Trillium Gift of Life Network

"CONCLUDE" study

Confirming the permanent cessation of intracranial circulation during abdominal normothermic regional perfusion in organ donation after the determination of death by circulatory criteria

Reference Package for Active Cases

Version Date: 7Nov.23

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Ontario Health
Trillium Gift of Life Network

Introduction

Abdominal normothermic regional perfusion (A-NRP) is an innovative organ recovery technology that mechanically circulates blood with oxygen within a donor's body after death determination to improve organ viability. While surgical safeguards are employed to prevent the resumption of intracranial blood flow during the procedure, there is a theoretical risk that A-NRP could result in the resumption of brain activity or function if these safeguards are ineffective. A-NRP is routinely used in DCC donation protocols in several European countries, and it is mandatory for liver donation in France, Norway, and Italy. It is widely accepted that A-NRP improves transplant outcomes. Ontario is interested in implementing this practice to improve transplant outcomes for our recipients.

A-NRP is not currently used in Canada. Confirming the permanent cessation of intracranial circulation during A-NRP is an important step toward the implementation of A-NRP in Ontario.

Purpose of Study

The aim of this study is to assess whether specific surgical safeguards successfully prevent the resumption of brain blood flow during A-NRP in donation after DCC. This will be done through multi-modal neuromonitoring during the dying process and throughout the A-NRP procedure. Confirmation of absence of intracranial blood flow will reassure the organ donation community and donor families that the use of a pump to circulate blood to the donor's organs does not lead to the resumption of brain blood flow, brain activity, or brain function in organ donors after they have died.

Donor Inclusion criteria:

Patients or their families approached for donation after DCC at study sites who are eligible for DCC donation according to the current criteria of the participating transplant programs. These may include patients donating a liver, kidneys, pancreas, and/or lungs. Please see Appendix A for organ specific donor inclusion criteria.

Donor exclusion criteria:

1. Patients who proceed to donation following medical assistance in dying or those who are able to provide first-person consent at the time of donation
2. Injuries that anatomically preclude the use of neurological monitoring

Study sites (major referring centers for LHSC & UHN transplant programs)

1. LHSC (University & Victoria Hospitals)
2. Toronto Western Hospital, University Health Network

Practice Considerations

Notification and approach planning aspects of the donation process do not change. After donation consent, and following acceptance of abdominal organs by participating transplant programs, a research coordinator will approach the substitute decision-maker/family of the patient to explain the study and obtain consent for study participation. Withdrawal of life-sustaining measures (WLSM) and determination of death will occur as per usual practice.

After consent, study activities by research personnel include:

1. Application of neuromonitoring electrodes/probes and 10 min. assessment prior to WLSM
2. Post-mortem neuromonitoring device connection and assessment in OR
3. Post-mortem insertion of a canula for extracorporeal perfusion in the OR, and management of the perfusion (ECMO) pump used during A-NRP
4. A-NRP protocol intra-operatively for 1-4 hours prior to usual organ recovery

