Organ Donation: A Crucial Collaboration To Save Lives

Valerie Canary, MSN, RN, CPNP December 13,2018

"I do not have a relevant relationship with a commercial company(ies); therefore, a product(s) and/or service(s) will not be referred to in my presentation(s)."

Goal: Increase staff awareness of organ donation opportunity.

Objectives:

- 1. Identify the disparity between the number of transplants occurring yearly to the state and national statistics regarding persons awaiting transplant.
- 2. Tissue donation significantly improves lives.
- 3. The different types of organ donations.
- 4. Management of organ donors.

December 13, 2018

1.25 Contact Hours

Hurley Medical Center is approved as a provider of continuing nursing education by Ohio Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. (OBN-001-91) (OH-291,6/1/2021)



Lets Start With Legislation & Standards.....

Legislation

2006 Uniform Anatomical Gift Law

2006-PA 178 Kyle Ray Horning Law

First Person Authorization

Gift of Life is HIPPA exempt



Source: Kielhorn, K. 2007, Giving life after death; the 2006 revision of the uniform anatomical gift act. Drake Law Review, 56 (3); 809-828

The Joint Commission / CMS

- * Hospital/OPO/Tissue Bank Work together to identify, maintain, complete donor testing, & place organs, tissues, and corneas.
- * Hospital/OPO Develop procedures to notify families of the option to donate/decline organ donation.

The Joint Commission / CMS Hospital Expectations

- Notify the O.P.O. of every patient that has died or is nearing death.
- Develop clinical triggers to identify potential donors. Identification of any one clinical trigger requires staff to contact the OPO.
- O.P.O. contact must be within one hour of clinical trigger recognition and before a withdrawal of support.



The Joint Commission / CMS

- Medical suitability for potential organ & tissue donation is the responsibility of the O.P.O.
- * The individual designated to notify families regarding the option to donate/decline organ donation is a **designated requestor**.
- * Hospital has a written donation plan for asystolic organ recovery.

OPO: Gift of Life Michigan



- Federally designated since 1971
- Liaison between 175 critical-care hospitals and transplant centers
- Maintains the Michigan Organ Donor Registry
- Non-profit, open 365 days a year, 24/7



Transplantation: National & Michigan Figures

Waiting List vs. Donors - National



Waiting List Candidates by Organ Type - All Patient States Based on OPTN data as of December 4, 2018

Organ	Candidates
Kidney	95,220
Liver	13,589
Pancreas	877
Kidney / Pancreas	1,622
Heart	3,836
Lung	1,439
Heart / Lung	50
Intestine	247
Total	114,283



Transplants By Organ Type - 2017 Based on OPTN data as of December 4, 2018

Organ	Transplants
Kidney	19,849
Liver	8,082
Pancreas	213
Kidney / Pancreas	789
Heart	3,244
Lung	2,449
Heart / Lung	29
Intestine	109
Head & Neck: Craniofacial	1
GU: Uterus	4
Upper Limb: Bilateral	1
Total	34,770



Waiting List Candidates By Organ Type -Michigan (12/01/2018)

Kidney	2376
Liver	378
Heart	158
Lung	109
Pancreas	18

Michigan Transplants 2017 & 2018

* Tissue Donors 2017: 1038

- * Organ Donors 2017: 320
- * Organ Donors YTD: 309
- * 363,168 New Donor Registrations 2018
- * 65% of State of Michigan on donor registry

Organ Donors - Facility

* Small Center 0-1 donors / year

* Very large centers 25-40 / year

* Level 1 Trauma Centers 10-15 year

Tissue Donation Improves Lives

Reporting Time of Death

- Notification of patient deaths are vital to ensure that the option to donate tissue is preserved.
- * Expectation: Time of a patients death <u>must</u> be called to the O.P.O within one hour.
 - * Includes:
 - *Deceased patient previously called to the O.P.O for meeting a clinical trigger.
 - *Patients not previously meeting clinical triggers for organ donation that have died.

The Good News!

Each organ donor can save up to 8 lives!

> Heart Kidneys Liver Pancreas Lungs Intestines



Each tissue donor can help up to 75 people! Corneas **Heart Valves** Bone Skin **Veins/Arteries** Tendons

New York Organ Donor Network

Saphenous & Femoral Vein Grafts



- Saphenous veins are used for bypass and limb salvage procedures.
- Femoral veins are in great demand for A-V dialysis fistulas as they can be accessed within 2 weeks, as opposed to 4-6 week for synthetic grafts.

Spinal Fusion Spacer Grafts



 Donor bone grafts of various types have diameters and densities which are ideally suited to all levels of spinal fusion implant sites.

Cornea Donation Restores Sight



 The most common tissue transplant is a cornea transplant. Approximately 1500 Michigan residents receive each year.

