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Stewarding Donation: Navigating Complex Donor Management Scenarios



Speakers:

Wendy Van Kirk, BSN, RN, CPTC

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Meet Our Presenters



Angelique Tadeo

RN, MSN, CPTC

MODERATOR

Supervisor, Organ Recovery Services



A Donate Life Organization



Wendy Van Kirk

BSN, RN, CPTC

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Director, Organ Recovery Services



A Donate Life Organization

Stewarding Donation: Navigating Complex Donor Management Scenarios

Moderated by : Angelique Tadeo MSN, RN, CPTC
Organ Recovery Supervisor
Donor Network of Arizona

Presenter:
Wendy Van Kirk BSN, RN, CPTC
Director of Organ Recovery Services
Donor Network of Arizona

Disclosures

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There is no commercial support being received for this event.

Learning Objectives

- ❖ Describe key challenges, both physical and emotional, associated with caring for a pregnant donor.
- ❖ Identify subtle indications of parasitic infections in potential donors.
- ❖ Outline effective strategies for managing donors that present unique clinical challenges.

The pregnant donor



When a pregnant woman becomes brain dead, the clinician has three options:

- immediately deliver the child

- do nothing and thus passively allow the death of the fetus

- begin prolonged somatic support of them mother to allow the fetus more time to mature in hope of a successful delivery at a later date

Ethical Considerations

After a diagnosis of brain death has been established, it is generally considered unethical to continue ventilatory support and other manipulations.



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Decision to treat

The stage of the pregnancy greatly influences what is appropriate:

1st trimester

- There have been no documented cases of survival, even with attempted somatic support

3rd trimester

- If the fetus has reached a stage of viability, (~ 23 weeks) saving the fetus's life is very likely. When survival is likely, attempts should be made to either deliver the fetus immediately or pursue somatic support of the mother to allow the fetus to develop further in utero before being delivered.

Decision to treat

2nd trimester-

Truly a tragic event...

Many will desire to do anything possible to save the fetus. Continued somatic support of the mother's body for a finite period in order to allow fetal maturation can be a morally good act. However, in this extreme situation, the decision to treat is often tempered by its uncertainty of success and the added financial burden.

Somatic support



Not uncommon for somatic support of a body to continue for a finite period after brain death has occurred.

- A common example of this occurs prior to organ donation. A body declared dead by neurologic criteria is often kept on a ventilator for several days before the organs are procured. After the organs are removed, the life support has achieved its goal and is discontinued.
- In other circumstances, a body may be kept on a ventilator until family members can arrive to say their farewells.

Management

Uterus

- Uterine vasculature is unable to autoregulate, so the wide fluctuations associated with a herniation pattern greatly reduce blood flow to the placenta.

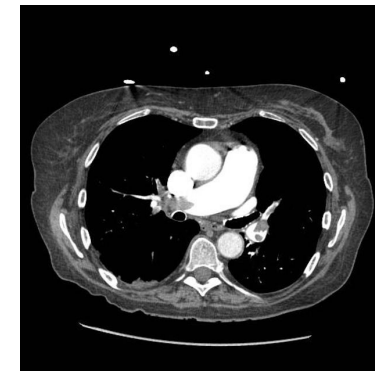
Vasopressors

- while necessary, cause additional placental insufficiency

Metabolic Derangement

- low protein stores may cause pulmonary edema
- Panhypopituitarism
- Diabetes insipidus
- pH imbalance

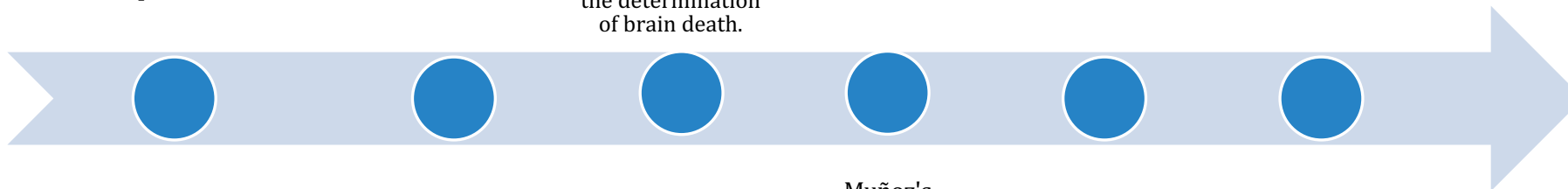
Case 1: Marlise Munoz



2013- 14 weeks pregnant. Suffered a suspected pulmonary embolism. Paramedic husband performed CPR

Texas law restricted withholding or withdrawing support from a pregnant person- even despite advance directives. The hospital kept her on a ventilator in the ICU despite the determination of brain death.