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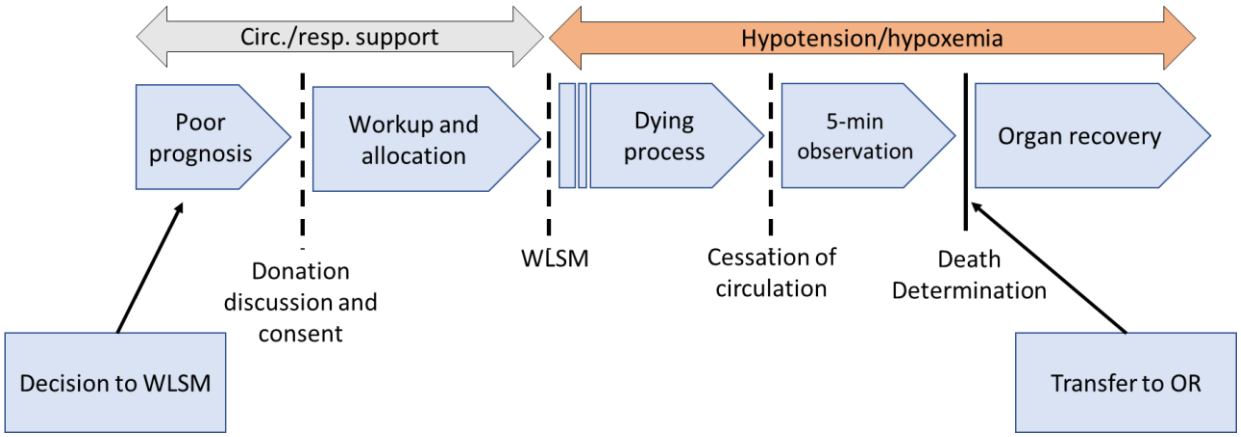
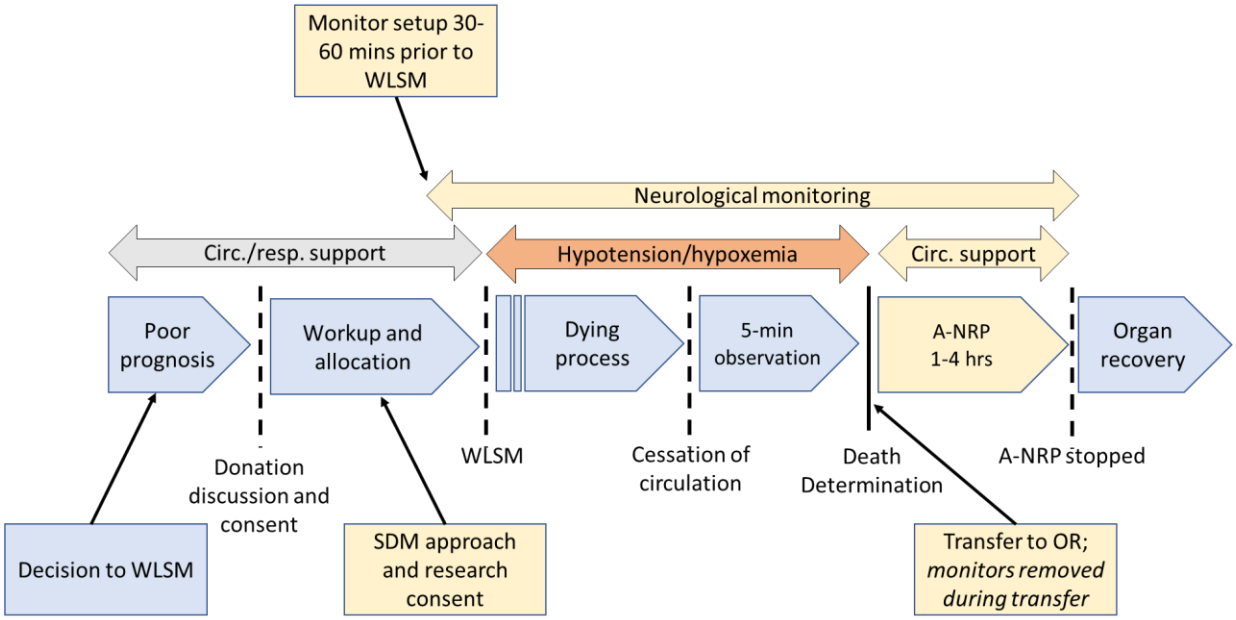
A-NRP Research Process vs. Current Donation Process Comparison

Conventional donation after DCC process



Donation after DCC with A-NRP and neuromonitoring



Just in Time Response Team Activities

Specific Role Section

Information regarding Research with Abdominal Normothermic Regional Perfusion in Donation after DCC: Most Responsible Physicians (MRP)

What is A-NRP?

Advancements in technology have led to changes in organ recovery and preservation techniques. A-NRP is a protocol that enables in-situ perfusion and assessment of abdominal organs to increase the chances of successful donation and improve recipient transplant outcomes.

What is the purpose of the research study?

The purpose of this study is to reassure stakeholders that the use of A-NRP does not lead to blood flow to the brain, brain activity, or brain function, and that it can be safely used with donors.

How will researchers ensure there is no blood flow to the brain, brain activity, or brain function?

