HHS Entrepreneur Innovation Project
Organ Labeling, Packaging and Tracking

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Topics for Today

- My Background
- Organ Donation & Transplant Overview
- HHS Innovation Program
- The Problem & Solution
- Organ Allocation – You be the judge
- Allocation & Viability
- Trivia & Questions
My Background

- UPS
  - Operations
  - Industrial Engineering (workflow and process redesign)
  - IT (Technology)
  - New Ventures (Entrepreneurship)

- Current: cHealthWorks
  - Founder
  - Strategy, Innovation, Process Redesign, Technology
  - Healthcare Systems Focus

- HHS Entrepreneur HHS Div of Transplantation
  - 70 Organ Recoveries
  - 9 Transplants
  - 10 Autopsies

- Personal Connection (Passion for Mission)
How many people died in the US in 2016?

2,744,248
Despite advances in medicine and technology, and increased awareness of organ donation and transplantation, the gap between supply and demand continues to widen.
We All Need to Register. Here's Why:

95% of U.S. adults support organ donation but only 54% are actually signed up as donors.

every 10 minutes another person is added to the waiting list.

only 3 in 1,000 people die in a way that allows for organ donation.

How many lives can one donor save?

8

- Heart
- Left Kidney
- Right Kidney
- Liver
- Left Lung
- Right Lung
- Pancreas
- Intestine
- Eyes
- Tissue: Bone, Ligaments, Tendons, Skin
- Arms, Hands, Face, etc.
The Health and Human Services Department (HHS) is looking for **external experts and entrepreneurs** to work on innovative projects through the HHS Innovation Fellows Program (HHS Entrepreneurs).

The Innovation Fellows Program aims to **bring external ideas and expertise to HHS**’s own innovation process and **rapidly create, develop, engage and accelerate innovation**.
A Collaborative Effort

- HHS – Entrepreneur Program, Idea Lab Team
- HRSA – Sponsor - Support & Funding
- UNOS – HRSA Contract to Manage Organ Donation & Transplant
- OPTN Ad Hoc Organ Tracking Committee
- OPTN Operations and Safety Committee
- OPO and Transplant Center Staff
- Patient Safety Program and Simulation Center
  - Northwestern University
  - Virginia Commonwealth University Simulation Center
HHS Entrepreneur Project
Revamp the Organ Labeling, Packaging & Tracking System

Legend

Initially Identified

Identified During Discovery

Label and Legibility Errors
Box Contents Errors
Laterality Errors

Complexity!

Job Setup
Redundant & Non-Value Added Work

Transportation
Data & Visibility
Transportation Options
The Old Process
Case Preparation & ICU

30 – 70 Labels by Hand

30 – 70 Manual Validations
The Old Process
Labeling & Packaging
The Solution

• Stakeholder Buy-in & Collaboration (Transparency)
• Innovation (Fresh Set of Eyes, Supply Chain)
• Process Redesign (Lean, Deployment Mindset)
• Change Management
• Standardization
• Technology
The TransNet System (People, Process, Technology)
An Ethical Dilemma?
Who Should Get the Lung?

65 Year Old Man

35 Year Old Woman

1 month ago, she smoked 4 packs of cigarettes per day
Who Should Get the Heart?

13 Year Old Girl

24 Year Old Woman

She just had twin baby girls
Who Should Get the Liver?

Man Who Is A Registered Organ Donor

Man Who Does NOT Want to Donate His Organs
Ethical Challenges – Organ Donation Policy

Who should get priority...
• Someone who will live 5 years or one who will live 10 years?
• Should a child get an organ before an adult?
• Should organs go to areas of the country with lower Registration rates?
• Someone who a US citizen or someone from another country?
• Someone who has been on the list the longest or the sickest?
• Should Someone from an unhealthy area share with a healthy area?
• Should prisoners be on the organ donor list?
Question

True or False? The government decides who get what organ.

False: A computer system allocates organs based on several criteria. That criteria, or business rules are determined by transplant and organ donation experts.
Questions

True or False? If I agree to donate my organs, the hospital staff won't work as hard to save my life.

False: When you go to the hospital for treatment, doctors focus on saving your life — not somebody else's. You'll be seen by a doctor whose specialty most closely matches your particular emergency.

True or False? Rich and famous people go to the top of the list when they need a donor organ.

False: The rich and famous aren't given priority when it comes to allocating organs. It may seem that way because of the amount of publicity generated when celebrities receive a transplant, but they are treated no differently from anyone else. The reality is that celebrity and financial status are not considered in organ allocation.
Question

True or False? Once a person is officially declared deceased (brain dead), an organ can typically be recovered in 1 to 3 days.

True: The first 24 – 48 hours are typically spent “managing” the patient in the ICU. This allows time to run infectious disease tests, find organ matches for transplant recipients, schedule the operating room (OR) and coordinate transportation for the surgical teams and organs.

Time becomes critical in the OR when the surgeons “Cross Clamp” or stop the blood flow.
Who Can be an Organ Donor?

- Any adult (18 yrs old) can register to be a donor
- Anyone can choose to donate - Talk about it with your family
How Organ Allocation Works

The system uses this information to match the medical characteristics of the candidates waiting against those of the donor. The system then generates a ranked list of patients who are suitable to receive each organ. Factors affecting ranking may include:

- tissue match
- blood type
- length of time on the waiting list
- immune status
- distance between the potential recipient and the donor
- degree of medical urgency (for heart, liver, lung and intestines)
- Donor/Patient Size
How Long is an Organ Viable?
(Cold Eschemic Time)

- Heart, lung: 4-6-8 hours
- Liver: 8-12 hours
- Pancreas: 12-18 hours
- Kidney: 24-36 hours
Can this change everything?

Lung: 6-8 hours

Lung-in-a-Box: 8-12+ hours
Lessons Learned

What surprised me with the donation process & in the OR.

• Right Atrium pumping looks like a defect when it beats...
• The smell of the bovi... burning flesh is gross
• Lungs and livers are big
• Your heart still beats when you are brain dead, your lungs don't...You stop breathing...then have a heart attack
• I was amazed how well my non-clinical experience transferred to medicine
• I was worried I would be disappointed by the organ donation system or doctors. I wasn’t!
More Trivia…
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