Maintained until 22 weeks -fetus was found to be "distinctly abnormal"



Declared brain dead.

Muñoz's husband entered a legal battle to have her removed from organ support. He argued that the law was not applicable because his wife was legally dead.

A judge ordered the hospital to remove organ support and her cardiac functions stopped on January 26, 2014.

Case 2: Catarina Sequeira

Portugal: Fatal asthma attack at 19 weeks pregnant and was put in an induced coma. However, her condition deteriorated and within days she was declared brain dead.

She was maintained on the ventilator for 56 days.

The head of the hospital's ethics committee, Filipe Almeida, explained that the decision to keep the baby alive in the mother's womb was made in discussion with the family and because she had never opted out of Portugal's presumed-consent organ donation law.

"Being a donor is not just about being in a position to donate a liver or heart or lung, but also being in a position to give yourself so a child can live," he said. ***"And no-one has the right to interrupt the mother's decision process,"*** he told the Observador website.

The baby was born weighing 1.7kg (3.75 lbs)-healthy per last report

Case 3-Karla Perez

- 2105-22 weeks pregnant with her second child, collapsed in her home and was found to have suffered a brain hemorrhage. Perez became the first person on record in the United States, since 1999, whose body was kept alive to have her pregnancy maintained, according to the hospital.
- Delivered at 30 weeks after becoming unstable
- Baby Angel arrived at 11:47 a.m. at 30 weeks and three days, doctors said, adding that he only weighed 2 pounds 12.6 ounces.
- "Angel's first cry was bittersweet – it meant he was alive, but Karla was gone," the hospital wrote. ***The deceased young mother donated her heart, liver, and kidneys*** on April 9.



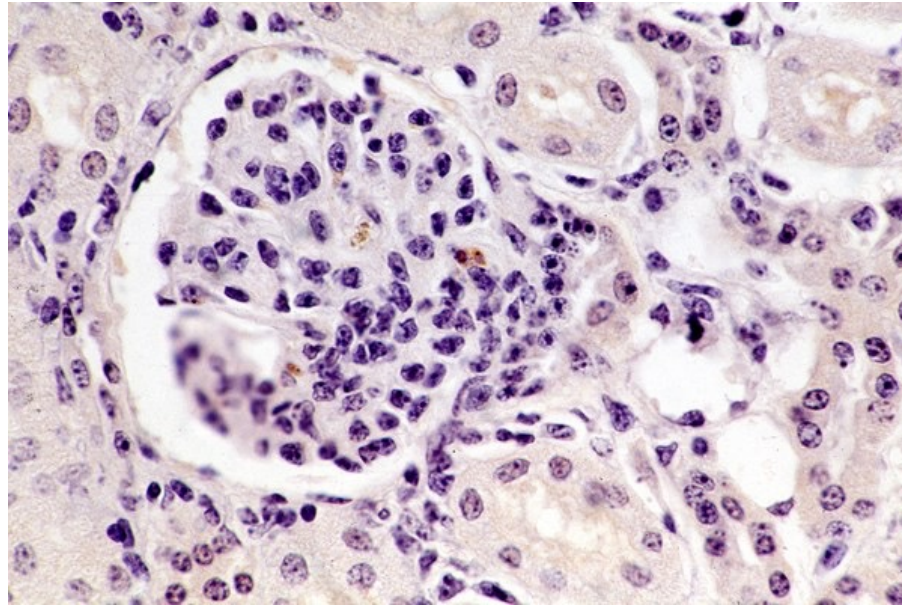
Questions?



Moving on.....

