Multi-visceral Organ Transplant Education for Medical Interpreters

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http://www.youtube.com/watch?v=aclS1pGHp8o
Transplantation at Cincinnati Children’s Hospital Medical Center

• Since 1986 more than 300 liver transplants and 30 small intestinal or small intestinal-liver combined transplants have been performed.

• Three liver transplants performed since May of 2013 alone. **UPDATE:** Two transplants have been performed since July class, including 1 re-transplantation surgery of an infant.

• One-year survival rate is 100%.

• CCHMC is one of the world’s top centers, with patients coming from as far as Honduras, Nepal, and Somalia, etc.
Function of the liver

• One of the largest and most complex organs in the body.

• It weighs about three to four pounds) and is made up of a spongy mass of wedge-shaped lobes.

• The liver has numerous functions that are necessary for life. The liver helps process carbohydrates, fats, and proteins, and stores vitamins.

• Processes nutrients absorbed from food in the intestines and turns them into materials that the body needs for life.

• Makes products the blood needs for clotting.

• Secretes bile to help digest fats, and breaks down toxic substances in the blood such as drugs and alcohol.
Function of small intestine

• Primary organ for breaking down food into nutrients to be absorbed by the blood stream for nourishing the body.

• Approximately 6 meters in length. Located below the stomach and above the colon.

• Made up of three segments: Duodenum, jejunum, and ileum.

• Bile (a sort of detergent for dissolving fats) is secreted directly into the small intestine by the liver and gallbladder.
Liver and small intestine failure
Common causes of liver failure

- **Biliary atresia** – Baby is born with a too narrow or completely absent bile duct. Inability to drain bile produced by the liver, resulting in liver death.

- **Autoimmune Hepatitis** – Idiopathic cause, but more common in girls. Body’s own immune system attacks the liver, slowly killing it.

- **Hepatitis B and C** – Rare in children, but easily the most common cause of liver disease in adults requiring transplant. No cure for Hep. B or C, but a vaccine prevents B. Transplant is not a cure, as virus will also attack the new liver. Death usually caused by liver cancer or cirrhosis.
Causes of liver disease (cont.)

- **Alpha 1 antitrypsin deficiency** – A genetic disorder that causes the body to lack called *alpha-1 antitrypsin*; an enzyme necessary to protect the body from the immune system. Body attacks the liver, lungs, and other organ systems.

- **TPN cholestasis** – Prolonged dependence on IV nutrition will cause the liver to shut down. Often accompanies small bowel failure, requiring a multi-visceral transplant.

- **Alcoholic liver disease** – Requires proof of abstinence from drugs and alcohol to qualify for transplantation.
Healthy Liver & Disease Liver
Common causes of intestinal failure

- **Gastroschisis** – Baby is born with intestines on the outside of the body. It is caused by a hernia (weak spot) on the wall of the abdomen. Intestines can be surgically placed back into the body, but often lack blood flow and die.

- **Hirschprung’s Disease** – Segments of the intestine lack nerves, making it impossible for them to contract and push food into the colon. Usually can be surgically corrected but not always. (Dr. Alberto Pena, MD)

- **Necrotizing Enterocolitis (NEC)** – Usually caused by premature birth. The intestines have not fully developed and decay. Often a combined liver/small bowel transplant is necessary due to TPN cholestasis.

- **VATER Syndrome** – A rare condition caused by umbilical cord defect. Usually results in intestinal failure, poorly developed kidneys, a missing thumb, airway problems, and deformed genitalia, anus, and urethra. (cloacal anomaly.)
Symptoms of Liver/Small intestinal Disease
• Jaundice – Yellowing of the eyes and skin. Caused by the sick liver’s inability to clear the body of bilirubin; a waste product of old, worn out red blood cells.

• Pale feces and dark urine.

• Fatigue lasting days, weeks, or months.
• Unexplained bleeding and bruising.
• Very swollen abdomen.
• Vomiting blood, nausea.
• Confusion, stupor.
• Coma
• Death
• (Intestinal Failure) – Inability to make or pass stool, blood diarrhea, nausea and vomiting, inability to nurse but with hunger, fussiness, severe lower abdominal “burning” pain, rapid weight loss.
Preparing for the transplant
The Organ Procurement and Transplantation Network (OPTN) maintains the only national patient waiting list

* Model for End-Stage Liver Disease (MELD) and Pediatric End-Stage Liver Disease (PELD) are numerical scales that are currently used for liver allocation. The MELD and PELD scores are based on a patient's risk of dying while waiting for a liver transplant, and are based on objective and verifiable medical data.