Maintaining Cornea Donation Potential - Eye Prep

- Provide the following care to the eye postmortem after the family's departure
 - * Instill two drops of sterile saline in each eye
 - * Tape eyes closed with paper tape
 - * Elevate head using a towel roll or pillow
 - Cool the eyes with an ice pack and or take the patient to morgue immediately

What is the organ donation process?

How often does donation occur?

- Approximately 86,000 deaths annually in Michigan
- 36,000 calls to Gift of Life every year
- 320 Organ Donors
- 1038 Tissue Donors
- < 1 % of calls result in organ donation.



Organ Donation Process

- Nursing calls the OPO within <u>one hour of any patient</u> meeting a clinical trigger.
- Clinical triggers help identify patients where death may be imminent.

Clinical Trigger Examples

- Mechanically ventilated patient with neurologic injury/insult and one of the following:
 - Glasgow Coma Scale of 5 or less
 - Physician evaluating for brain death
 - Plan to discuss withdrawal of support

Organ Donation Process

- O.P.O. evaluates the case via phone <u>or</u> responds on-site to follow the patient's clinical progression & collaborate with the healthcare team.
- O.P.O. determines if any medical rule outs exist
- Medical rule out for donation ≠ Inability to donate tissue
 *Call at time of death is still very important

Huddle

- The O.P.O & hospital clinical team should conduct a huddle before every approach for organ donation to discuss:
 - * Current hemodynamic status of the patient
 - * Plan for patient care (Ex. Time of family meeting, Next planned brain death examination, etc.)



Organ Donation Process

- * An approach by a designated requestor occurs after:
 - Family has determined they would like to withdrawal support

or

* After Declaration of Neurologic Death

Donation After Circulatory Death DCD

Donation After Circulatory Death (DCD) Process

DCD:

Organ recovery from patient's pronounced after cessation of circulatory and pulmonary function.

Occurs when:

- Patient can't recover but does not meet criteria for brain death
- Family has decided to withdraw life sustaining therapy

DCD Process

- Family meeting, family has decided to withdrawal life sustaining therapy.
 - * Conversation to withdrawal life sustaining therapy occurs independently of approach for organ donation.
- * Approach by the O.P.O at the appropriate time.
- * Donation may occur after family consents for donation

DCD Approach/ Consent Elements

- Withdrawal life sustaining therapy:
 - CPR may be provided to maintain potential to donate
 - Comfort care will be provided by medical team
 - Final goodbye options
 - When and where withdrawal will occur
- Reasons case must be aborted, examples:
 - Patient does not expire within 30-120 minutes
 - Recipient unavailable

DCD Process

- * Serology & ancillary testing, organ placement & OR times set
- * Orders obtained from physician/APP for: NEM/comfort measures, extubation, anticoagulant?
- Bed arrangements made in the event the patient does not expire in the anticipated time frame
- * Comfort measures may be started in the ICU <u>or</u> O.R. as directed by the hospital care team

DCD Process

- Nurse accompanies pt. to location for withdrawal of life sustaining therapies at designated time
- Family may remain with pt. during withdrawal if desired.
- Recovering transplant team is <u>not allowed</u> at bedside until after the patients death.
- Anticoagulant may be given before extubation



- Declaring provider will remain at bedside until declaration of death <u>or</u> when designated donation timeframe exceeded.
 - Transplant Physician <u>cannot</u> declare the patient as this is a conflict of interest.
- Declaration of patient death occurs after two to five minutes of a non-perfusing rhythm.
- Upon declaration of death, pt. transported immediately to OR when occurring within designated time frame.
- * Hospital Provider & Gift of Life discuss declaration of death with family members & declaration documented.
- OR set up & transplant team ready in OR to recover allocated organs for recipient.
- If pt. does not expire within timeframe, the case is stopped.
 Hospital providers will meet with family & discuss continuation of comfort measures.

Facts About DCD Process

- * No medications are given with intent to cause cardiac cessation.
- Medications may be given to prevent and alleviate pain and suffering as directed by the hospital care team.
- * Complete Record of Death per hospital policy

Hurley Medical Center Organ Donation Following Circulatory Death (DCD)









Components of a DCD Policy

- Donor care and end of life decisions are determined by the hospital care team & family.
- * Adherence to dead donor rule
- * Conflicts of Interest:
 - * Critical Care Physician does not participate in recovery
 - * Critical Care Physician does not care for recipient
 - * Organ Recovery team does not enter pt. room until after declaration
- * Conditions of eligibility for DCD donation

Components of a DCD Policy

- Provider role descriptions during DCD donation:
 Donation Coordinator, Physician, Nurse
- * Locations for extubation (close to an OR suite)
- * Time frame for period after extubation when donation may occur
- * Determine if anticogulants will be given



- * Determination of death by cardiopulmonary criteria
- * Duration of monitoring for autoresuscitation
- * Plan if pt. doesn't expire within time frame
 Where will pt. go? Continued comfort measures

Declaration of Death By Neurologic Criteria

Criteria for Brain Death

Exam Pre-requisites:

Correction of potentially reversible causes of coma

Clinical Examination:

- Absence of all brainstem reflexes
- Predefined age specific wait time between examinations

Criteria for Brain Death

Apnea Testing:

Positive apnea test is indicative of loss of final brainstem structure.

