Dedication

This manual is dedicated with gratitude and admiration to the individuals and families who make the decision to help others through the gift of organ and tissue donation.

And to the healthcare professionals who work to ensure the opportunity to act on those donation decisions is provided as part of end-of-life care.
Introduction

Trillium Gift of Life Network (TGLN) is committed to creating a culture that enables every Ontarian to make an informed decision about organ and tissue donation and to support healthcare professionals in implementing those decisions.

This resource manual was developed by TGLN as a tool to support healthcare professionals in hospitals across Ontario that don’t currently have an onsite TGLN coordinator and as a quick reference guide for those hospitals that do.

Following these guidelines will help advance knowledge and understanding of the merits of organ and tissue donation, and ultimately lead to saving and enriching lives. Working together, we can make a difference in the lives of those awaiting organ and tissue donations while bringing comfort to the families of donors whose generosity has given renewed hope to another human being.

Every effort has been made to ensure that all information and references contained in the manual are as up-to-date as possible. However, the constantly evolving world of legislation, guidelines and research can have a direct impact on the contents contained within. TGLN will do its best to keep you apprised of changes that might have a significant impact on the process for organ and tissue donation.

If you have any questions about the contents of this manual, please call TGLN at 1-877-363-8456 (toll free) or in Toronto at 416-363-4438.
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Step 1
The Referral and Notification Process
Over the past few years, changes in hospital accreditation standards and Ontario legislation as well as innovations in donation and transplantation have led to new referral practices for organ and tissue donation. To ensure every opportunity to donate is assessed, designated hospitals now call Trillium Gift of Life Network (TGLN) when patients meet clinical triggers (referral indicators) for donation.

Timely referral is necessary to a) establish if the person has a donation consent decision in the OHIP (Ontario Health Insurance Plan) database, b) determine medical suitability, and c) dispatch a coordinator onsite if there is potential for organ donation (Note: some locations will supported via telephone).

**Fast Facts**

- Access to registered consent decisions changes the time of the referral to TGLN. Call TGLN before the time for withdrawal of life sustaining therapy (WLS) is discussed with families.
- Death by circulatory determination (DCD) is expanding the opportunity to donate – more people then ever before can be organ donors.
- Advanced technology is making it possible to maintain or improve organ function (e.g. kidney and lungs) after recovery and prior to transplant. This is expanding the number of organs that can be transplanted from one donor.

**Who can be a donor?**

- Most people can be a tissue donor at death.
- To be an organ donor, the patient must have sustained a non-recoverable injury and be mechanically ventilated at the time TGLN is notified.
- What organs or tissue a person can donate largely depends on the type of hospital unit the person is in at end-of-life (intensive care units/critical care units (ICUs/CCUs) and emergency rooms (ERs) for organ and tissue donation; other units such as palliative care units for tissue donation) as well as his/her current and past medical history.
- Each patient’s eligibility to donate is evaluated on a case-by-case basis.
- Every eligible patient/family in Ontario has the opportunity to leave a lasting legacy through organ and/or tissue donation at the end-of-life.

**Donation after neurologically determined death (NDD)**

- Any patient who has been pronounced dead by neurological death criteria may be a potential organ and/or tissue donor.
Death after circulatory determination (DCD)

- Any patient who has sustained a non-recoverable injury, who is on life sustaining therapy and who does not meet the criteria for neurological death, may be a potential organ and tissue donor with DCD.

Who can identify and refer a potential donor?

While any member of the healthcare team may identify a potential donor, the referral should be made under the direction of an MD/RN/RN(EC)/RPN to obtain the appropriate clinical information about the potential donor.

What is Routine Notification and Request?

Legislation directly affecting the referral and notification process for imminent deaths in designated hospitals across Ontario came into effect in January 2006. All designated hospitals in Ontario must call TGLN with all imminent deaths to assess the potential for organ and tissue donation.

When should TGLN be contacted?

- When the patient meets the criteria for Routine Notification & Request (in designated hospitals/units).
- If the patient meets clinical triggers/referral indicators (see Diagram 1).

What is timely referral?

A timely referral is a call made by the hospital to TGLN before setting a time to withdraw life sustaining therapy and prior to any organ/tissue donation discussion with the family.

What information is needed to decide if there is an opportunity to donate?

Specific information is required with each referral to register the referral, provide a TGLN number and assess the specific donation opportunities available for each patient.

The following preliminary information is needed:

- caller’s name and professional designation (MD, RN, RPN)
- hospital/unit name
- patient name/age/DOB/hospital identification number/health card number
- admission date
- family contact information
- suspected cause of death
- admitting diagnosis
- time and date of death
- time and date of intubation (if patient had an endotrachial tube or tracheostomy)
- positive history of specific diseases
- weight/height
**Diagram 1**

**CLINICAL TRIGGER/REFERRAL INDICATOR ALGORITHM FOR TRILLIUM GIFT OF LIFE NETWORK (TGLN) REFERRAL**

*Note:* In designated hospitals *all* imminent deaths must be referred to TGLN.

---

**Call Trillium Gift of Life Network (TGLN) when a ventilated patient meets the following referral indicators for high risk of imminent death**

- **G** Grave prognosis or Glasgow Coma Scale (GCS) = 3
- **I** Injured brain or non-recoverable injury/illness
- **F** Family initiated discussion of donation/withdrawal of life sustaining therapy or treatment (WLS)
- **T** Therapy-limited, de-escalation of care, or WLS discussion planned.

---

**Call TGLN**

1-877-363-8456 or 416-363-4438

---

**TGLN will:**

1. Determine if patient has donation consent registered in the OHIP database.
2. Assess opportunity for saving lives through organ and tissue donation.
3. Provide support for advanced assessment, support healthcare team.
4. Initiate the donation conversation with family in collaboration with the healthcare team following neurological death or WLS discussion.
CALL

SCREEN

CONNECT

Diagram 1 (continued)

Call Trillium Gift of Life Network (TGLN) when a ventilated patient meets any of the following referral indicators for high risk of imminent death:
- Grave prognosis or GCS = 3
- Injured brain or non-recoverable injury/illness
- Family-initiated discussion of donation/withdrawal of life-sustaining therapy (WLS)
- Therapy-limited, de-escalation of care, or WLS discussion planned

With high risk of imminent death in non-ventilated patients:
- Planned palliation or WLS
- When the topic of donation is raised by the family
- Within one hour of death

TGLN will determine patient’s eligibility to donate organs and/or tissue:
- Potential to donate organs* and tissue – patient must be receiving mechanical ventilation
- Potential to donate tissue exclusively – provide info outlined in Routine Notification Worksheet
- No family at hospital – tissue exclusive potential?
Fill out Next Steps Worksheet before you call TGLN

Optimize potential for tissue recovery:
- Elevate head 30 degrees, instill saline drops in eyes and ensure eye lids are closed
- Transfer body to morgue as soon as possible (unless otherwise directed)
- Documentation should be handled as per hospital policy (e.g. sent to admitting, morgue etc.)
  This may include:
  - ‘Hold the Body’ form (faxed by TGLN)
  - Consent form (or copy)
  - Chart

* Potential to donate organs:
  TGLN will transfer your call to a Clinical Coordinator to arrange a support plan for the hospital

Document TGLN number in patient’s chart

Eligible

Arrange for TGLN to speak to family at the hospital

Not Eligible

TGLN obtains consent for tissue donation by telephone

Provide clinical information outlined on the Next Steps Worksheet if not previously provided

Continue with end-of-life care as per hospital policy

Decision not to donate
Step 2
Determination of Death
Step 2: Determination of Death

Organ and tissue donation is possible: \textbf{a)} following pronouncement of death using neurologically determined death (NDD) criteria or, \textbf{b)} in planned situations of withdrawal of life sustaining therapy (WLS) and pronouncement of death (DCD potential).

\textbf{Call TGLN prior} to discussion of WLS or mention of donation to family to ensure time to look up the donation consent decision in the OHIP database:

- Catastrophic brain injury with ventilator dependence
  - Determination of NDD
  - Consent for donation
  - Continuation of therapy to support organs
  - Continuation of therapy until organ recovery

- Non-recoverable injury with ventilator dependence
  - Family/healthcare team agree on withdrawal of life sustaining therapy (WLS)
  - Consent for donation
  - Continuation of therapy to support organs until WLS
  - Determination of death by cardiocirculatory criteria and organ recovery
Neurologically determined death is defined as the “irreversible loss of the capacity for consciousness combined with the irreversible loss of all brainstem functions, including the capacity to breathe” (Canadian Neurocritical Care Group 1999). Previously, the terms “brain death”, “neurological death” and “death by neurological criteria” were used interchangeably.

Trillium Gift of Life Network (TGLN) accepts criteria developed at a consensus conference coordinated by the Canadian Council for Donation and Transplantation (CCDT) in 2003 as the standard for neurologically determined death (NDD). The CCDT states that diagnosing neurological death involves determining the irreversible loss of brain stem reflexes, such as cough or gag, as well as absence of pupillary response to light. There is no spontaneous movement or central response to pain, although spinal reflexes may persist. The person is also no longer able to breathe (apneic), requires mechanical ventilation and their capacity for consciousness has been irreversibly lost.

What conditions may lead to neurological death?

**Acute brain injury:** Head trauma from motor vehicle collisions, intracranial hemorrhage from any cause including stroke, intracranial tumor or acute hydrocephalus.

**Hypoxic-ischemic encephalopathy:** Post-cardiac or respiratory arrest, near drowning, asphyxia, hypovolemic shock.

**Central nervous system (CNS) infection:** Meningitis, encephalitis, generalized sepsis.

**Miscellaneous:** Metabolic encephalopathy from liver disease; diabetic ketoacidosis, metabolic disorders, acute hyponatremia or vasculitis.

What qualifications are needed to determine neurological death?

Physicians declaring neurological death should have full and current licensure for independent medical practice in Ontario (or relevant Canadian jurisdiction) and have skill and knowledge in the management of patients with severe brain injury and in the diagnosis of NDD. For donations to be eligible for transplantation, two physicians must declare the patient’s death. The Trillium Gift of Life Network Act states a physician whose judgment might be influenced owing to an association with a transplant program or a proposed recipient cannot take any part in the declaration of death.

What is the legal time of death?

The time of the first completed determination of neurological death is the legal time of death – this is the time that is written on the death certificate.

What are the minimum clinical criteria needed for NDD?