Donor Derived Infections

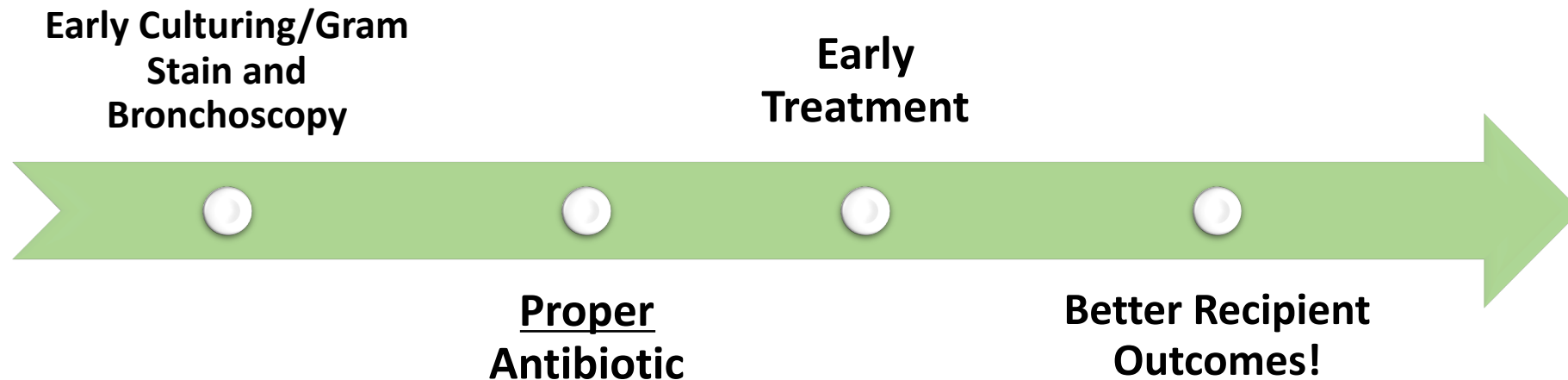
- Case Studies



Infectious Diseases:

Infectious complications continue to be the primary cause of morbidity and mortality after organ transplantation. Many of these complications have an exogenous origin, including those caused by pathogens transmitted by the transplanted organ.

While the overall risk of significant donor-transmitted infectious disease remains low, timely and effective communication of potential transmission events can help avert or minimize infection in recipients.



Post Transplant Infection

Infections Post Transplant:

- Donor Derived:
 - Incidence of donor-derived infections in solid organ transplant recipients varies from 2.1%–23.4% and can be classified as expected (known infection present in the donor) or unexpected.
- Nosocomial
 - Hospital Acquired

Risk Criteria

If a donor meets these any of these criteria within the 30 days prior to organ procurement they are at greater risk of transmitting HBV, HCV, HIV.

Risk criteria (during the 30 days before organ procurement):

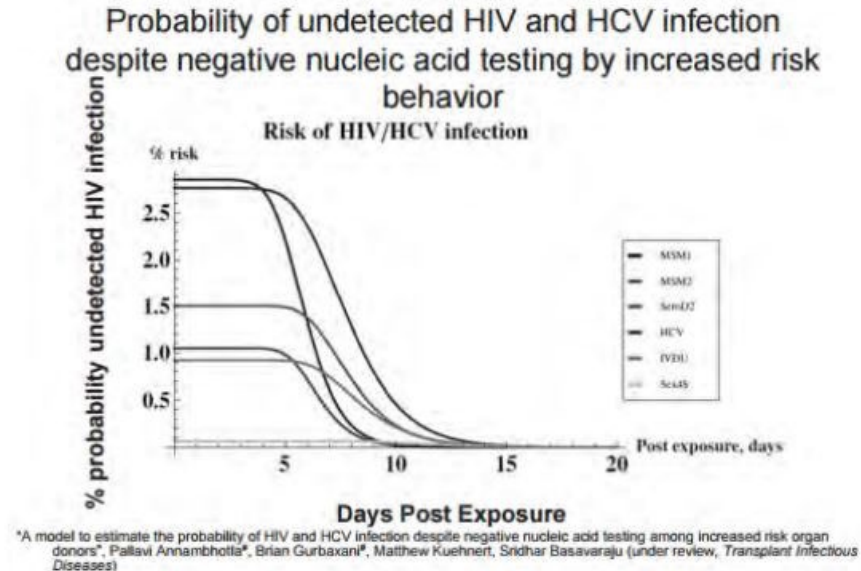
- Sex (i.e., any method of sexual contact, including vaginal, anal, and oral) with a person known or suspected to have HIV, HBV, or HCV infection
- Man who has had sex with another man
- Sex in exchange for money or drugs
- Sex with a person who had sex in exchange for money or drugs
- Drug injection for nonmedical reasons
- Sex with a person who injected drugs for nonmedical reasons
- Incarceration (confinement in jail, prison, or juvenile correction facility) for ≥ 72 consecutive hours
- Child breastfed by a mother with HIV infection
- Child born to a mother with HIV, HBV, or HCV infection
- Unknown medical or social history

Show me the data!

What does this show us? →

- Statistical analysis of disease transmission, reveals a much more forgiving timeline when considering “exposure” as it relates to risk of transmission.
- Cessation of risky behavior drops rate of undetected transmission to nearly zero.