Experts will look at the information from the neuromonitoring devices in real-time to ensure that blood flow, activity, and function do not resume.

Support for Families and Hospital Staff

Following consent for organ donation and organ acceptance by participating transplant programs, a research coordinator approached the family to obtain consent for the research study. Research coordinators will be available for any questions regarding the study. The research coordinator will provide both the health care team and the SDM/family with contact information for any questions that may arise. All questions relating to the study should be directed to the research coordinator.

Responsibilities of the MRP

Study participation should not interfere with usual end-of-life care protocols. The timing of WLSM will be arranged based on family, hospital and transplant considerations. WLSM and determination of death will occur as per unit-specific practice. Standard criteria for death determination following DCC is followed.

Information Regarding Research with Abdominal Normothermic Regional Perfusion in Donation after DCC: ICU RNs and RRTs

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Support for Families and Hospital Staff

Following consent for organ donation and organ acceptance by participating transplant programs, a research coordinator approached the family to obtain consent for the research study. Research coordinators will be available for any questions regarding the study. The research coordinator will provide both the health care team and the SDM/family with contact information for any questions that may arise. All questions relating to the study should be directed to the research coordinator.

Responsibilities of the ICU Nurse

Study participation should not interfere with usual end-of-life care protocols. The timing of WLSM will be arranged based on family, hospital and transplant considerations.

- Provide unit-specific care to study participants and to the patient's family to support their end-of-life journey and the decision to donate.
- Encourage the SDM/family to ask any questions about the study and refer them to the research coordinator if needed.
- Neuromonitoring equipment setup will be the responsibility of the study team, not ICU staff.
- Neuromonitoring electrodes/probes and equipment will be set up in advance of the WLSM. Monitoring will begin 10 minutes prior to withdrawal. Monitors will remain in place throughout the dying process.
    - This does not require visitors to leave the patient's bedside. Steps will be taken to minimize intrusiveness or impacts on usual care.

- Prior to any post-mortem intervention in an NRP protocol, the patient must be determined to have died by circulatory criteria that includes a five-minute observation period identifying the absence of respiratory effort, a palpable pulse, and pulse pressure. During this observation period (before death determination), no interventions or transfer movement of the patient (e.g. from ICU to the operating room) is permitted.
- The WLSM will occur in the same manner as any donation after DCC. The WLSM will be the responsibility of the ICU staff. The Most Responsible Physician (MRP) will be present. Family may be present.
- Standard criteria for death determination following DCC is followed.
- During this time, you or a member of the ICU team will continue to support the family and help guide them out of the room after the patient's death has been confirmed.
- If the patient does not die within the allotted timeframe, then the patient's end-of-life care will continue as per hospital policy.

Research related to Abdominal Normothermic Regional Perfusion in Donation after DCC: Perioperative Nurses

What is A-NRP?

Advancements in technology have led to changes in organ recovery and preservation techniques. A-NRP is a protocol that enables in-situ perfusion and assessment of abdominal organs to increase the chances of successful donation and improve recipient transplant outcomes.

What is the purpose of the research study?

The purpose of this study is to reassure stakeholders that the use of A-NRP does not lead to blood flow to the brain, brain activity, or brain function, and that it can be safely used with donors.

How will researchers ensure there is no blood flow to the brain, brain activity, or brain function?

Experts will look at the information from neuromonitoring devices in real-time to ensure that blood flow, activity, and function do not resume.

Support for Families and Hospital Staff

Following consent for organ donation and organ acceptance by participating transplant programs, a research coordinator approached the family to obtain consent for the research study. Research coordinators will be available for any questions regarding the study. The research coordinator will provide both the health care team and the SDM/family with contact information for any questions that may arise. All questions relating to the study should be directed to the research coordinator.