The following minimum clinical criteria are required for NDD:

1. Proof of etiology that is capable of causing neurological death (in the absence of reversible conditions capable of imitating neurological death).
2. Absence of reversible causes of coma, or confounding factors including:
   a. Unresuscitated shock.
   b. Low core body temperature < 34 degrees Celsius (or < 36 degrees Celsius for term newborns).
   c. Treatable metabolic/endocrine/electrolyte disturbances (including hypernatremia, hypoglycemia, severe hypophosphatemia, liver and/or renal dysfunction).
   d. Peripheral nerve or muscle dysfunction due to disease or neuromuscular blocking agents (pancuronium, succinylcholine, etc.).
   e. CNS depressants/significant drug intoxications (e.g. alcohol, barbiturates, sedatives) – note that therapeutic levels of anticonvulsants, sedatives and analgesics do not preclude the diagnosis.

3. Absence of brain stem reflexes/absence of bilateral movement, both spontaneous and in response to stimulation (including seizures). **Spinal cord reflexes are exempt.** Deep pain testing must include all extremities and above the clavicles.

4. Absence of respiratory effort, as established by apnea testing.

Assistance for the determination of neurological death is available by contacting the Trillium Gift of Life Network’s Provincial Resource Centre at 1-877-363-8456 or 416-363-4438 (in the Toronto area).

**What are the testing criteria to determine neurological death?**

The following tests are done to determine neurological death:

1. **CNS-mediated motor response to pain:** Testing must include all extremities and above the clavicles. Spinal cord reflexes are exempt.

2. **Brain stem reflexes:** All reflexes must be tested bilaterally (except cough and gag).
   a. **Pupillary response:** In a darkened room, shine light into each eye and observe change in pupil size. Absent reflex involves fixed dilated pupils that are unreactive to light. Intravenous drugs, including conventional doses of atropine may influence pupil size, but the light response remains the same. Topical ocular instillation of drugs, however, may produce non-reactive pupils.
   b. **Corneal reflex:** Stimulate the cornea with a tissue and observe both eyelids for any response. If no response such as blinking is observed, the reflex is absent.
   c. **Gag reflex:** Stimulate the pharynx with a tongue blade /Yankauer. If it elicits no response, the reflex is absent.
   d. **Cough reflex:** If bronchial suctioning fails to initiate a cough, the reflex is absent.
   e. **Oculovestibular reflex (cold caloric):** With head of bed elevated 30 degrees, syringe about 50 cc of ice-cold water into each ear canal ensuring patient’s eyes are open. Any movement of one or both eyes excludes the diagnosis of neurological death. Prior to testing, a tympanic membrane assessment is required as testing of this reflex is contraindicated if there is impaired integrity of the tympanic membrane. Initial flushing of the ear canal may be needed if wax is obstructing the membrane.

3. **Apnea testing:** Apnea testing involves driving up PaCO₂ levels to a maximum point to elicit the respiratory response (while supporting oxygenation). Cooler body temperature may impact clinical testing for neurological death and can prolong the time required for apnea tests, due to the decreased amount of CO₂ produced by the body.
Threshold levels once the apnea test is completed should be as follows:

- $\text{PaCO}_2 \geq 60 \text{ mmHg}$, and
- $\text{PaCO}_2 \geq 20 \text{ mmHg}$ rise above baseline, and
- $\text{pH} \leq 7.28$

These thresholds must be documented by arterial blood gas measurement. If the apnea test is started with a normal $\text{PaCO}_2$ of $35 – 45 \text{ mmHg}$, the rise of the $\text{PaCO}_2$ to the level of $60 \text{ mmHg}$ usually will occur within 10 minutes. The physician must be present to observe and ensure the absence of respiratory effort while the patient is off the ventilator during the apnea test. A single apnea test may be performed in children over one year and in adults if both physicians are present at the time of the test.

Instructions:

a. Attempt to achieve normal baseline arterial blood gases: pH $7.35-7.45$, $\text{PaCO}_2$ $35-45 \text{ mmHg}$, $\text{PaO}_2 > 100 \text{ mmHg}$.

b. Preoxygenate with 100% $\text{O}_2$.

c. Disconnect ETT from ventilator and insert catheter into ETT to deliver $\text{O}_2 @ 1-4 \text{ L/min}$.

d. Verify apnea; observe chest and abdomen continuously for respiratory effort while patient is off ventilator. Ensure cardiovascular status and oxygen saturations remain stable.

e. Test arterial blood gases in 10-15 minutes, then reconnect ventilator.

f. Absence of capacity to breathe is confirmed if: $\text{PaCO}_2 \geq 60 \text{ mmHg}$ and $\text{PaCO}_2 \geq 20 \text{ mmHg}$ rise above baseline and a $\text{pH} \leq 7.28$.

Note: If the test fails to meet the three criteria listed above or an apnea test is unable to be performed due to donor instability, an ancillary test should be performed.

4. Ancillary testing for neurological death: Ancillary testing to determine absence of intracranial flow is indicated when any of the specific components of the clinical testing cannot be conducted or completed. Ancillary testing does not negate the need for carrying out the clinical exams by two physicians to the extent possible. Acceptable imaging techniques for ancillary testing as per CCDT guidelines include radionuclide imaging (nuclear medicine testing), 4-vessel cerebral angiogram, Xenon and computed tomography (CT), or magnetic resonance (MR) angiography. The electroencephalogram (EEG) is no longer recommended.

Are there paediatric considerations for NDD?

For the purpose of donation all children should be pronounced as per the age specific criteria outlined below. A TGLN Paediatric Donation Resource Manual is available for patients ≤ 18 years and can be obtained from TGLN. As with the adult population, the CCDT recommends that declaring physicians have skill and knowledge in the management of patients with severe brain injury and in the diagnosis of NDD.
**Who is eligible for DCD?**

In Ontario, organ and tissue donation after death by circulatory determination (DCD) is now a possibility for patients who do not meet the strict criteria for neurological or brain death. Patients who meet the criteria for DCD are dependent on mechanical ventilation. DCD is a possibility for families who have decided to withdraw life sustaining therapy after a physician has determined that there is no long-term prognosis for recovery. This may include patients at end-of-life with chronic ventilator-dependent conditions (i.e. - Amyotrophic Lateral Sclerosis, Muscular Dystrophy, etc).

**What is the policy around withdrawal of life sustaining therapy?**

Each hospital has policies related to end-of-life and withdrawal of life sustaining therapy. The medical staff at the hospital and TGLN personnel will consult with the family regarding timing of withdrawal. Typically, withdrawal of life sustaining therapy is carried out under the care of the physician caring for the patient. Other physicians, depending on the specific hospital policy, may also be involved. TGLN personnel or any physician involved in the surgical recovery or care of the intended recipient will not be involved in the withdrawal of life sustaining therapy.

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**Death determined by circulatory Determination (DCD)**

### Assessment

<table>
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<th>Children older than one year and adults</th>
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<td><strong>Pupillary Response</strong></td>
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<td><strong>Corneal Reflex</strong></td>
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<td><strong>Gag Reflex</strong></td>
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<tr>
<td><strong>Apnea Test</strong></td>
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*If unable to complete any of the above*

**Ancillary Test**

- If unable to complete any of the above
- If unable to complete any of the above
- If unable to complete any of the above

**Time of 1st test**

- 48 hours post birth
- No fixed time
- No fixed time

**Interval between two exams**

- 24 hours
- Not specified, but at separate times
- Can be done concurrently

*A single apnea test may be performed in children over one year and in adults if both physicians are present at the time of the test.*
It is important to note that in all settings where life sustaining therapy is withdrawn, patient comfort measures are of utmost concern and should follow hospital or physician standard practice. The attending physician may administer analgesia or other medications for comfort based on clinical judgment and hospital protocol. Regardless of whether or not support is withdrawn in the intensive care unit (ICU) or in the operating room (OR), end-of-life care follows the same standard of care as with a patient for whom organ donation is not possible.

**Where does withdrawal take place?**

Withdrawal of life sustaining therapy may occur in the ICU, the OR or another area close to the OR. Withdrawal in the OR setting is optimal to promote the best transplant outcomes. The decision will be discussed between the family, hospital and TGLN personnel.

**When is death pronounced in situations of DCD?**

Death is pronounced as per the hospital policy on withdrawal of life sustaining therapy. A second physician is required by the TGLN Act to confirm death for donation to occur. Neither physician can have a relationship with the intended transplant recipients. The legal time of death is the first pronouncement of death. Each physician will confirm the absence of spontaneous respiration and the absence of a pulse pressure for a pre-determined period of time (usually five minutes) after the first pronouncement of death.

**What if the patient does not die within the timeframe needed for successful transplant?**

If the patient does not die within an expected timeframe established with the transplant programs (usually 60-120 minutes), end-of-life care will continue and the patient can be transferred to a previously agreed upon location.
Step 3
Coroner Considerations
Step 3: Coroner Considerations

The Coroner’s permission to recover organ and tissues is required when the death is a Coroner’s case. Trillium Gift of Life Network (TGLN) works collaboratively with the Coroner’s Office to facilitate donation and the Coroner’s investigation, if needed. In Ontario and many other jurisdictions, coroners are recognized as champions for organ and tissue donation and a number of coroners have further supported donation through the provision of enucleation services.

Can donation occur when the death is a Coroner’s case?

Yes, coroner involvement does not preclude the opportunity for organ or tissue donation even if the events of the death are suspicious or a homicide.

When is a donor a Coroner’s case?

As outlined in the Coroner’s Act, if there is reason to believe that the death was caused by violence, misadventure, negligence, misconduct or malpractice, the Coroner must be notified. In these circumstances, the Coroner must give permission to proceed with organ and/or tissue donation.

Some hospitals have specific protocols indicating the local Coroner’s Office must always be notified about a death if the person is a potential donor. As this varies from facility to facility, verify hospital-specific directives.

How is the Coroner’s permission for donation obtained?

When a death appears to be a Coroner’s case, contact the local/regional Coroner’s Office. TGLN should be informed if the patient’s death is considered a Coroner’s case under the Coroner’s Act. If possible, it is prudent to speak with the Coroner prior to a consent discussion with the family as donation exceptions may impact the conversation.

If initial discussion with the attending Coroner indicates that permission for organ or tissue donation may be withheld, TGLN will contact the Office of the Chief Coroner of Ontario (416-314-4000 or toll-free at 1-877-991-9959) to further discuss.