Ancillary Studies (4 Vessel Cerebral Angiogram, Brain Death Scintigraphy, EEG): Useful if portion of examination cannot be completed <u>or</u> uncertainty of a portion of the clinical examination

Exam Prerequisites

- * Clinical or neuroimaging evidence of central nervous system catastrophe compatible with diagnosis.
- * Assessment Excludes:
 - * Hypothermia (core temp < 36 degrees)</p>
 - * severe electrolyte abnormality
 - * acid-base or endocrine disturbances
 - drug or alcohol intoxication or poisoning
 - * exogenous intoxication with sedative drugs
 - Residual effect of paralytics
 - Systolic BP <100</p>

Examination

- * Presence of Coma
- * Absence of brainstem reflexes
 - * Pupils- Dilated, non reactive to bright light
 - * Absent Oculocephalic reflex (C- Spine must be intact to test)
 - * Absent Oculovestibular reflex (cold calorics)
 - * Absent facial movement to noxious stimuli
 - * Absent gag reflex
 - * Absent corneal reflex
 - * Absent cough reflex
 - * No motor response to pain in all extremities

Oculocephalic & Oculovestibular Reflexes



Testing for absent doll's eye sign

To evaluate the patient's oculocephalic reflex, hold her upper eyelids open and quickly (but gently) turn her head from side to side, noting eye movements with each head turn.

With absent doll's eye sign, the eyes remain fixed in midposition.









Apnea testing

- * Perform formal apnea test if hemodynamically stable.
- * Adjust ventilator to provide normocarbia
- Pre-oxygenate with 100% FiO2> 10 minutes to PaO2> 200mm Hg
- * Obtain ABG prior to testing

Source: Widjicks et al: Evidence based guideline update: Determining brain death in adults. Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2010; 74:1911-1918

Apnea Testing

- Pt. is disconnected from ventilator and connected to FiO2 of
 1.0
- Monitor for respiratory effort
- * Discontinue test after 8 minutes & obtain ABG
- * Discontinue test prior to 8 minutes if:
 - * New Respiratory effort
 - * New dysrhythmia
 - * Hypotension (SBP < 90)</p>
 - * SPO2 85%

Source: Widjicks et al: Evidence based guideline update: Determining brain death in adults. Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2010; 74:1911-1918

Apnea Test

- * Positive/Consistent with Brain Death:
 - * No Respiratory effort
 - * PaCO2 > or equal to 60 mm Hg or (20 mm Hg increase over baseline if hypercarbic condition)

Declaration of Death by Neurologic Criteria

- Hospital Specific
 - * Testing to evaluate absence of prerequisites for exam
 - * # of clinical examinations
 - * When ancillary testing may be utilized

Documentation

Cessation of Brain Function (see Standard Practice #0273)

Method

Evaluator

Prerequisites

Clinical or Neuroimaging Evidence of Acute CNS catastrophe compatible with clinical

Core Temp >36 degrees C

Absence of Hypotension (SBP 100 mmHg or greater)

Absence of severe electrolyte, acid-base or endocrine disturbances

No drug or alcohol intoxication or poisoning

No medication intoxication (see row information for details)

Clinical Examination

Presense of Coma; No cerebral motor response to pain in all extremities; use both

Clinical Examination of Brainstem Reflexes

Pupil Response, Bilateral

Ocular movement - Oculocephalic Reflex (test only if C-Spine is intact)

Oculovestibular reflex - Deviation of eyes to irrigation in each ear with 50ml of cold H2O

Facial muscle movement to noxious stimuli

Corneal Reflex, Bilateral

Gag Reflex

Cough Reflex

Formal Apnea Test

Spontaneous respirations

Findings

Ancillary Test

Ancillary Test Findings

Clinical Findings

Physician Electronic Signature (Enter Name, Date, and Time)

Certification of Death by Neurological Criteria (Enter Name, Date, and Time)

Declaration of Death by Neurologic Criteria

- * Declaration of Death by Neurological Criteria is pronouncement of death.
- * Time of removal from mechanical ventilation is <u>NOT</u> the time of death, time of declaration of brain death is time of death.
- Time of Declaration (time arterial PCO2 reached target value or ancillary test reported)

