Taking A PI Project from Conception to Abstract Submission

Victoria Hunter, BSN, RN-C, CCTC
Manager – Kidney/Pancreas Transplant & Donate Life Services

Suzanne Miller, RN, CCTC
Accreditation & Outreach Coordinator

Nebraska Medicine

Objectives

- To share our results of effective collaboration between the Transplant Center, the Hospital Blood Bank and our OPO (Live On Nebraska) and our decision to share our story to promote patient safety;
- Transplant Centers and OPO's may not have encountered or be aware of unique situations that can lead to unplanned ABO incompatible transplants affecting patient outcomes & safety;
- By attending this session, transplant centers and OPO will understand unique situations that can lead to unplanned ABO incompatible transplants and strategies to avoid our experience with a patient safety adverse event and how this experience lead to our abstract submission.

September 28, 2018 – Timeline

- Friday afternoon around 3PM
- The phone call you never want to get
- Kidney recipient, blood type O, was ex-planted 6 hours after transplant due to hyperacute rejection and graft loss– suspected ABO Incompatible!
- Liver transplant recipient - currently in the OR
- The left kidney - allocated to a nonlocal zero mismatch

Action Steps

Adverse Event Crisis Plan Activated:
We notified:

- Appropriate transplant staff members
- Liver transplant surgeon
- OPO
- Blood Bank Medical Director
- Hospital Patient Safety Team
- Internal Media Staff
- Transplant Administrator
- Our patients & families
- Enter an *Improving* Patient Safety Report into UNET
- Started investigation – How did this happen?!

Improving Patient Safety Portal

Assessed Remaining Organ Status

Left Kidney:

Allocated to a nonlocal zero mismatch blood type A recipient in California.

The transplant physician there was notified by the Surgical Director of Live On Nebraska of our suspicions.

They planned to repeat the ABO on arrival.

Liver:

The local liver recipient, blood type O, after consultation with the Blood Bank Director, was treated with plasma exchanges and usual immunosuppression and did well post-transplant with good graft function.

RCA Initiated – Monday 10/1/2020

Individuals Involved:

- Transplant Surgeon
- Transplant Nephrologist
- Manager – Kidney/Pancreas Transplant and Donate Life Services
- Live On Nebraska Staff (OPO)
- Director and Manager of Blood Bank
- Hospital Quality & Patient Safety Staff
- Transplant Regulatory & Compliance Staff

Background of Event

- 51 y/o, restrained motor vehicle collision
- Hemodynamically unstable upon arrival to our ER and required massive blood transfusion protocol
- Neurologically declined, pronounced brain dead and organ donation process initiated
- Donor ABO testing is required to have two blood draws at different times for testing
    - Only one blood sample available prior to massive blood transfusion protocol

Background of Event

9/23/18 18:51	• Trauma team ran stat ABO on pre-transfusion blood – Result = ABO A
20:05 – 05:27	• Pt received 21 units of PRBC – Type O
9/24/18 13:25	• Organ donation authorization obtained from legal decision maker
22:21	• Blood Type Verification, post-transfusion, hemodiluted = ABO O – Comment: "Patient Received 19 units of O PRBCs within the last 24 hours from an MTP and Trauma"
9/25/18 11:47	• A 3rd ABO was completed, post-transfusion, hemodiluted = ABO O – Comment: "Forward O, Reverse A discrepancy. Patient received multiple type O PRBC."
9/26/18 04:45 – 22:21	• LON ordered 3 additional units of PRBCs. Units sent from Blood Bank were ABO O.

Background of Event

9/27/18 11:00	• Live On Nebraska Clinical Services Manager notices ABO Report Comments and directs question to LON Medical Director
11:47	• 4th confirmatory ABO ordered with note: “due to ABO changing after mass transfusion, need a confirmatory ABO.” Completed, non-hemodiluted – Result = ABO O
	• Organ donor classified as ABO O
9/28/18 04:00	• Liver and kidneys recovered for transplant
	• Right kidney and liver transplanted at Nebraska Medicine, Left kidney transplanted nationally
	• Right kidney experienced immediate graft failure – suspected ABO incompatibility

Donor Screening

- Potential organ donors are screened for hemodilution using Food and Drug Administration-approved algorithms to recognize potential false-negative infectious disease marker (IDM) tests.

- Organs from donors that meet hemodilution criteria are classified as increased risk for transmission of infectious diseases.

- Assessment of hemodilution is not uniformly applied to non-infectious testing including ABO determination.