Based on the information provided, the Office of the Chief Coroner will decide:

- Whether donation may proceed.
- If there are any limitations to donation.
- If a physical exam or further examination is needed by the Coroner prior to recovery.
- If a Coroner’s representative is needed in the OR during recovery.
What documentation is needed from the Coroner to proceed with donation?

When a death is designated a Coroner’s case, the surgical recovery process (including transfer of body) may not start until the Coroner has granted permission. A Coroner's/Forensic Pathologist Permission form (sample below) will be provided by either the Coroner or TGLN when a Coroner’s case is deemed to be a potential donor. The form will be provided to the hospital as per hospital policy.

Does Coroner involvement impact funeral planning?

Coroner involvement in a donation case may directly impact the timing of the donation process and release of the body to the funeral home. In these circumstances, it is essential that information related to timing is shared with the family and discussed with the Coroner involved.

Figure 1

![Sample Coroner/Forensic Pathologist Permission Form](image)
Step 4
The Donation Discussion:
Communicating Registered Consent Decisions and Family Approach for Substitute Consent
Step 4: The Donation Discussion: Communicating Registered Consent Decisions and Family Approach for Substitute Consent

Diagram 2

COMPONENTS OF AN OPTIMAL DONATION DISCUSSION

- Timely referral to TGLN (as per clinical triggers and prior to setting time to withdraw life sustaining therapy)
- Pre-approach planning with the TGLN coordinator
- Grave prognosis provided
- Consistent messages from team
- Family understanding of neurological death
- Time of death provided
- Separate conversation about death from donation discussion
- Introduction of TGLN Coordinator as healthcare team member/specialist
Most Ontarians support organ and tissue donation. To better support donor families, Ontario hospitals are currently in the process of changing practice to include a Trillium Gift of Life Network (TGLN) coordinator in the donation discussion. The *Trillium Gift of Life Network Act* specifies that contact with the family for substitute consent must be made in a manner that meets the requirements of TGLN. TGLN coordinators can quickly determine if the potential donor registered a donation consent decision via their health card. Research also indicates that families are more likely to donate when the discussion is with a requester who has experience talking to families about donation. For these reasons, it is strongly recommended that the TGLN coordinator be present during the donation discussion.

The goal of the discussion is to make sure that the patient or the patient’s substitute decision maker is given the information, support and time needed to understand the opportunity to donate. This promotes an outcome that best reflects the patient’s and/or the family’s choice about organ and tissue donation. The goal is best achieved when the attending healthcare team collaborates with the TGLN coordinator who has the training and skills relevant to facilitating this type of conversation.

It is important to never assume a family will choose not to donate, and in fact, to approach the discussion as if the family were among the majority of Ontarians who would donate organs and tissues after death.

**Who has the legal authority to give consent?**

Under Section 4(1) of the *Trillium Gift of Life Network Act*, any person who has attained the age of 16 years may consent to donation of their organs and/or tissues after death. Consent to be an organ and tissue donor can be registered during renewal or registering for a health card with the Ontario Health Insurance Program (OHIP) at the ServiceOntario office. Ontarians who have a red and white card or who have a photo health card and have not previously registered consent to donate, are able to download a Gift of Life Consent Form from the TGLN website (www.giftoflife.on.ca). Other ways of communicating consent for donation include family conversation or a signed donor card.

If the person registered a consent decision, had a signed donor card or communicated their decision to donate to their family, the patient’s substitute decision maker (usually a family member) will be asked to affirm those wishes during the donation discussion. The TGLN coordinator will explain what honouring the person’s consent decision entails.

Section 5(1) to (2) of the *Trillium Gift of Life Network Act* outlines the hierarchy, in descending order, of legal authority to give consent as the patient’s substitute after the death of a person, as follows:

- The person’s spouse or same-sex partner;
- Any one of the person’s children;
- Either one of the person’s parents;
- Any one of the person’s brothers or sisters;
- Any other of the person’s next of kin;
- The person lawfully in possession of the body (e.g. executor of the will or administrator of the estate) with the exception of persons such as a funeral director or the administrative head of the hospital.
Can consent be obtained by telephone?

Yes. Consent is most often obtained by a TGLN coordinator. If the TGLN coordinator is not available when the family provides the consent, the healthcare professional obtaining the telephone consent should:

- Read the consent form to the patient’s substitute over the telephone, clearly identifying the organs/tissues to be donated.
- Sign the appropriate section of TGLN’s Consent to Donate Organs and/or Tissues form.

A second person must act as a witness by asking the patient’s substitute to confirm his/her relationship to the patient and to identify the organs and tissues that he/she is consenting to donate. The witness signs and dates the telephone consent section on the form.

When is the optimal time for the donation discussion with the family?

The timing of the donation discussion is important in both neurologically determined death (NDD) and for death by circulatory determination (DCD).

In cases of NDD, unless there has been an early request initiated by the family, it is recommended the discussion take place after the patient’s substitute has been notified of the death. Research shows that families are more likely to donate if they understand the fatality of the patient’s injury prior to the donation discussion. When family members raise the topic of donation, they clearly understand how ill the patient is. Two practices address the question of when to discuss donation:

1. **Only after the family understands the patient will not survive.**
   
   As donation after neurological death can only happen if the patient meets all the neurological death criteria, it is suggested that one declaration of neurological death be completed before donation is discussed.

2. **Providing the time of death when confirming neurological death.**
   
   Providing a time of death to the family has proven to be beneficial in helping families understand the finality of the situation.

A decoupled approach is recommended and is defined as introducing the concept of donation only after the family has had time to absorb the reality and finality of the diagnosis.

When is the opportunity for DCD introduced to families?

In some cases, a family may raise the topic of donation opportunities with the healthcare team when they understand a grim prognosis. The decision to withdraw life sustaining therapy should be made independent of the decision to donate. Therefore, DCD should be offered by an experienced requester after the decision to withdraw life sustaining therapy has been made and prior to the actual withdrawal of therapy or setting of a time for withdrawal.

How is the registered donation consent decision communicated to the family?

The TGLN coordinator will access the donation consent information in the OHIP database once the hospital notifies TGLN of an imminent death or of a family’s interest in donation. If consent to donate is registered, the TGLN coordinator will provide the consent information to the donor’s family members at the appropriate time. TGLN works closely with the healthcare team to honour the person’s choice to donate. Ongoing support is provided to the patient’s family to help them understand the donation process and the meaningful decision their loved one has made to save and enhance lives.
What is pre-approach planning? Why is it important? What are the benefits?

Pre-approach planning involves creating a shared communication plan between the healthcare team caring for a patient and the TGLN coordinator and, in a recent study, has been shown to triple the consent rate. Although 79% of Ontarians state they would donate an organ for transplantation at death, the consent rate for organ donation is only 55%. If consent to donate is registered, the TGLN coordinator will work with the healthcare team to ensure the family has this information. Pre-approach planning makes sure that known best practices about the donation discussion, as listed below, are considered prior to raising the topic of donation with families.

- Shared understanding of patient’s status and plan of care.
- Shared understanding of family dynamics, hospital experience and available support.
- Established plan related to timing of:
  - Neurological death testing
  - Introduction of the TGLN coordinator
  - The donation discussion, including who will lead the discussion.

When should pre-approach planning happen?

As discussed in The Referral and Notification Process (Step 1), when the TGLN coordinator arrives onsite, he/she will meet with the healthcare team to review the patient’s status and eligibility for donation and develop a plan of care. The earlier pre-approach planning occurs, the greater the opportunity to ensure optimal conditions for the donation discussion with the family. Clinical milestones that indicate pre-approach planning might start include:

- suspected non-recoverable brain injury
- patient meets hospital clinical trigger criteria for TGLN referral
- suspected neurological death
- discussion of withdrawal of life sustaining therapy.

Other opportunities for pre-approach planning include:

- arrival of TGLN coordinator
- family raising topic of donation.

Optimal Donation Discussion

What factors influence the decision to donate?

Best practices have been developed for the following three identified factors that influence the decision to donate:

- timing (see ‘optimal time’ on page 29)
- experience
- attitude and language.
How does the experience, attitude and language of the requester influence the decision to donate?

Research indicates that families are more likely to donate when the discussion is with a requester who has experience talking to families about donation. For this reason, it is recommended that the TGLN coordinator be present during the discussion about donation. If the family raises the topic of donation, it is always appropriate for the TGLN coordinator to provide information to the family regardless of the status of the patient.

If a TGLN coordinator is not able to provide onsite support because of geographic challenges, a member of the healthcare team who has a good relationship with the patient/substitute may discuss donation or introduce a person who can explain the choices and answer any questions. Whenever feasible, a person skilled in explaining donation should lead the discussion once it has been initiated.

Families are more likely to donate if the requesting person has a positive attitude about donation. Typically, attitude is evident in both tone and language. It is always appropriate to consult TGLN regarding suggested language if onsite coordinator support is not available.

Should religion and culture be considered when discussing donation?

The family’s religious and cultural beliefs may be helpful areas to explore to understand how to best offer the opportunity to donate organs and tissues in a manner that is consistent with their beliefs. Table 1 provides an overview of cultural and religious considerations. It is important to note that every family should be offered the opportunity to donate regardless of identified religion or culture as donation holds different meaning for individual families.

What information is shared with families about donation?

People choose to donate because it honours their loved one’s wish, helps other people and provides some comfort in an otherwise senseless situation. For this reason, information about the benefits of donation and how it helps grieving families and the recipients is always provided to the family first. In addition, families are also told how few people can donate organs at death and how rare the opportunity is to help others through organ donation.

The following information is also shared with families:

- A medical-social history interview with family/friend is required and includes questions about history of sexual relationships, alcohol and drug use, similar to those required with blood donation.
- Access to medical records is required to collect and clarify information.
- Blood samples are drawn and sent for testing for infectious diseases such as HIV, Hepatitis B and C, and syphilis.
- Organ/tissue recovery usually occurs within 24 hours.
- With NDD, the person is taken to the OR while on mechanical ventilation.
- Organ recovery is similar to any other surgery and the body is treated with respect.
- On occasion, a transfer of the patient’s body may be required to recover organs and tissues.
• **Donation may not result in transplantation.**
  - Final eligibility to transplant the donated organs and/or tissue occurs once the medical-social history has been taken, serology test results for infectious diseases and organ function test results are shared with the transplant teams, and organ appearance has been assessed in the operating room.