Data used in both the MELD and PELD score calculations:

- **The MELD score calculation uses:**
  - Serum Creatinine
  - Bilirubin (mg/dl)
  - INR

- **The PELD score calculation uses:**
  - Albumin (g/dl)
  - Bilirubin (mg/dl)
  - INR
  - Growth failure (based on gender, height and weight)
  - Age at listing
**The Transplant Team**

**Transplant coordinators** – Responsible for the patient's evaluation, treatment, and follow-up care.

**Transplant physicians** are doctors who manage the patient's medical care, tests, and medications. He or she does not perform surgery.

**Transplant surgeons** perform the transplant surgery and may provide the follow-up care for the recipient.

**Financial coordinators** - Works with other members of the transplant team, insurers, and families to clarify the financial aspects of the patient's care before, during, and after the transplant.

**Social workers** help the patient and their family understand and cope with a variety of issues associated with a patient's illness and/or the various side-effects of the transplant itself.
A democratic system

Waiting Times
Waiting times vary, largely due to a shortage of donors. How long a patient waits depends on many factors. These can include:
• Blood type and tissue type, compatibility.
• Medical urgency and time on the waiting list.
• Distance between the donor's hospital and the potential donor organ (6 regions in the USA.) A suitable live donor can voluntarily donate ¾ of his or her liver with medical approval.

Patient Notification
• OPTN cannot provide patients with their place on the list. The transplant coordinator and physician will inform them.
• The transplant program must notify patients in writing within 10 business days if the patient has been placed on the national transplant waiting list.
• The transplant program must notify the patient in writing within 10 business days after completion of the evaluation that the patient will not be placed on the patient waiting list.
• If the patient is removed from the waiting list for any reason other than transplantation or death, the transplant program must notify the patient in writing within 10 business days.
Social factors for eligibility

• Mental health screening – a patient and/or his/her caretaker must be deemed mentally competent and capable of learning how to take care of the patient. Caring for a transplant recipient is a lifelong commitment.

• Patient and/or caregivers must have adequate resources or access to transportation, suitable housing, and ability to get to a hospital or clinic for necessary health monitoring.

• Patient must be willing to comply with medication therapy and restrictions on lifestyle. For example, a transplant recipient must agree to refrain from consumption of alcohol and other illicit substances including medical marijuana.*

• Patients with alcohol-related liver disease must seek treatment for cessation of drinking usually before they are listed.

• **Gray areas:** Language barrier, immigration status, definition of mental competency, past medication compliance if needing a second transplant.
The transplant surgery
Steps of Transplant

• Average surgery takes 12 – 14 hours and requires three surgeons. (video)

• **Surgeon 1** – Responsible for removing the organ to be transplanted from the cadaver. Usually done within the region of the transplant surgery center. Medical jet or helicopter available in most cases. If a live donor is used, the organ will be harvested in the adjoining room.

• **Surgeon 2** – Prepares the patient for transplant, creates the incision, and maintains stability of the patient.

• **Surgeon 3** – Modifies the organ for new organ for implantation while surgeons 1 and 2 remove the diseased organ(s).

• Entire team will then work together to attach the new organ(s) to the donor’s blood vessels and close the incision. Patient is then transported to ICU.
http://www.youtube.com/watch?v=AbzuMm9T0tM
http://www.youtube.com/watch?v=4kPFuxWn-WY
http://www.youtube.com/watch?v=4q4q7e6l3il
Life after transplant
Lifestyle modifications

• A transplant recipient will have to take medications every day for the rest of their lives to keep the body from rejecting the new organ. The most commonly drug, Prograf, has the least amount of side effects, but requires monitoring of the kidneys and heart.

• Transplant recipients should NEVER go swimming in fresh water. Ocean water and pools are fine.

• Transplant recipients are prone to greater risk of infections. Often biopsies are required to monitor their organ health in the event of rejection.

• Small bowel recipients are at risk for dehydration and malnutrition. He or she or their caregiver must learn to change ostomy bags, measure stool output daily, and administer supplemental feeds per NG or G-tube.
Q & A