Brain Death vs. DCD Donation

Severe neuro injury; legally dead No hope of recovery from illness



Donor Evaluation & Management in the ICU



Donors After Circulatory Death:

Remain in the care of a hospital attending with orders placed by the attending care team

Donors After Brain Death:

O.P.O. may place orders directly into the EMR <u>or</u> via order forms

Hospital specific protocol

Donor Evaluation

- After consent, additional donor eligibility evaluation; Labs- ABG, CBC, Cardiac Enzymes, BMP, Mag, Phos.,
- * Heart Recovery Consideration Two- 12 Lead EKG & Echocardiogram obtained when vasopressors are weaned
- Arterial Line & Central Venous Catheters inserted
- Additional investigations determined by organ recovery potential: (Bronchoscopy, CT Chest, Liver Biopsy, Cardiac Catheterization, & Trans-Esophageal Echocardiography)



- Placement offers made via United Network For Organ Sharing
- Typically offers made 24 hr. after declaration of brain death <u>or</u> ASAP once function is maximized after a family meeting in DCD case.
- Transplant centers accept within 2 hours offer
- Note: Testing delays, impair ability to allocate organs, which are life saving for a recipient <u>waiting</u> for transplant.

Organ Allocation

- All organs placed, OR time scheduled
- Time to OR for recovery at the Gift of Life Surgical Center typically 45-55 hr. after Declaration of Death by Neurologic Criteria
- Pt to OR within 24-48 hr. of family meeting in DCD cases. DCD donor recovery occurs at the hospital.

Organ Allocation



Donor Management Goals Adult

- * MAP
- * CVP
- * PF Ratio:
- * Urine output
- * PH
- * Na
- * Blood Glucose
- * Temperature

>65 6-10 > 300 0.5cc - 1cc/kg/hr. 7.35 - 7.45 135 - 155 <180 36 - 37

Donor Management Goals Pediatric

- * MAP
- * CVP
- * PF Ratio:
- * Urine output
- * PH
- * Na
- * Blood Glucose
- * Temperature

Adequate for Age 4-10 > 300 0.5cc – 1cc/kg/hr. 7.35 – 7.45 135 – 155 <180 36 – 37

Hormone Replacement Therapy (HRT)

 * HPA axis is impacted by infarction post herniation.



- After brain death 80% of patients have reduction in vasopressin. Hypothyroid and hypocortisolism also occur.
- Replacement of these hormones (HRT) promotes hemodynamic stability, improves organ function and increases organ retrieval.



* Vasopressin:

- * Give if hypotension present despite adequate volume resuscitation
- * Give in the presence of DI



Society of Critical Care Medicine: Management of the potential organ donor in the ICU. Critical Care Medicine. June 2015 (6) 1291-325



* Methylprednisolone:

 Administer after blood collection for tissue typing to suppress human leukocyte antigen expression

Benefits:

Reduces inflammatory cascade Improves donor graft function Improves donor lung quality



- * Thyroid Hormone:
 - * Give alone or in combination for hemodynamically unstable donors
 - Give to potential cardiac donors with ejection fraction <45%
 - * Benefits:
 - Improves cardiovascular status after brain death and reduces the need for inotropic support

HRT Dosing

- Thyroid Hormone 10 30 mcg/hr
- Vasopressin 0.5 2.4 units/hr.
- Solumedrol 15 mg/kg

End Goals of Treatment

Good critical care management of the patient

Maintain donation potential

Save the life of someone waiting!!!

Take Away Message

>114,000 family and friends are waiting for life saving transplants

Early donor recognition and referral are key to addressing the need for organs & tissues

Organ donation is a rare and beautiful event. Well written standards/policies can assist providers to navigate this amazing process and help to provide excellent critical care management for potential donors.
References

CMS Manual System May 23, 2014. Available at cms.gov. Accessed December 13, 2018.

American Society of Anesthesiologists: Statement on Controlled Organ Donation After Circulatory Death, Oct. 2017

Gift of Life Michigan Data, Available at http://giftoflifemichigan.org Accessed December 6, 2018

Kielhorn, K. 2007, Giving life after death; the 2006 revision of the uniform anatomical gift act. Drake Law Review, 56 (3); 809-828

The Organ Procurement and Transplantation Network Data, Available at <u>http://optn.transplant.hrsa.gov</u>. Accessed December 6, 2018

Society of Critical Care Medicine: Management of the potential organ donor in the ICU. Critical Care Medicine. June 2015 (6) 1291-325

Widjicks et al: Evidence based guideline update: Determining brain death in adults. Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2010; 74:1911-1918.

Discussion