**What is the impact of donation on funeral arrangements?**
- Rarely, recovery may delay the release of the patient’s body to the funeral home and may influence timing of the funeral ceremony.
- Donation does not prevent cremation or open casket ceremony.
- Heart-for-valve donation and musculoskeletal tissue donation may influence clothing for burial.
- Donation does not add any additional expense to the patient’s estate and no profit is gained through the donation or transplantation.

**Why is a second consent required for DCD?**
In addition to the *Consent to Donate Organs and/or Tissues* form, a *Consent for Pre-mortem Treatment* form is also required as optimal protocol includes pre-mortem interventions to facilitate the best possible outcome for recovered organs/tissues. These interventions pose minimal risk to the patient, and will not be used or continued if there is any indication that death will be hastened as a result. The following are considered interventions that may be performed:

- A trial period off the ventilator which predicts the timing of deterioration of patient vital signs after withdrawal of life sustaining therapy.
- Testing and/or procedures similar to those performed in the case of NDD, e.g. serology for infectious diseases, blood type, as well as organ-specific testing and evaluation such as CXR or bronchoscopy.
- Medical management to stabilize the donor.
- Anticoagulants administered prior to death while the heart continues to beat to avoid clotting and ensure circulation and perfusion to all organs.

Some hospital policies may also include femoral cannulation in anticipation of upcoming recovery in the operating room.

**What other information is provided to families in DCD situations?**
As part of the donation discussion with the family, the TGLN coordinator will discuss the possibility that their loved one may not expire within the timeframe needed for donation to occur. If this happens, the patient will be returned to an appropriate area of the hospital where comfort measures will be continued and family members can be present.

**What if my hospital has no formal policy regarding DCD?**
If a family has raised the subject of donation, TGLN will provide assistance to hospitals to help carry out this request regardless of whether or not a policy is in place for DCD. It is important that both staff and hospital administrators have determined that they are able to proceed with DCD before the family is approached.
## RELIGIOUS BELIEFS ABOUT DONATION

<table>
<thead>
<tr>
<th>Religion</th>
<th>Beliefs and Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinduism</td>
<td>• not prohibited from donating organs and tissues&lt;br&gt;• matter of individual choice</td>
</tr>
<tr>
<td>Buddhism</td>
<td>• no official position on organ donation&lt;br&gt;• matter of individual choice</td>
</tr>
<tr>
<td>Sikhism</td>
<td>• support a positive stance on organ and tissue donation</td>
</tr>
<tr>
<td>Shinto</td>
<td>• either clearly oppose/are extremely cautious regarding organ and tissue donation</td>
</tr>
<tr>
<td>Confucianism</td>
<td>• prohibited from damaging body as a whole</td>
</tr>
<tr>
<td>Taoism</td>
<td>• no objections to use of parts of body after death</td>
</tr>
<tr>
<td>Judaism</td>
<td>• all four branches of Judaism support and encourage organ and tissue donation&lt;br&gt;• general principle “saving of a human life takes precedence over all other laws”; including the delay in burial</td>
</tr>
<tr>
<td>Islam</td>
<td>• strongly believes in the principle of saving human life&lt;br&gt;• permit organ transplant as a priority in saving human lives</td>
</tr>
<tr>
<td>Baptist</td>
<td>• matter of individual choice</td>
</tr>
<tr>
<td>Episcopal</td>
<td>• encourage donation</td>
</tr>
<tr>
<td>Greek Orthodox</td>
<td>• support donation</td>
</tr>
<tr>
<td>Lutheran</td>
<td>• encourage donation</td>
</tr>
<tr>
<td>Jehovah's Witnesses</td>
<td>• matter of individual choice&lt;br&gt;• all blood must be removed from organs prior to transplant</td>
</tr>
<tr>
<td>Presbyterian</td>
<td>• encourage and promote donation</td>
</tr>
<tr>
<td>Catholicism</td>
<td>• encourage donation as an act of charity</td>
</tr>
<tr>
<td>Seventh Day Adventist</td>
<td>• strongly encourage donation and transplantation</td>
</tr>
<tr>
<td>United Church of Canada</td>
<td>• support and encourage donation</td>
</tr>
<tr>
<td>Protestantism</td>
<td>• respect individual choice</td>
</tr>
</tbody>
</table>
Step 5
Screening and Testing
To promote successful transplantation and the health of each recipient, the risk of disease transmission through organ and/or tissue transplantation must be minimized and the potential donor’s medical and social history carefully assessed to determine medical suitability. Sources of data include the potential donor’s hospital medical records, the professionals involved in his/her care at the hospital, and where necessary, past medical records. In accordance with Health Canada requirements, a Donor Medical and Social History Questionnaire is included in this assessment and data collection and involves an interview with the next-of-kin (NOK) or others who have a close relationship with the potential donor. Trillium Gift of Life Network (TGLN) and the transplant teams rely on information provided by diagnostic tests and serology done on the donor to make decisions about individual organ suitability for transplant.

**What are the essential elements of the combined organ/tissue donor assessment?**

The donor assessment includes but is not limited to the following:

- Complete head-to-toe physical examination for observation of tattoos, piercings, evidence of needle tracks, discoloration or sores on mucous membranes, swollen lymph nodes, masses and/or moles.
- Arterial blood pressure (ABP), central venous pressure (CVP), heart rate, temperature, urine output.
- Height, weight, chest circumference, abdominal girth.
- Ventilator settings.
- Documentation of sedation received.
- BP support (e.g. inotropes, vasopressors, antihypertensives).
- Intravenous (IV) fluids (type and rate).
- Other IV medications (type, dose and rate).

**What are the essential elements of tissue exclusive donor assessment?**

The donor assessment includes but is not limited to the following:

- Complete head-to-toe physical examination for observation of tattoos, piercings, evidence of needle tracks, discoloration or sores on mucous membranes, swollen lymph nodes, masses and/or moles.
- Height, weight.
- If intubated, length of time.
• Most recent white blood cell count (WBC), temperature, chest x-ray (CXR) and blood/urine/sputum culture results.
• Current medications (specifically antibiotics).
• Documentation of known sepsis.
• Assessment of any fluids received in the hour before death and any blood products or colloids within the last 48 hours prior to death.

What is the basic testing needed for organ donors**?

The donor assessment should include but is not limited to the following:

• Known allergies profile
• ABO - Blood Group (Cross and Type)
• Arterial Blood Gases (ABGs) on ventilator setting of FiO₂ 1.0, PEEP 8-10 cmH₂O x 10 minutes post lung recruitment maneuvers q2-4h
• CBC q4h
• Liver profile – Bilirubin (total and direct), AST, ALT, ALP, LDH, Total Protein, Albumin, Amylase, Lipase, GGT, PT/INR, PTT q4h
• Electrolytes, Creatinine, Urea, Glucose, Ca, PO₄, Mg, Lactate q4h
• CK, CK-MB q4-8h
• Troponin (I or T) q8h
• Urinalysis q24h
• Toxicology screen (blood or urine) unless overdose ruled out by MD
• C & S – sputum, urine and blood (include gram stain) q24h
• 12 lead EKG
• CXR q4h – with interpretation of both right and left sides

**More frequent testing may be required based on individual cases.

What additional testing is needed for potential heart or lung donors?

• Bronchoscopy is considered for all potential lung donors. A second bronchoscopy will be performed in the Operating Room (OR) if the lungs are accepted for recovery.
• 2D Echo – include assessment of left ventricular (LV) function/ejection fraction (EF), valve function, description of wall motion and function, evaluation of heart function.
• Coronary angiography may be requested by the transplant surgeon pending the 2D Echo results. If required, consider giving N-acetylcysteine (muco-myst) to preserve kidney function.
What tests are done to determine tissue matching between donors and recipients?

In addition to blood type considerations, histocompatibility, also referred to as HLA testing (Human Leukocyte Antigen) or tissue typing, is completed. This testing detects antigens (genetic markers) on white blood cells and is used to assess tissue compatibility between the donor and potential recipients. HLA is a critical factor in determining which patient is selected to receive a donated organ and reduce the potential for rejections after transplantation. The TGLN coordinator will advise what blood samples are needed.

What blood samples are needed for infectious disease testing?

To minimize the risk of disease transmission through organ or tissue transplantation, the donor’s blood is carefully screened for the presence of transmissible diseases. The information is used to help determine the medical suitability of organs and tissue. TGLN will advise what blood samples are needed and coordinate deliveries to appropriate labs.

According to the Health Canada Guidance Document, minimum serological testing for infectious diseases includes the following:

- HIV-1, HIV-2 (human immunodeficiency virus antibody);
- HBsAg (hepatitis B surface antigen);
- Total anti-HBc (hepatitis B core antibody);
- HCV (hepatitis C virus antibody);
- HTLV-1, HTLV-2 (Human T-cell lymphotropic virus);
- Syphilis (RPR);
- Antibody to cytomegalovirus – IgG (CMV);
- West Nile Virus (as directed).

The results of these tests are transmitted to TGLN prior to transplantation of the organ and usually prior to the donor recovery surgery.

In addition to the tests specified above, donors are tested for:

- Toxoplasmosis for heart donors (which may be done retrospectively)
- Epstein-Barr virus (EBV).

To address the possible vertical transmission of infectious agents in donors under 18 months of age, or up to 12 months beyond breast-feeding, the serology of the birth mother is also tested.

What is involved in the hemodilution screening process?

Prior to drawing blood specimens for infectious disease testing, the hemodilution status of the donor must be established. This “Hemodilution Screen” calculates the amount of intravenous fluids the donor has received in the past 48 hours. This is done to ensure accuracy of testing for the infectious disease markers.
Prior to the time serology samples are drawn, the following information will be needed:

- Red cell product volume within 48 hours prior to the draw.
- Colloids (e.g. plasma, albumin, dextran, pentaspan, platelets, cryoprecipitate or TPN) in the 48 hours prior to serology draw.
- Crystalloid volume given in the one hour prior to serology draw.

The TGLN coordinator will help complete the calculation for the hemodilution screen.

If a sample is determined to be hemodiluted and there was a sample drawn prior to the patient receiving multiple infusions, there may be a need to obtain this sample (pending permission of the Coroner if considered a Coroner’s case).

**What other steps are involved in screening for medical suitability and infectious diseases?**

The donor’s medical-social history is critical in identifying the risk versus benefit for a potential transplant recipient. TGLN staff will complete a medical-social questionnaire interview with the appropriate individuals.