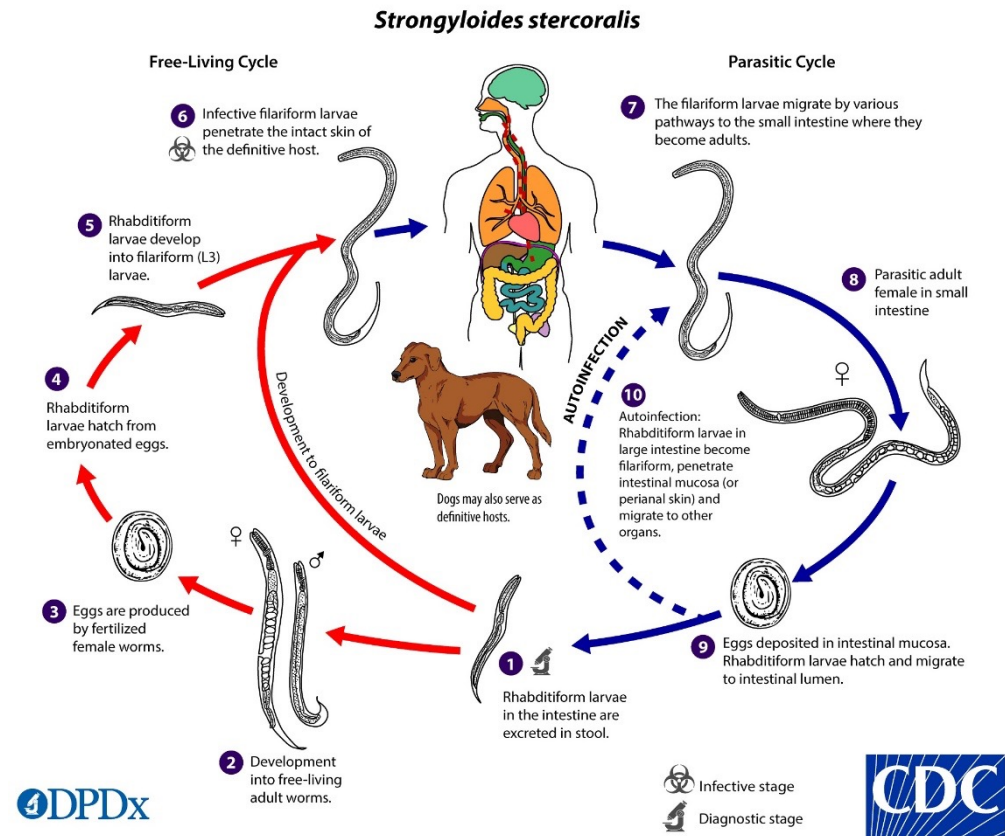
Figure 1: Probability of Undetected HIV and HCV Infection despite Negative Nucleic Acid Testing by Increased Risk Behavior²⁷



“CDC determined that the risk for undetected infection in donors with high-risk behaviors screened by NAT 30 days after the most recent potential risk behavior was fewer than one per 1 million for HIV and hepatitis C and close to one per 1 million for hepatitis B.”

Case 1: Strongyloidiasis

- Parasitic round worm-Spread via contact with round worm larva
- Majority of infected do *not* have symptoms.
- Symptoms do include:
 - Abdominal pain
 - Bloating/heartburn,
 - Diarrhea and constipation
 - Dry cough
 - Skin rashes.



Strongyloidiasis



The Donor

In July 2012, a 24-year-old Puerto Rico-born Hispanic man was hospitalized for multiple gunshot wounds.

He required intubation, multiple vasopressors and packed red blood cell transfusion.

He developed cerebral edema & declared brain dead

Hospital Day 10, his organs were procured and transplanted. He had no history of symptoms suggestive of *Strongyloides* infection but had traveled to Puerto Rico often.