Causal Factors

Causal Factors	
Transplant & LON staff did not realize that the donor pt's blood type was A Positive BECAUSE they are not trained to review Blood Bank comments AND providers are not always formally trained in Transfusion medicine and Blood Bank terminology used in the Comments section is not universally understood	Lack of training & understanding regarding Blood Bank terminology used in results reporting
LON listed the donor patient as ABO: O BECAUSE staff verified three matching ABO: O test results AND UNOS policy requires two matching ABO tests on two separate dates in order to list ABO type related to organ donation, but does not provide guidance for addressing ABO determination in the event blood type has changed related to massive transfusions	Lack of collaboration and/or communication with the Blood Bank during donor/transplant processes
Transplant & LON did not directly communicate with Blood Bank regarding ABO results BECAUSE they followed internal processes for ABO confirmation AND Blood Bank is not directly involved in donation/transplant processes or when there are ABO discrepancies	Lack of collaboration and/or communication with the Blood Bank during donor/transplant processes

Corrective Actions

Blood Bank Medical Director provided training on blood bank processes and reporting to LON & Nebraska Medicine Transplant staff on 11/2/18

Updated internal ABO verification policy with more specific guidelines to assign donor ABO

- Stressed the need to find pre-transfusion samples for testing
- Requires the coordinator to contact the blood bank to ask specific questions about transfusions and ABO report
- If discrepancy still exists and all other efforts exhausted:

RELATIONSHIPS BETWEEN BLOOD TYPES AND ANTIBODIES

Blood Type	Antigens on Red Blood Cell	Can Donate Blood To	Antibodies in Cerum	Can Recieve Blood From
A	A	A, AB	Anti-B	A, O
B	B	B, AB	Anti-A	B, O
AB	A and B	AB	None	AB, O
O	None	A, B, AB, O	Anti-A and Anti-B	O

ABO Badge Cards Developed for all Transplant Staff

Solid Organ Transplants Blood Type Compatability Chart (Rh Factor is not applicable)

Recipient Blood Type	Acceptable Donor Organ ABO Types
O	O, A2, non-A1
A	O, A, A1, A2, non-A1
B	O, B, A2, non-A1, A2B, non-A1B
AB	all ABO types

1. ABO Organ Verification (Donor) Timeout for the LIVE donor is done in Pre-op with staff surgeon
2. ABO Pre-Organ Arrival Verification (Recipient) Timeout is done when the patient enters the room by any two licensed professionals
3. ABO Organ Verification (Recipient) Timeout occurs when the organ arrives in the room and prior to anastomosis – staff surgeon must sign prior to end of case
4. If organ in room, surgeon present, and patient in room and awake, only need to do ABO Organ Verification (Recipient) Timeout and can skip the ABO Pre-Organ Arrival Verification (Recipient) Timeout

Follow-Up Actions

- ✓ Donate Life Coordinators attend mandatory blood bank education with LON
- ✓ Developed a tool (calculator) to assist with determining if donors meet the potential for an ABO discrepancy due to massive blood transfusion
- ✓ Blood Bank Medical Director volunteered his team to be available for any consultations of any future ABO concerns
- ✓ Ensuring that our accepting transplant surgeon is aware of any concerns

“After The Dust Settles”

If this could happen to our patients, it can happen to others – how do we communicate?

- Organizationally – presented at Hospital Quality & Transplant QAPI
- OPTN – *Improving* Patient Safety Reporting? Confidential
- Publicly? - Legal and disclosure concerns
- Transplant Conferences – TQI, TMF, other?
- Other avenues?

Contacted TMF & TQI which lead to our abstract submission

November 2018

South Carolina Donor

- Blood type A
- Massive transfusions
- ABO x 2 pre-donation – Blood type O
- Lung recipient dies
- Liver patient rejects

Abstract Creation

- Start early
- Gather the experts regarding abstract requirements & assignments
- Follow-up
- Nag!!
- Follow abstract directions (perfectly!)
- Submit on time

How We Got Here Today

- Abstract was denied for TQI 2019 due to format
- Abstract submitted to TMF for April 2020 conference (winner!)
  - This is official notification that your abstract, *Multidisciplinary Response to Donor ABO Discrepancy-Related Adverse Event,* was voted winner in Category 2-QAPI & Safety
- Abstract rewritten & submitted to TQI for October 2020 conference

In Conclusion

Transplantation continues to present unique circumstances both for transplant centers and OPOs & the patients we serve.

Effective collaboration is key.

Guidance and policy modifications addressing blood type determination were implemented 9/1/2020

We need better methods of sharing information in the transplant community and abstract submissions of our learnings is one way that we can do that.

Nebraska Medicine