Information gathered through the questionnaire:

- Assists in screening for the transmission of bacterial, viral and prion-associated diseases (e.g. Creutzfeldt-Jakob disease or CJD) that may be transmitted through transplantation.
- Identifies evidence of conditions or diseases that may make donation unsuitable.
- Identifies donors with activities that are considered high-risk for infectious disease transmission.
- Identifies those who may be genetically predisposed to certain diseases that may preclude donation.
- Identifies if maternal serology may be necessary for a paediatric donor.

Final acceptance of organs and tissues for transplantation rests with the receiving transplant surgeons or tissue banks.
Step 6
Donor Management
Step 6: Donor Management

Preserving the opportunity to donate is an important part of end-of-life care and involves a collaborative effort between healthcare providers and Trillium Gift of Life Network (TGLN). Many hospitals have developed standing orders or pre-printed order sets that are initiated when the patient meets referral indicators for organ donation potential. Maintaining a potential donor allows TGLN to access the registered consent information in the OHIP database and advocate for the patient's decision to donate. Optimum donor management ensures the donor family is offered the opportunity to donate when substitute consent is required and facilitates donor stability in order to act on a registered donation consent decision. Finally, comprehensive donor management promotes the best outcome for the potential recipients.

Resuscitation and re-evaluation can improve reversible organ dysfunction such as myocardial/cardiovascular dysfunction, oxygenation impairment related to potentially reversible lung injury, invasive bacterial infections, hypernatremia and any other potentially treatable situation. It is important to take the time needed in a critical care unit (CCU) to optimize multi-organ function for the purposes of improving transplant outcomes and helping as many recipients as possible. TGLN follows the recommendations for donor management set out by the Canadian Council on Donation and Transplantation (CCDT) and best medical practices for critically ill patients.

- The management period may range from 12-24 hours or longer.
- The CCDT states there are no predefined demographic factors or organ dysfunction thresholds that preclude the consent for donation and offering of organs for transplantation.
- Technology has advanced. It is now possible to maintain or improve organ function after recovery and prior to transplant with organs like kidneys and lungs, thus expanding the number of organs that can be transplanted from one donor.
- The assessment for donation opportunity via a referral to TGLN should always precede actual intervention to withdraw life sustaining therapy if patients are mechanically ventilated.

A one page Quick Reference Chart is located at the end of this section. Paediatric donor management is covered in the Paediatric Donation Resource Manual, available through TGLN.

What are the goals of donor management?

When the healthcare teams’ focus shifts from saving the patient’s life to end-of-life care and there is the potential to donate, organ resuscitation and preservation are part of the end-of-life care provided to ensure the opportunity to donate is maintained. Thus, the goals of donor management are to ensure physiological homeostasis in order to maintain optimal organ function at the time of surgical recovery. These include hemodynamic, ventilatory, fluid, electrolyte and endocrine management to maintain:

- Euvolemia (normovolemia)  
- Hemodynamic stability  
- Normothermia.
Prior to and following consent when death by circulatory determination (DCD) is planned for organ donation, optimum management (employing the same goals as above) continues until the time of withdrawal of life sustaining treatment.

The TGLN Donation Support Physicians (DSPs) are available for consultation regarding donor management issues that are unresponsive to the interventions identified in this section.

**What are the monitoring guidelines for donor management?**

- Vital signs **q1h**
- Temperature **q4h** (warming blanket to maintain temperature 35.5-37.0 °C)
- Continuous pulse oximetry and electrocardiogram (EKG) monitoring
- Arterial blood pressure **q1h**
- Continuous central venous pressure (CVP) monitoring
- Urine catheter to straight drainage, hourly intake and output
- Nasogastric tube – straight drainage if not using for nutritional support
- Initiate or continue enteral feedings, when appropriate and possible
- Mixed venous blood gases **q6h** if pulmonary artery catheter in situ
- Infectious disease assessment (via **q24h** blood, urine & sputum cultures)

**Cardiovascular considerations**

- 12 lead EKG x 1 now and prn
- Insert a subclavian or jugular central line for continuous central venous pressure monitoring
- Transthoracic echocardiogram (2D Echo) unless cardiac donation ruled out by TGLN
  - If 2D echo EF ≤ 40% then repeat echo at q8-12hr intervals after first dose of Levothyroxine given
- Consider insertion of a PA catheter if EF ≤ 40% and/or secondary inotropes or vasopressors required for hypotension
- Cardiac angiogram may be required under certain situations

Hemodynamic status target ranges include:

- **a.** Heart Rate (HR) ≥ 60 ≤ 120 bpm
- **b.** Systolic Blood Pressure (SBP) ≥ 100 ≤ 160 mmHg
- **c.** Mean Arterial Pressure (MAP) ≥ 70 ≤ 90 mmHg
- **d.** Central Venous Pressure (CVP) ≥ 6 ≤ 10 mmHg (normovolemia)
- **e.** Central or Mixed venous MvO₂ > 60%

  - **f.** If PA catheter in situ:
    - **a.** CI > 2.4 L/min/m²
    - **b.** SVR 800-1200 dynes/sec-cm²
    - **c.** PCWP 6-10 mmHg
Fluid, electrolyte and endocrine considerations

As electrolyte levels impact the ability to declare by neurologically determined death (NDD) criteria, strict attention should be paid to management. Potentially confounding factors that might prevent the observation of neurologic responses and/or mimic death might include hypophosphatemia (< 0.4mmol/L) and hypernatremia (> 160 mmol/L).

### Suggested Donor Management Guidelines and Interventions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Primary Pressors</th>
<th>Secondary Pressors</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP &lt; 100 mmHg or MAP &lt; 70 mmHg and CVP &lt; 10 mmHg</td>
<td><strong>Vasopressin</strong> &lt;br&gt;IV infusion 0-2.4 units/hr prn when SBP or MAP lower than suggested target ranges</td>
<td><strong>Epinephrine</strong> 0-20 mcg/min prn &lt;br&gt;<strong>Phenylephrine (neo-synephrine)</strong> 0-200 mcg/min prn</td>
</tr>
<tr>
<td>SBP &lt; 100 mmHg or MAP &lt; 70 mmHg</td>
<td><strong>Dopamine</strong> &lt;br&gt;IV infusion 5-10 mcg/kg/min prn &lt;br&gt;When SBP or MAP lower than suggested target ranges and unresponsive to above interventions (omit if HR &gt; 120)</td>
<td><em>(in order of recommended initiation)</em> &lt;br&gt;Secondary pressors for SBP or MAP &lt; target and unresponsive to above intervention</td>
</tr>
</tbody>
</table>

#### Suggested DONOR MANAGEMENT GUIDELINES AND INTERVENTIONS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP &gt; 160 mmHg or MAP &gt; 90 mmHg</td>
<td><strong>Short-acting Beta blockers such as:</strong>  &lt;br&gt;(in order of recommended initiation) &lt;br&gt;– Sodium Nitroprusside IV infusion at 0-5 mcg/kg/min prn  &lt;br&gt;– Esmolol 100-500 mcg/kg IV bolus followed by infusion 100-300 mg/kg/min prn  &lt;br&gt;– Nitroglycerin IV infusion at 0-10 mcg/kg/min prn  &lt;br&gt;– Labetalol 0-2 mg/min prn; discontinue if HR &lt; 65</td>
</tr>
</tbody>
</table>

*Note: L-thyroxine is not routinely given to DCD donors*
The following guidelines are suggested.

**IV fluids to maintain normovolemia with:**

- Serum Sodium (Na) ≥ 130 ≤ 150 mmol/L
- Maintain blood glucose within 6 – 10 mmol/L
- Maintain potassium, calcium, magnesium and phosphate within normal ranges
- Urine output 0.5 - 3 mL/kg/hr (50 cc – 200 cc/hr).

### Donor Management Guidelines and Interventions

| Condition | Treatment
|-----------|-----------|
| If urine output > 4 ml/kg/hr with serum Na > 145 mmol/L and/or serum osmolarity ≥ 300 mosM and/or urine osmolarity ≤ 200 mosM and/or urine specific gravity < 1.010 | Treat as Diabetes Insipidus  
- Titrate therapy to urine output ≤ 3 ml/kg/hr  
- IV maintenance bolus to maintain CVP of 6-10 mmHg  
If SBP > 100 mmHg suggest:  
- Treatment with DDAVP 4 mcg IV q6 h prn  
If SBP < 100 mmHg or on vasopressors suggest:  
- Treatment with Vasopressin infusion (minimum 0.5 units/hr and maximum 2.4 units/hr)  
If Na > 145 suggest:  
- Change Maintenance IV to 0.45% NaCl or D5W

| Blood glucose > 10 mmol/L | Implement hospital insulin nomogram/order set to maintain serum glucose 6-10 mmol/L
| Blood glucose < 6 mmol/L | IV dextrose infusion
| Hypernatremia Na ≥ 145 mmol/L | Change maintenance IV to 0.45 % saline or D5W  
- Also consider free water: 250 ml via NG tube
| Hyponatremia Na ≤ 135 mmol/L | Change maintenance IV to 0.9% saline
| Electrolyte deficiency e.g. Ca, Mg, K, PO₄ | Electrolyte replacement  
- Suggest q4h monitoring  
- Observe for upward/downward trends
| PO₄ < 0.65 mmol/L | Potassium phosphate 9 mmol IV in 100ml NaCl or D5W over 4-6 hours via central line (if K in normal limits) or Sodium Phosphate if potassium abnormal
| Ca < 2.0 mmol/L or Ionized CA < 1.0 mmol/L | Calcium gluconate 10% 1 gram IV in 100ml NaCl or D5W over 30 minutes (central or peripheral line)
| Mg ≤ 0.80 mmol/L | Magnesium sulphate 1 gram IV in 50-100ml NaCl or D5W IV over 30 minutes (central or peripheral line)
| K < 3.9 and > 3.2 mmol/L | Potassium chloride 20 mEq IV in 50-100ml NaCl or D5W via central line over 1 hour  
* Via central line only – according to hospital policy
| K ≤ 3.2 mmol/L | Potassium chloride 40 mEq IV in 100ml NaCl or D5W via central line over 2 hours  
* Via central line only – according to hospital policy
| Optimal kidney support | If planning IV contrast for angiography  
- N-acetylcysteine [Mucomyst] 600mg IV bid x4 doses if contrast procedure planned

* Via central line only – according to hospital policy
**Respiratory considerations**

In addition to the following management guidelines, there may be supplemental tests requested to adequately assess organ function if there is lung transplant interest. These tests may include extra challenge blood gases with recruitment maneuver (as well described below), repeat chest x-rays, and a documented bronchoscopy with sputum sample collected for culture and sensitivity.