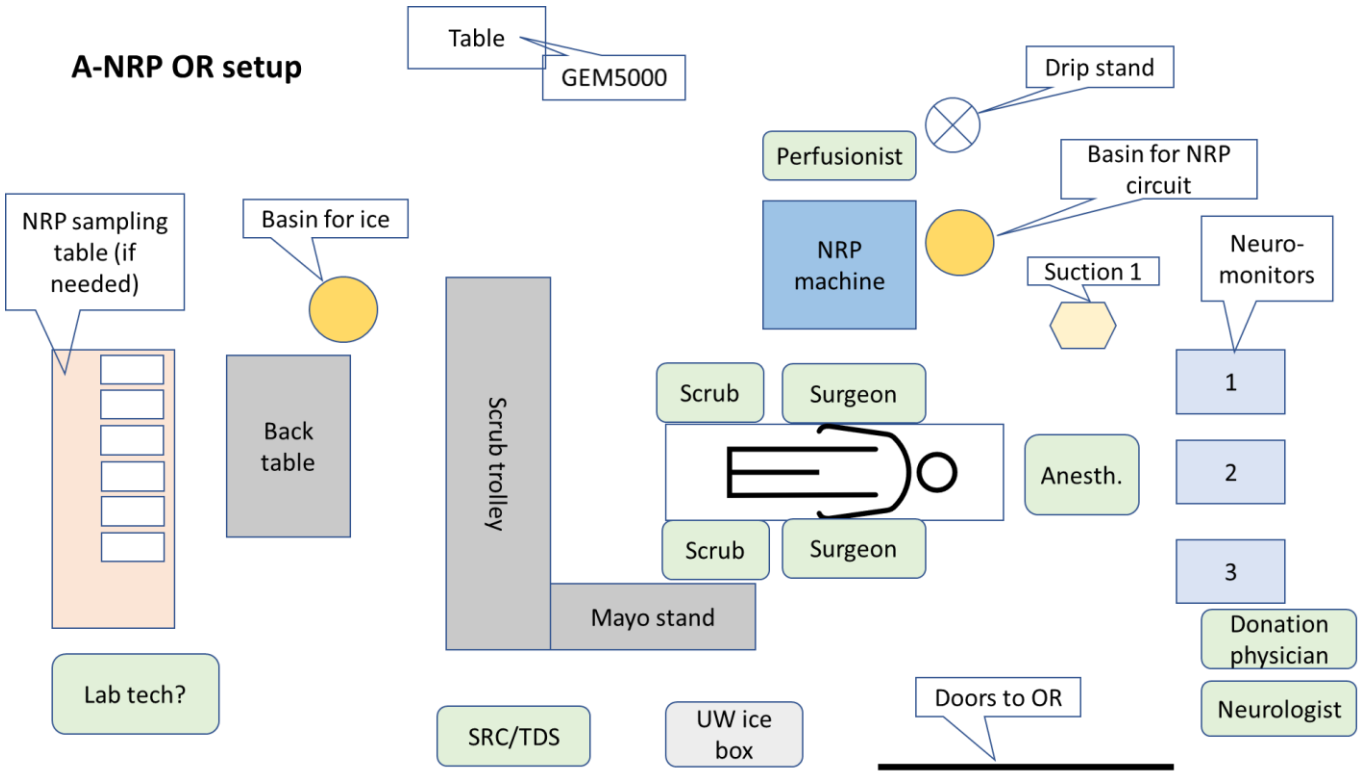
Perioperative Team Responsibilities

- Plan for an OR booking for 2-3 additional hours in the largest OR available (6 hours total)
    - There will be 3-4 research team members in the OR
    - Special perfusionist equipment will be brought into the OR
- Confirm clothing cover requirements for those who will be in the OR.
- Set up the OR as per diagram (see page 11)
- Huddle with neuromonitoring personnel/perfusionist/transplant surgeon before OR
- Room at head of bed will be needed for neuromonitoring machines (OR diagram will be provided)
- Prep for incision as per usual
- Support instruments needed for rapid cannulation
- Perfusionists will run the ECMO machine during A-NRP

Perioperative Research Activity Summary

1. Post-mortem neuromonitoring device connection and assessment in OR
2. Post-mortem insertion of a canula for extracorporeal perfusion in the OR, and management of the perfusion (ECMO) pump used during A-NRP
3. A-NRP protocol intra-operatively for 1-4 hours prior to usual organ recovery

OR-Setup Diagram*



"CONCLUDE" study: Confirming the permanent cessation of intracranial circulation during abdominal normothermic regional perfusion in organ donation after the determination of death by circulatory criteria