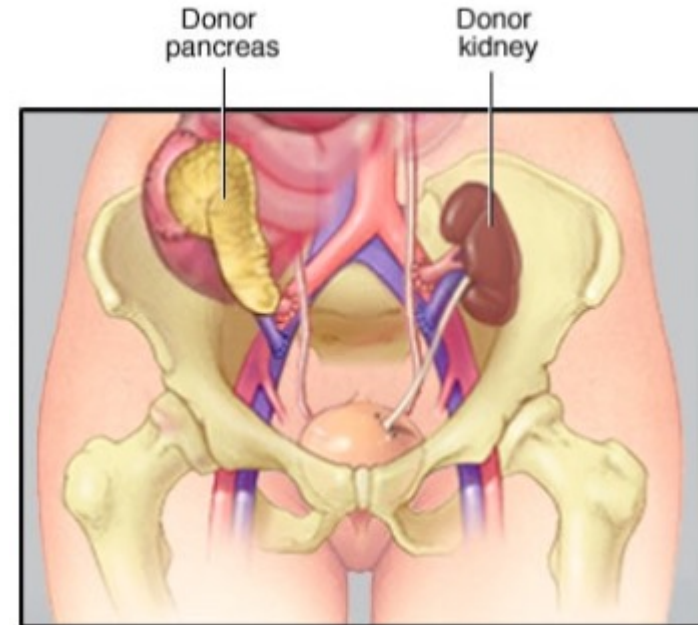
The Recipients: Heart



- A 60-year-old Hispanic man with end-stage ischemic cardiomyopathy underwent heart transplantation.
- On post-transplant Day 48, he presented with fatigue, sore throat and hemoptysis. An endomyocardial biopsy demonstrated grade 1A rejection and multifocal myocyte necrosis.
- Chest radiograph revealed diffuse bilateral interstitial infiltrates. The OPO was contacted about the clinical course of the other transplant recipients; however, no problems were reported at this time.

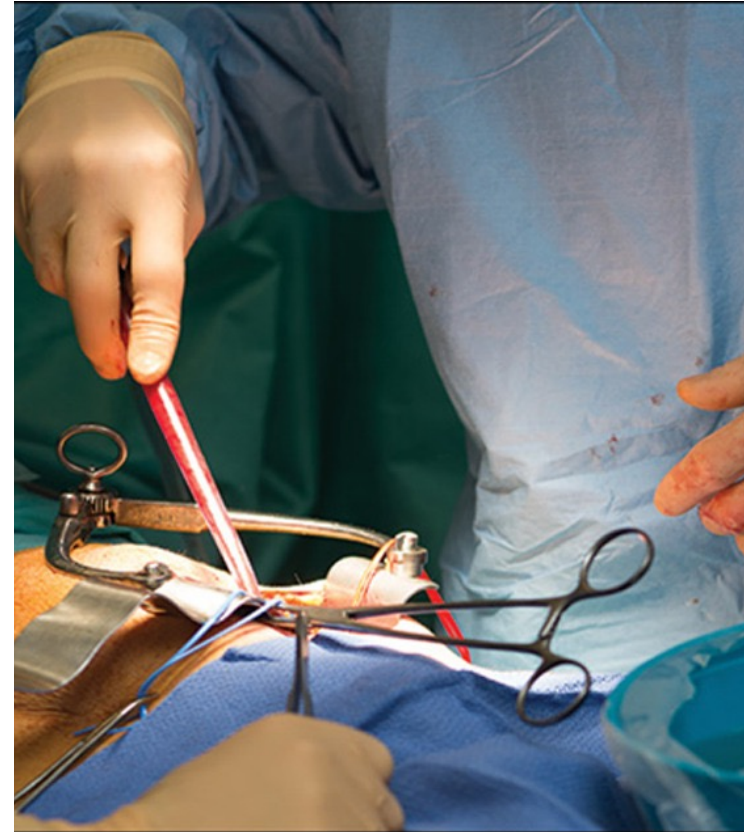
The Recipients: K/P

- 64-year-old with ESRD secondary to Type I DM underwent simultaneous pancreas and kidney transplant.
- Post-transplant course was complicated by small bowel obstruction requiring multiple surgeries and multidrug-resistant sepsis.
- Pseudo-aneurysm hemorrhage necessitated allograft pancreatectomy on posttransplant Day 33.
- Pathology showed fat necrosis and acute hemorrhage without evidence of *Strongyloides* larvae.



The Recipients-Kidney

- A 14-year-old with ESRD secondary to single dysplastic kidney underwent a preemptive renal transplant.
- On post-transplant Day 72, the patient was admitted to another hospital because of fever, vomiting and diarrhea.
- Knowledge of *Strongyloides* infection in the heart and kidney-pancreas recipients prompted patient transfer to the transplant center.