<table>
<thead>
<tr>
<th>Donor Management Guidelines and Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ventilation settings to maintain arterial blood gases as indicated:</strong></td>
</tr>
<tr>
<td>SaO₂ ≥ 95%</td>
</tr>
<tr>
<td>PaO₂ ≥ 80 mmHg</td>
</tr>
<tr>
<td>PaCO₂ 35-45 mmHg</td>
</tr>
<tr>
<td>pH 7.35-7.45 mmHg</td>
</tr>
<tr>
<td><strong>Mechanical ventilation – suggested settings:</strong></td>
</tr>
<tr>
<td>Vt 6-8 ml/kg</td>
</tr>
<tr>
<td>PEEP 8-10 cmH₂O</td>
</tr>
<tr>
<td>PIP ≤ 30 cmH₂O</td>
</tr>
<tr>
<td><strong>Arterial blood gases</strong></td>
</tr>
<tr>
<td>For all potential lung donors:</td>
</tr>
<tr>
<td>Increase FiO₂ to 100% with minimum PEEP of 8-10 cmH₂O and maintain for 10 min prior to drawing all blood gases</td>
</tr>
<tr>
<td>– return FiO₂ to previous settings once blood gas drawn</td>
</tr>
<tr>
<td>• Repeat q2-4h</td>
</tr>
<tr>
<td>• Repeat (as requested by transplant team) for all lung donors</td>
</tr>
<tr>
<td><strong>Optimal pulmonary support</strong></td>
</tr>
<tr>
<td>• Routine suctioning, repositioning and chest physiotherapy q2h and prn as tolerated</td>
</tr>
<tr>
<td>• Head of bed to be elevated 30-45°</td>
</tr>
<tr>
<td>• CXR q4h and prn</td>
</tr>
<tr>
<td>• Recruitment manoeuvres (described below)</td>
</tr>
<tr>
<td>• Salbutamol &amp; ipratropium 8 puffs each q4h + q2h prn for wheezing</td>
</tr>
<tr>
<td>Methylprednisone 15 mg/kg (max 1 gm) IVq24h for all potential lung donors (including DCD donors)</td>
</tr>
<tr>
<td><strong>Alveolar recruitment manoeuvres</strong></td>
</tr>
<tr>
<td>For all potential lung donors:</td>
</tr>
<tr>
<td>• Change ventilation settings 10 minutes prior to drawing ABG’s</td>
</tr>
<tr>
<td>• With assistance from the respiratory therapist initiate sustained inflation PEEP of 30 cm H₂O for 30 seconds with FiO₂ at 100%</td>
</tr>
<tr>
<td>• Obtain CXR after each recruitment</td>
</tr>
<tr>
<td>• Repeat q2-4h and prn as tolerated</td>
</tr>
<tr>
<td><strong>Bronchoscopy</strong></td>
</tr>
<tr>
<td>For all potential lung donors:</td>
</tr>
<tr>
<td>• Bronchoscopy for diagnostic assessment as well as bronchial lavage.</td>
</tr>
<tr>
<td>• Obtain gram stain and culture</td>
</tr>
</tbody>
</table>
**Thermoregulation considerations**

Loss of hypothalamic function leads to the loss of central temperature control resulting in hypothermia. This can be compounded by the infusion of cool IV fluids. Hypothermia can result in myocardial depression, hypoxemia and acidosis. Cooler body temperature may impact clinical testing for neurological death, and can prolong the time required for apnea tests due to the decreased amount of CO₂ produced by the body.

### Donor Management Guidelines and Interventions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| For temperature < 35.5-37.0°C (Note: for NDD declarations, temperature must be ≥ 34°C for a valid clinical examination) | • Warming Blanket  
May also require:  
– warming inspiratory gases  
– warming IV fluids  
• Cooling Blanket |

### Transfusion considerations

**Blood Products**

- **Packed Red Blood Cells**
  - Use restricted to restoration of blood loss situations
  - Used to replenish low hematocrit, which may lead to decreased O₂ availability to vital organs

### Donor Management Guidelines and Interventions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| Hemoglobin (Hgb) target ≥ 70 g/L | • Transfusions should be individually tailored in consultation with TGLN and the transplant teams  
• Whenever possible, CMV negative blood should be used |
| No definite targets for platelets/INR/PTT | • Platelet or Plasma factor replacement is indicated for clinical bleeding only |

The TGLN Donation Support Physician is available for consultation regarding donor management issues that are unresponsive to any of the above interventions.

**How is donor management different for DCD cases?**

The goals of donor management remain the same in DCD; the preservation of euvolemma, hemodynamic stability and normothermia.

The main differences with DCD cases include the following:

1. Donor support continues until withdrawal of life support (this continues to recovery in NDD).
2. L-thyroxine is not necessary (currently, recovery of hearts does not occur with DCD donors).
3. At the time of withdrawal of life sustaining therapy, anticoagulation therapy may be administered to the donor at the request of the transplant team.
If no results and SBP > 100 mmHg:

**Primary Pressors**
- Vasopressin 0-2.4 units/hr prn
- Dopamine 5-10 mcg/kg/min prn (omit if HR > 120)

**Secondary Pressors**
- Norepinephrine 0-20 mcg/min
- Epinephrine 0-20 mcg/min
- Phenylephrine gtt 0-200 mcg/min

If SBP < 6 mmol/L
- Consider tailoring IV fluids to ↑

If SBP < 100 mmHg
- Consider tailoring IV fluids to ↑

If SBP > 100 mmHg
- Consider DDAVP infusion

If u/o < 0.05 ml/kg/hr
- Consider fluid bolus

If u/o > 4 ml/kg/hr & serum Na > 145 mmol/L &/or ↓ urine osmo &/or urine specific gravity < 1.010 treat for Diabetes Insipidus

If Na < 135 mmol/L
- Consider 0.9% NS

If Na > 145 mmol/L
- Consider 0.45% NS or D5W

*vasopressin drip often part of baseline order sets regardless of MAP at many sites

**Blood Sugar (BS) target:**
- 6-10 mmol/L

**Urine Output (u/o) target:**
- 0.5-3 ml/kg/hr
- U/A x1 now + prn

**Maintain electrolytes within normal ranges**

**Thyroid Hormone:** NDD donors only
- Solumedrol: all donors
Step 7
Organ and Tissue Recovery Planning
Step 7: Organ and Tissue Recovery Planning

Recovery of organs and tissues typically occurs in the hospital in which the donor is located. Trillium Gift of Life Network’s (TGLN) Provincial Resource Centre coordinates with the healthcare team and Operating Room (OR) onsite, as well as the recovery teams from the transplant programs, to organize the recovery.

What planning is needed for onsite recovery?

The recovery personnel may vary depending on the specific organs or tissues that have been donated. Typically a recovery may start 8-12 hours after consent has been obtained; however, this can vary significantly depending on donor stability, geographic region and the number of organs to be recovered. TGLN is committed to helping the greatest number of people possible and there are a significant number of considerations for planning the recovery including the following:

- OR time is scheduled in partnership with the hospital’s OR staff, TGLN’s Provincial Resource Centre and the transplant program’s recovery surgeons.
- Complexity of the allocation of individual organs and tissues because of blood type or other matching factors may require additional time prior to OR.
- Other organ recovery surgeries may be in process and the transplant teams or TGLN surgical recovery staff may be involved.
- Timing of the results of infectious disease tests (typically required prior to starting OR recovery).
- Organization of temporary surgical privileges as per individual hospital policy.

(The names and credentials for recovery staff may be accessed via TGLN’s Provincial Resource Centre)

Normally, the facility and staff resources in the OR are booked using the same process as that for other types of surgery or urgent surgeries. TGLN recommends that the hospital classify recovery surgeries as high priority. The hospital may need additional steps or approvals to address circumstances in which a requested booking for an organ recovery surgery conflicts with another planned surgery.

In situations where the recovery involves non-perfused tissue exclusively, the donor’s body should be transported to the morgue until tissue recovery teams have arrived. This helps to preserve tissue integrity. The Provincial Resource Centre may fax a TGLN Release of Body form to the relevant personnel (e.g. specific unit, Admitting Department, Medical Records, Morgue etc.) to ensure that the body is not transferred out of the hospital until the family’s request for tissue recovery has been facilitated.
What documentation is needed for onsite recovery?

- Patient identification band.
- Bradma/hospital card (medical record number).
- TGLN or hospital-specific Consent for Organ and/or Tissue Donation and, in addition for DCD recoveries: Consent for Pre-mortem Intervention.
- Coroner/Forensic Pathologist Permission form (if applicable)
- If patient was pronounced by neurologically determined death (NDD), documentation of NDD exams (ensure two (2) physician signatures are clearly identified).
- Results of ancillary testing (if required to pronounce NDD).
- Any additional documentation specific to the OR at recovery hospital.
- Completed hospital pre-op checklist (most items will not be applicable due to the donor being deceased).
- The Pronouncement of Death: Organ Donation after Cardio-Circulatory Death form (for DCD cases)

How are special requests from the family or Coroner noted?

Verbal communication of any special requests should be communicated to the TGLN coordinator onsite and the TGLN Provincial Resource Centre. In addition, special requests are noted in two places:

1. TGLN consent form

The organ and tissue donation coordinator (OTDC) or person obtaining consent will document any special request of family regarding care of the body during or following the recovery surgery (e.g. an item such as jewellery or a religious effect to accompany the donor to the OR). These types of requests should be noted on the appropriate section on the consent form.

Coroner directions can also be documented on the consent form.

2. TGLN medical-social questionnaire

Any special family requests should also be recorded on this document and communicated as above.

What surgical resources are needed for organ or tissue recovery?

<table>
<thead>
<tr>
<th>Organ or Combined Organ and Tissue</th>
<th>Tissue Exclusively</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Large operating room</td>
<td>• Operating room</td>
</tr>
<tr>
<td>• Surgical instruments and supplies (see recovery checklist)</td>
<td>• Surgical supplies (see recovery checklist)</td>
</tr>
<tr>
<td></td>
<td>• Enucleator protocols are site specific</td>
</tr>
</tbody>
</table>

See also Tables 4 and 5 – Surgical Recovery Checklist for Equipment and Supplies
What hospital staff resources are needed for organ or tissue recovery?