Research Study - Fast Facts

Abdominal normothermic regional perfusion (A-NRP) is an innovative organ recovery technique that employs extracorporeal membrane oxygenation (ECMO) technology to mechanically circulate oxygenated blood within a donor's body after death determination by circulatory criteria (DCC). A-NRP improves organ viability and transplant outcomes. While surgical safeguards are employed to prevent the resumption of intracranial blood flow during the procedure, there is a theoretical risk that A-NRP could result in the resumption of brain activity or function if these safeguards are ineffective. A-NRP is not currently used in Canada. Confirming the permanent cessation of intracranial circulation during A-NRP is an important step toward the implementation of A-NRP in Ontario.

Purpose of Study

The aim of this study is to assess whether specific surgical safeguards successfully prevent the resumption of brain blood flow during A-NRP in DCC donors. This will be done through multi-modal neuromonitoring during the dying process and throughout the A-NRP procedure. Confirmation of absence of intracranial blood flow will reassure the organ donation community and donor families that the use of a pump to circulate blood to the donor's organs does not lead to the resumption of brain blood flow, brain activity, or brain function in organ donors after they have died.

Current Status of NRP in Other Jurisdictions

A-NRP is routinely used in DCC donation protocols in several European countries, and it is mandatory for liver donation in France, Norway, and Italy. Ontario is interested in implementing this practice to enable more donors to leave a legacy and to improve transplant outcomes for organ recipients.

Study Partners

Ontario Health (TGLN) is currently working with Transplant Programs at London Health Sciences Centre and University Health Network to implement the study at several hospital sites, including Toronto Western Hospital, Victoria Hospital and London University Hospital. Other hospital sites may also be added.

Practice Considerations

Notification and approach planning aspects of the donation process do not change. After donation consent, and following acceptance of abdominal organs by participating transplant programs, a research coordinator will approach the substitute decision-maker/family of the patient to explain the study and obtain consent to study participation. Withdrawal of life-sustaining measures (WLSM) and determination of death will occur as per usual practice. After consent, study activities by research personnel include:

1) Application of neuromonitoring electrodes/probes and 10 min. assessment prior to WLSM
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4) A-NRP protocol intra-operatively for 1-4 hours prior to usual organ recovery

Education and On-site Support

Study organizers collaborated with Donor Family representatives to develop educational material for potential participants' surrogate decision-makers. The research coordinator will provide both the health care team and the SDM/family with contact information for any questions that may arise regarding the study. All questions relating to the study should be directed to the research coordinator, not ICU staff.

Prior to the study start date, TGLN and the research team will provide an overview of the study to ICU nurses, physician, peri-operative, and anesthesia groups. Research coordinators will be available for any questions regarding the study. TGLN Coordinators will be briefed on the study protocol and can direct any questions to the research team. A resource package and a video link with an overview of the research study will be available.

Overview of Hospital Considerations and Hospital Staff Responsibilities

Study participation should not interfere with usual end-of-life care protocols. The A-NRP process is expected to increase the time of the organ recovery by 1-4 hours. There will be 3-4 research team members in the OR. The increased time and number of team members is a consideration when booking the OR.

Critical Care Responsibilities

- Provide unit-specific care to study participants and to the patient's family to support their end-of-life journey and the decision to donate.
- Encourage the SDM/family to ask any questions about the study to the research coordinator.
- Neuromonitoring equipment setup will be the responsibility of the study team, not ICU staff.
- Neuromonitoring electrodes/probes and equipment will be set up in advance of the WLSM. Monitoring will begin 10 minutes prior to withdrawal. Monitors will remain in place through the dying process.
    - This does not require visitors to leave the patient's bedside. Steps will be taken to minimize intrusiveness or impacts on usual care.
- WLSM and determination of death will occur as per unit-specific practice.
    - Standard criteria for death determination following DCC.

Perioperative Team Responsibilities

- Plan for an OR booking for 2-3 additional hours in the largest OR available (6 hours total).
- Huddle with neuromonitoring personnel/perfusionist/transplant surgeon before OR.
- Room at head of bed will be needed for neuromonitoring machines (OR diagram will be provided).
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