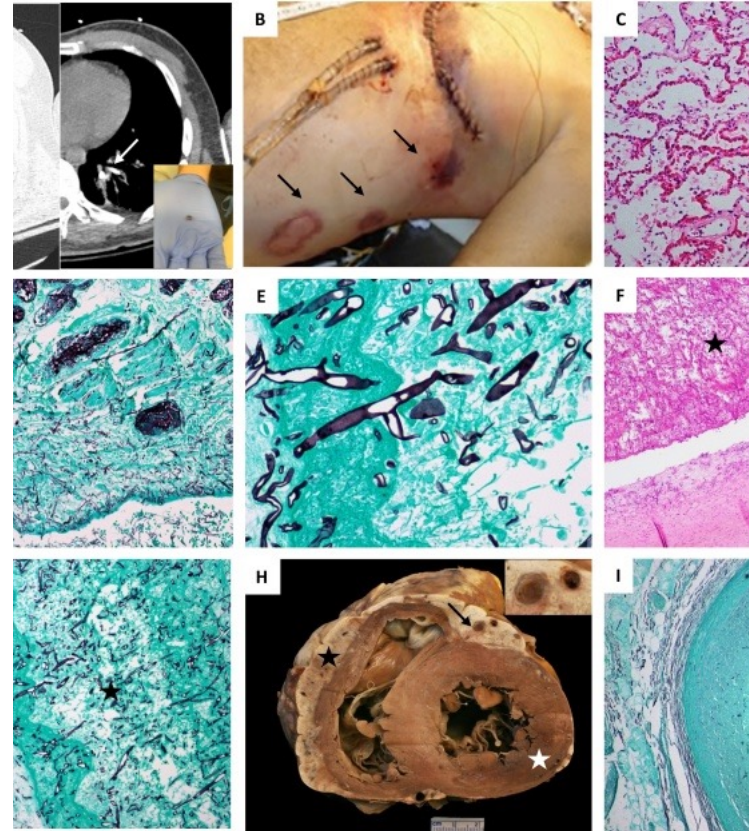


Follow Up

- The Centers for Disease Control and Prevention was contacted and performed an epidemiologic investigation. Donor serology was strongly positive for *S. stercoralis* antibodies on retrospective testing while all pretransplant recipient serum was negative
- There should be a high index of suspicion for parasitic infection in transplant recipients and donors from endemic regions of the world.

Case 2- Mucormycosis

- The donor was a healthy, 30-year-old man who succumbed to injuries from motorcycle accident.
- A 57-year-old man with idiopathic pulmonary fibrosis was evaluated for lung transplantation.
- Donor lung imaging revealed metallic debris in the left-sided airways indicating dirt contamination.



Case progression

- On the fifth postop day, the patient developed a fever of 101.9 °F along with tachycardia and tachypnea.
- Blood cultures and BAL cultures were obtained, and antibiotics switched.
- The following day, he suffered a PEA arrest requiring 14 minutes of CPR.
- He was intubated and VA-ECMO support was initiated.
- Eventually-despite an IABP and CRRT his heart continued to fail. Care was withdrawn at that time, and an autopsy was performed.



Case progression

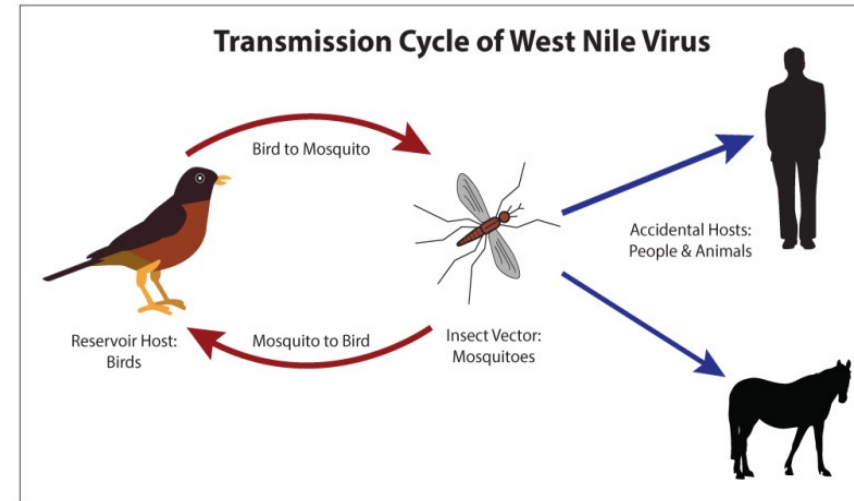
Grossly, patient's skin had patches of necrotic areas along the left chest all extending on to the flank. Bronchi revealed invasive fungal infection. Cardiac autopsy revealed multifocal coronary artery thrombosis without plaque, consistent with septic embolization, along with myocardial and epicardial necrosis.