<table>
<thead>
<tr>
<th>Organ or Combined Organ and Tissue</th>
<th>Tissue Exclusively</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Anesthetist*: initial 2-4 hours</td>
<td>• Circulating nurse: available upon request from tissue recovery personnel (not required if only ocular tissue is to be recovered)</td>
</tr>
<tr>
<td>• Scrub nurse: duration of organ recovery</td>
<td></td>
</tr>
<tr>
<td>• Circulating nurse: for duration of organ and tissue recovery</td>
<td></td>
</tr>
</tbody>
</table>

* For DCD cases, an anesthetist or an RT may be required if lungs are being recovered

How long does surgical recovery of organs and tissues take?

<table>
<thead>
<tr>
<th>Organ or Combined Organ and Tissue</th>
<th>Tissue Exclusively</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Organ recovery: 3-7 hours</td>
<td>• Tissue recovery: 3-7 hours</td>
</tr>
<tr>
<td>• Approximate depending on which organs/tissues are being recovered</td>
<td></td>
</tr>
<tr>
<td>• Tissue recovery (excluding ocular tissue): additional 3-7 hours</td>
<td></td>
</tr>
</tbody>
</table>

• Organ recovery: 3-7 hours
• Approximate depending on which organs/tissues are being recovered
• Tissue recovery (excluding ocular tissue): additional 3-7 hours

What happens if onsite recovery is not possible?

In the event that onsite recovery is not feasible, a TGLN coordinator will assist with the transfer to a facility that can provide the required recovery services. The following documentation should be sent with the donor:

• **Coroner/Forensic Pathologist Permission** form (if applicable)
• TGLN or hospital-specific **Consent for Organ and/or Tissue Donation** (including consent to transfer for recovery and, in addition for DCD recoveries: **Consent for Pre-mortem Intervention**).
• If patient was pronounced by neurologically determined death (NDD), documentation of NDD exams (ensure two (2) physician signatures are clearly identified) and ancillary test results if required to complete the declaration.
• Copy of donor’s hospital medical record; specifically:
  a. medication records
  b. NDD form or notes
  c. Copy of CT scan/cerebral perfusion scan/angiography images
  d. ABO documentation
  e. Nursing records
  f. Additional organ-specific testing results.
How does the organ recovery process proceed in NDD and DCD?
See Table 2 and 3 – Surgical Recovery Procedure.

What after-recovery care is needed for the donor’s body?
Care of the donor’s body after completion of the recovery surgery is generally the same as for routine care after death (e.g. ensure body is clean and dry, close eyes, etc.). There may, however, be specific instructions from the Coroner regarding preparation of the donor’s body for release that require consideration. A TGLN staff will ensure the OR staff is informed of any special considerations in advance of the surgery.

What is the best way to support the family during the recovery surgery?
Always offer to support the family through surgical recovery procedure. Some families choose to leave the hospital prior to recovery; others may elect to stay. Hospital staff may offer the family the opportunity to view or possibly hold their loved one’s body following recovery. They may also wish to participate in the after care of their loved one’s body such as bathing and dressing. If the family has identified a funeral home, a TGLN representative can liaise with this facility regarding timing for release of the body.

Table 2

NDD SURGICAL RECOVERY PROCEDURE

A multi-organ recovery is a sterile surgical procedure. Recovery teams can spend more than six hours carefully removing organs. There may be as many as four surgical teams, with each team recovering a different organ. All members of the team are responsible for ensuring the body is treated with respect at all times during the procedure.

The anesthetist is responsible for intra operative donor maintenance as well as the administration of neuromuscular blocking agents which should be used to facilitate surgical exposure and to avoid neuromuscular (spinal) reflexes during the procedure.

The donor should be placed in a supine position on the surgical table with both arms abducted. Surgical preparation and draping will include the abdominal and thoracic regions. Generally the liver recovery team is responsible for this initial preparation (with the assistance of the OR nursing team). An extensive midline incision is made from the suprasternal notch to the symphysis pubis. The sternum is split, even if the heart and lungs are not to be recovered. This is to aid in visualization and facilitates easier access to the abdominal organs. Liver dissection usually takes from two to three hours, during which time it is not uncommon to have hemodynamic fluctuations due to compression of the inferior vena cava (IVC) and manipulation of the adrenal glands. The timing of the dissection varies depending on the experience of the surgeon.

Once dissection is complete, Heparin 300 units/kg must be administered. Ensure any necessary blood sampling has been obtained at this point. Heart dissection begins as the cardiac surgeon dissects around the superior vena cava (SVC) and IVC; minimal dissection is also completed around the distal ascending aorta to facilitate cross-clamping. At this time, cooperation and coordination is required by all teams to ensure perfusion solutions are ready to infuse and sterile slush is ready to initiate cold ischemia. Cannulation of the ascending aorta to prepare for perfusion of cardioplegia or celsor solution is completed at this time.

Continued...
Cannulation of the pulmonary artery and preparation of Perfadex lung perfusion solution is the next step in the recovery process. The liver team then cannulates the portal vein and abdominal aorta. The teams negotiate cross-clamp timing when all cannulas are in place. Lungs are inflated at this point to avoid atelectasis (if lungs are being recovered). Cross clamp aorta (continue ventilation if lungs are donated). At this time the aorta is cross-clamped and perfusion commences using organ-specific solution (usually about two to three hours into the procedure). Prepared ice-cold solutions, which are used to flush the organs, serve two purposes: the organ is flushed free of any blood and the organ temperature is lowered which helps to preserve the organ. Cooling acts as a metabolic brake, reducing the oxygen requirements of the organ to near zero while it is transported to the recipient’s hospital. This represents the start of the cold ischemic period. Once organ perfusion is completed, the organs are removed in order starting with the heart, lungs which are dissected free and the trachea clamped with the lungs in the inflated state. Ventilation is discontinued only after the trachea has been clamped. The liver, pancreas and/or bowel with kidneys are the last organs recovered. The organs are then packed in more cold solution and placed in a cooler full of ice to be delivered to the recipient transplant OR. In addition to the above, specimen management is also crucial to successful transplantation outcomes. The recovery of spleen, blood for archiving and occasionally biopsies, are also part of the process.

Special considerations are required for the recovery of donated tissues. Region-specific bone banks are responsible for musculoskeletal tissue recovery. The clinical service coordinator in the Provincial Resource Centre is responsible for facilitating the recovery process of donated tissue with the tissue banks (see tissue donation process). If bones are being recovered, an additional three hours is required; skin recovery adds an additional three hours for a total recovery period of 10 to 12 hours for a multi-organ/tissue recovery process. The organ recovery team may recover heart valves.

Source: http://www.lhsc.on.ca/transplant/orgnret.htm

Table 3

DCD SURGICAL RECOVERY PROCEDURE

DCD recovery cases happen at a much faster pace to minimize the effect of decreased perfusion to organs during the process of dying. Operating room nurses have compared the DCD recovery pace to that of a ruptured ascending aortic aneurysm (AAA) repair surgery.

The donor should be placed in a supine position on the surgical table with both arms abducted or tucked depending on surgical preference. Surgical preparation and draping occurs in a rapid sequence and will include the abdomen and thoracic regions.

A midline incision is made to expose the intra-abdominal and intrathoracic organs. The aorta is clamped, perfusion begins and crushed ice is placed on the liver and kidneys. If lungs are being recovered, reintubation and bronchoscopy typically occurs around the same time as the prep. Once bronchoscopy has determined no signs of aspiration are present, ventilation is started. Hypothermia of the lung bloc is established. The heart is elevated out of the pericardial sac and the lung bloc is removed, and placed in cold Perfadex solution within sterile containers for transport.

Further irrigation and dissection takes place. The liver is the first abdominal organ to be recovered followed by the pancreas. Kidneys are dissected along with the renal vessels and placed on a sterile back table for further examination to exclude abnormal pathology.

Considerations for tissue are consistent with tissue recovery post NDD as explained in Table 2.

Source: TGLN Online Resource Centre – DCD Operative notes.

Table 3

DCD SURGICAL RECOVERY PROCEDURE

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Source: TGLN Online Resource Centre – DCD Operative notes.
Table 4

ORGAN RECOVERY EQUIPMENT CHECKLIST

<table>
<thead>
<tr>
<th>Equipment for Room Set-up</th>
<th>Drugs</th>
<th>Sutures</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Large volume suction apparatus (~16 litres)</td>
<td>✓ Heparin 1:1000</td>
<td>✓ Bone Wax (x2)</td>
</tr>
<tr>
<td>✓ Small tables (x2)</td>
<td>✓ Lasix</td>
<td>✓ Ligaclip large (x1)</td>
</tr>
<tr>
<td>✓ High stands</td>
<td>✓ Neuromuscular blocking agents</td>
<td>✓ Ligaclip medium (x1)</td>
</tr>
<tr>
<td>✓ IV poles (x2)</td>
<td>✓ Mannitol (20% – 100 cc)</td>
<td>✓ Umbilical tape (x2)</td>
</tr>
<tr>
<td>✓ Blood warmer</td>
<td>✓ 1-4 units packed red blood cells (check with TGLN coordinator)</td>
<td>✓ Silk 3-0 (x2)</td>
</tr>
<tr>
<td>✓ Bovie (x2)</td>
<td>✓ Bone Wax</td>
<td>✓ Silk 0 (x2)</td>
</tr>
<tr>
<td>✓ Nitrogen tank</td>
<td>✓ Lasix</td>
<td>✓ Silk 0 (x2)</td>
</tr>
<tr>
<td>✓ Gerhardt table</td>
<td>✓ Neuromuscular blocking agents</td>
<td>✓ Silk 2 (x1)</td>
</tr>
<tr>
<td>✓ Ring stands</td>
<td>✓ Mannitol (20% – 100 cc)</td>
<td>✓ Silk 3-0 (x2)</td>
</tr>
<tr>
<td>✓ Slush machine (if available)</td>
<td>✓ 1-4 units packed red blood cells (check with TGLN coordinator)</td>
<td>✓ Silk 2-0 (x2)</td>
</tr>
<tr>
<td>✓ Flexible bronchoscope (if recovering lungs)</td>
<td>✓ Bone Wax</td>
<td>✓ Vicryl 2-0 Reel (x1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>✓ Equipment</th>
<th># Qty</th>
<th>✓ Equipment</th>
<th># Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major abdominal tray</td>
<td>1</td>
<td>Tubing smoke evacuator w/ adaptor (standard)</td>
<td>1</td>
</tr>
<tr>
<td>Sternal or oscillating saw</td>
<td>1</td>
<td>Tubing – IV administration</td>
<td>2</td>
</tr>
<tr>
<td>Prep tray</td>
<td>2</td>
<td>Sponge – tonsil single strung (Raytec pushers)</td>
<td>1</td>
</tr>
<tr>
<td>Basic basin set</td>
<td>1</td>
<td>Sponge – cylindrical dbl.strung</td>
<td>1</td>
</tr>
<tr>
<td>ENT basins</td>
<td>2</td>
<td>Opsite (45 cm x 55 cm)</td>
<td>4</td>
</tr>
<tr>
<td>Deep sharp Balfour retractor and blade</td>
<td>1</td>
<td>Sponge – laparotomy (12x12)</td>
<td>20</td>
</tr>
<tr>
<td>Gibson retractor</td>
<td>1</td>
<td>Cautery tip – blade 1</td>
<td>2</td>
</tr>
<tr>
<td>Draping – CV pack</td>
<td>1</td>
<td>Cautery tip – blade 6</td>
<td>1</td>
</tr>
<tr>
<td>Gown single – gortex</td>
<td>4</td>
<td>Cautery pencil electroswitch</td>
<td>2</td>
</tr>
<tr>
<td>Gown bundle (3/pk) – gortex</td>
<td>3</td>
<td>Cautery holder</td>
<td>1</td>
</tr>
<tr>
<td>Drape – overhead table cover</td>
<td>2</td>
<td>Fogarty clamp inserts</td>
<td>1</td>
</tr>
<tr>
<td>Cover – table (50x90)</td>
<td>3</td>
<td>Needle counter</td>
<td>2</td>
</tr>
<tr>
<td>Towel – green (6/pk)</td>
<td>3</td>
<td>Suction tip – hi-capacity</td>
<td>2</td>
</tr>
<tr>
<td>Pack – universal</td>
<td>1</td>
<td>Suction tip – low capacity</td>
<td>1</td>
</tr>
<tr>
<td>Towel – adhesive</td>
<td>3</td>
<td>Suture boots mini cartridge (3 pr)</td>
<td>1</td>
</tr>
<tr>
<td>#20 blade</td>
<td>2</td>
<td>Syringe – 60 ml irrigation bulb</td>
<td>1</td>
</tr>
<tr>
<td>#15 blade</td>
<td>2</td>
<td>Suction tip – Poole</td>
<td>1</td>
</tr>
<tr>
<td>Yankauer suction</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued...
### TISSUE RECOVERY EQUIPMENT CHECKLIST

#### Equipment for Room Set-up

- ✓ Plaster cart (4 boxes slabs)
- ✓ Nitrogen tank
- ✓ Tevdek #5 (8)
- ✓ Betadine-bottles (x2)

#### Equipment

<table>
<thead>
<tr>
<th>✓ Equipment</th>
<th># Qty</th>
<th>✓ Equipment</th>
<th># Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubing – suction</td>
<td>2</td>
<td>Clip Appliers – medium 10.5”</td>
<td>2</td>
</tr>
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<td>Electro tip cleaner</td>
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<td>Clip Appliers – large 10.5”</td>
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<td>Retractor – chest medium (square hole)</td>
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<td>Vessel loops – yellow maxi</td>
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<td>Forceps – Swedish Debakey 11”</td>
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<tr>
<td>Bottle suction liner with cap 3000cc</td>
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<td>Forceps – Allis 9”</td>
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<td>Staple – skin TW-35</td>
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<td>Forceps – Fraser straight 7.25”</td>
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<td>Asepto syringe</td>
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<td>Forceps – Fraser curved 7.25”</td>
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<td>Pickups – Debakey medium 12”</td>
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<td>Forceps – Fogarty Hydragrip curved 8.75”</td>
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<td>Pickups – Debakey insulated medium 8”</td>
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<td>Forceps – Lee bronchus 9.25”</td>
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<td>Pickup – Pott Smith</td>
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<td>Forceps – Semb dissector 9.25”</td>
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<td>Bulldogs – Cross Action 1.25”</td>
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<td>Forceps – Satinsky medium 10”</td>
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<tr>
<td>Rummel rods 12” (1 large, 1 small)</td>
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<td>Forceps – Debakey regular 7”</td>
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<tr>
<td>Retractor Alar 6”</td>
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<td>Scissor – Mayo straight 6.75”</td>
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<tr>
<td>Retractor Alar 10”</td>
<td>1</td>
<td>Scissor – Metzenbaum 9”</td>
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<td>Tourniquets (4 large, 2 small)</td>
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<td>Needle holder – arterial 7”</td>
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<tr>
<td>Scalpel handle #4</td>
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<td>Needle holder – Mayo Hegar 7”</td>
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<th>✓ Equipment</th>
<th># Qty</th>
<th>✓ Equipment</th>
<th># Qty</th>
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<td>Sponge – 4x4, box</td>
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<td>Reciprocating saw (bone saw)</td>
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<td>Syringe – 30cc, box</td>
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<td>Basins – large</td>
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<td>Staple – skin</td>
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<tr>
<td>Basins – small</td>
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<td>Stockinette – intermediate</td>
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<td>Sheet – thoracic</td>
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<td>Gown bundle (3/pk)</td>
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<td>Sheet – utility</td>
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<td>Tubing – smoke evacuator with adaptor (standard)</td>
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<tr>
<td>Drape – overhead table cover</td>
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<td>IV tubing – sterile</td>
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<tr>
<td>Drape – ¾ sheet</td>
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<td>Flannel bandage – 4</td>
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<td>Split sheet – large</td>
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<td>Gigli saw blade 20</td>
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<tr>
<td>Cover – table</td>
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<td>Gigli saw handle</td>
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<td>Towel – green (6/pk)</td>
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<td>Osteotomes – donor</td>
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<td>#22 blades</td>
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<td>Light handles</td>
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<td>Opsite – 45cm x 55cm</td>
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<tr>
<td>Sponge – 12 ply, 4x8</td>
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Step 8
Case Closure and Follow-up
The recovery process marks the closure of the main clinical aspect of a donation case. However, support for donor families continues and is carried out by both Trillium Gift of Life Network (TGLN) personnel and the hospital team. In addition, outstanding results of tests or observations during the recovery surgery must be communicated to the transplant teams to ensure the health of the recipient and to meet Health Canada Standards.

**What information does TGLN provide to families following donation?**

A sympathy card is sent to the family within 48 hours of their loved one’s death. TGLN coordinators also send donor families a letter within one to two weeks indicating the outcome and offering a brief description of who was helped through the gift of donation.

After the initial correspondence, the donor family aftercare program (a 12-month program) provides support and resources to donor families. The program also provides the opportunity for donor families to participate in TGLN initiatives that honour organ and tissue donors. The information is tailored for each family and may include:

- Grief library resources (pamphlet and website link).
- *Writing to Transplant Recipients* information pamphlet.
- One-year anniversary card to commemorate the death of their loved one.
- Donor family survey (to help improve the donation process and support received).
- Information on the ‘Celebration of Life’ event – a memorial tribute and medal presentation honouring donors and their families.

Some hospitals may also offer commemorative ceremonies for people who have died within their facility. Preliminary literature suggests that family members appreciate both the service as well as re-connecting with hospital staff at this time. Families are also grateful for any cards received from staff who cared for their loved one. Other site-specific bereavement services may include:

- Taking photos of a loved one at end-of-life.
- Clipping a lock of hair for a family keepsake.
- A blanket and/or gown (children and infants).
- Foot and hand molding (children and parents of young children).

Receiving such mementos may be of help in the family’s grieving process.
Will donor family and recipient contact be possible?

- All donor and recipient information is confidential as per the Trillium Gift of Life Network Act.
- An anonymous exchange of letters between recipients and donor families may be facilitated through TGLN donor family services in conjunction with the transplant programs.

Donor families may also request an update on recipient status by making a wellbeing request to TGLN in the future.

What follow-up of test results is needed after donation?

TGLN coordinators will call the intensive care unit (ICU) or hospital lab to follow up on preliminary and final urine, sputum, and blood culture results. Any positive serology reports of reportable diseases are communicated to the department of Public Health who in turn contacts the family physician with the results. In addition, the transplant teams are advised of any test results that may directly impact recipients so that steps can be taken towards any necessary treatment (e.g. use of antibiotics if donor cultures are positive).
Appendix
Appendix 1:
Registering Consent to Become an Organ and Tissue Donor in Ontario

How is consent to become an organ and tissue donor registered in Ontario?

Anyone 16 years or older, with a photo ID health card or red and white health card, can register consent online at beadonor.ca, or by visiting a ServiceOntario centre. If you have previously registered a decision of “Yes” to donate organs and tissue with Ontario Health Insurance Plan (OHIP), you do not need to re-register.

At or near death, how is the registered consent decision communicated to the healthcare team members?

If this information is readily available during your conversation with the TGLN coordinator, you will be made aware of a registered consent decision.

What if a person wants to be a donor but has not yet registered consent with the ServiceOntario office or has not yet made a decision?

The choice to donate can also be communicated by healthcare directives or by family members. When a person’s donation decision is not known, specially trained TGLN coordinators work with families and the healthcare team to learn what the person would have wanted if they were able to make the decision.

Why is registering consent through beadonor.ca or a ServiceOntario office the best way to communicate the choice to donate?

Access to registered donation consent decisions in the OHIP health card database is available at any time, day or night. In this way, a person’s consent to donate can be determined whenever it is needed.
Appendix 2: Organs and Tissues that may be Donated for Transplantation

Diagram 4

ORGAN AND TISSUE DONATION GUIDE

Organ Donation
Neurologically Determined Death (NDD)
- Lungs
- Liver
- Pancreas/Islets
- Kidneys
- Small bowel

Organ Donation
Death after circulatory determination (DCD)
- Kidneys
- Lungs
- Liver
- Pancreas

Tissue Donation
In situations of organ donation with NDD, DCD as well as most deaths
- Bone and tendons
- Eyes and Corneas
- Heart for valve recovery
- Skin