The patient developed angioinvasive mucormycosis. The clinical presentation mimicked acute myocardial infarction in that the patient had ST-elevation, elevated cardiac biomarkers, and regional wall motion abnormalities. **Suspected source was aspiration of soil and foreign debris during the motorcycle accident.**

Donor lung contamination with soil should be considered during the donor evaluation process, as it can be the source of invasive mold infection.

Case 3: West Nile Virus

- West Nile virus (WNV) is the leading cause of mosquito-borne disease in the continental United States.
- It is most spread to people by the bite of an infected mosquito. Most people infected with WNV do not feel sick.
- About 1 in 5 people who are infected develop a fever and other symptoms.
- About 1 out of 150 infected people develop meningitis, encephalitis, or WNV acute, flaccid paralysis.
- **WNV disease is a nationally notifiable condition.**

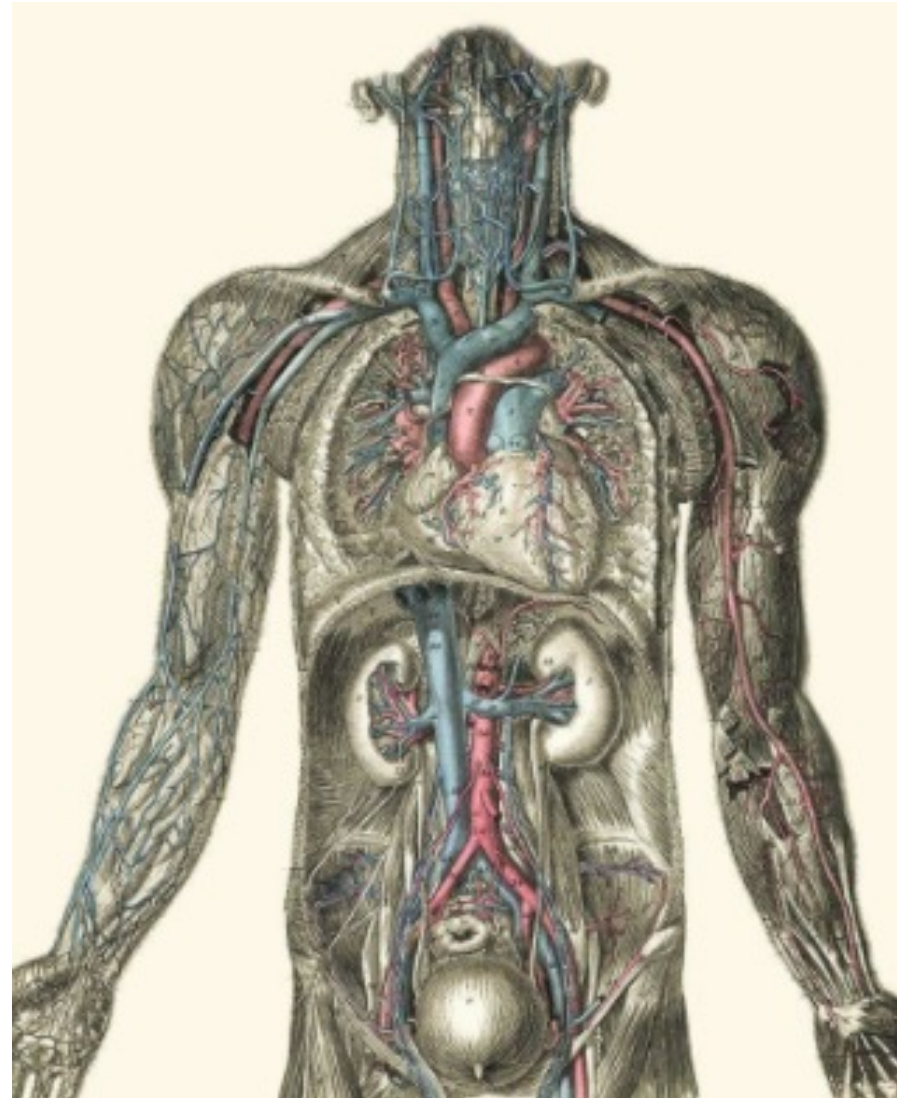


The Donor

In the early fall of 2011:

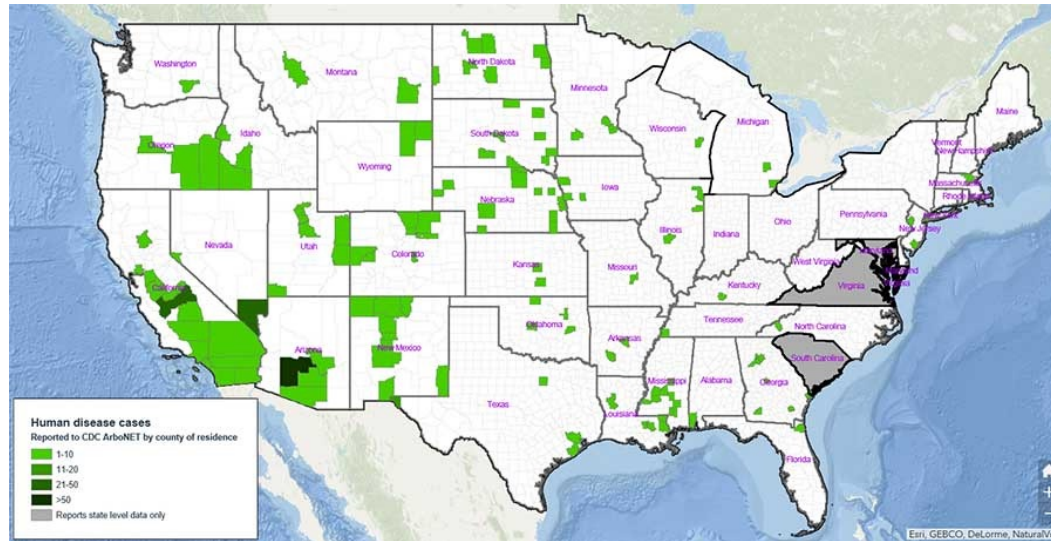
A 56-year-old man developed fever, muscle weakness, and an altered level of consciousness.

He was seen in the ED and started on an oral antibiotic for a possible UTI and sent home. Final urine and blood cultures were negative.



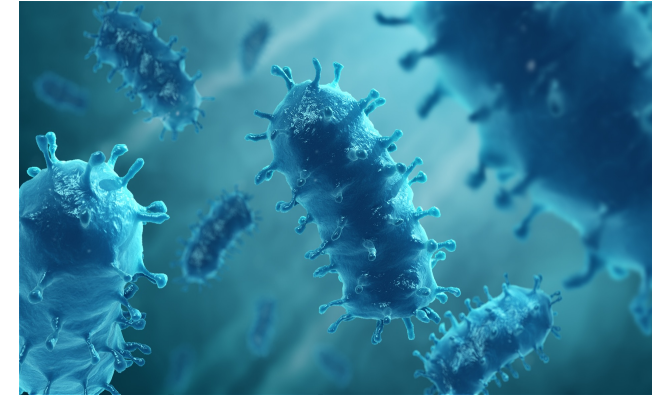
The Recipients

The diagnosis of donor-derived WNV infection in solid-organ transplant patients requires a high index of clinical suspicion in any patient who develops unexplained fever followed by neurologic symptoms during the early post-transplantation period.



Case 4: Rabies

- Viral disease that causes inflammation of the brain in humans and other mammals.
- Early symptoms can include:
 - Fever and tingling at the site of exposure.
 - Nausea, vomiting,
 - Violent movements,
 - Uncontrolled excitement
 - Fear of water
 - Partial paralysis
 - Confusion, and loss of consciousness
- The time period between contracting the disease and the start of symptoms is usually one to three months but can vary from less than one week to more than one year.



The Donor

- Four days before death, the organ donor was seen twice at an emergency department for nausea, vomiting, and difficulty swallowing.
- He was subsequently admitted to another hospital with altered mental status requiring intubation.
- Physical examination revealed a temperature of 38.1°C (100.5°F) and fluctuating blood pressures, including systolic measurements of more than 200 mm Hg.



The Recipients

- In May 2004, encephalitis was diagnosed in three recipients of a liver and two kidneys from a common organ donor.
- In all three patients, signs and symptoms of altered mental status and progressively worsening encephalitis developed within 30 days after transplantation.
- All patients had:
 - Rapid neurologic deterioration
 - Respiratory failure
 - Neurologic imaging in the week after the onset of symptoms showed no evidence of an acute cerebral process.
 - The patients died an average of 13 days after the onset of neurologic symptoms.



Conclusion:

Management of a pregnant donor /potential donor can be physically, ethically, and morally challenging. Requires a team effort between the family/decision makers, the health care team, and the OPO.



Conclusion:



- Donor derived infections are associated with severe complications in recipients. Efforts must be made to thoroughly evaluate potential donors and communicate well any risk factors with transplant centers.

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Thank You!