

Transporting Living Donor Kidneys in the OPTN KPD Pilot Program

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How is it decided if a living donor kidney will be transported in a KPD exchange versus the donor traveling?

- The donor and donor’s hospital agree to ship the donor kidney
- The candidate and candidate’s hospital agree to receive a shipped kidney.

How is transportation of a living donor kidney to a recipient transplant hospital arranged in KPD?

- UNOS organizes conference calls to discuss transportation arrangements with transplant hospitals and their designated courier.
- The recipient hospital chooses the mode of transportation for the kidney that is traveling to them.

Who is responsible for and who pays for transporting living donor kidneys in KPD?

- The recovery hospital is responsible for packaging, labeling, and transporting living donor kidneys (centers may utilize their OPO’s help).
- The recipient hospital is responsible to contract with a courier (or work with their OPO) to pay for transportation. UNOS does not contract with couriers.
- The recipient hospital is responsible for the cost of shipping their matched donor’s kidney. Transportation costs may be covered by recipient insurance.

What UNOS policies pertain to living donor and KPD kidney packaging and transportation?

- Policy 13.4.C.13 Informed Consent for KPD candidates
- Policy 13.11 Transportation of Kidneys
- Policy 14.8 Packaging, Labeling, and Transporting of Living Donor Organs, Vessels, and Tissue Typing Materials
- Policy 16 Organ and Vessel Packaging, Labeling, Shipping, and Storage

What are the transportation options and chain of custody of the kidney during transport?

Options	Chain of Custody					
Driving	Kidney remains with driver from donor hospital to recipient hospital					Driver takes kidney to recipient hospital where hospital staff receiving kidney signs delivery confirmation.
Commercial airline, as cargo	Kidney taken to special cargo area ¹ and handed to airline personnel who takes kidney to plane.	Kidney handed to airline personnel (baggage handlers), scanned placed in hold (baggage compartment). ²	Driver picks kidney up at the special cargo area. ³			
Commercial airlines, with on board	Driver picks kidney up at recovery hospital and takes to designated hospital or airport.	Driver hands kidney to on board courier who takes kidney through TSA and boards flight. ⁴	With the assistance of the crew, on board courier secures the kidney in an upright position for the flight. ⁵		The on board courier deplanes and hands kidney to a driver.	
Charter flight (Prop)	Driver hands kidney directly to the pilot or crew member of the chartered aircraft	After landing, pilot/crew member of the chartered aircraft hands kidney to driver.				
Hybrid, Commercial and Charter combo	If commercial flight is first, the driver hands kidney to commercial airline personnel who takes kidney to plane. OR If charter flight is first, the driver hands kidney directly to the pilot or crew member of chartered aircraft.	Once offloaded (from either the commercial or charter flight) the kidney is handed to a driver waiting to take kidney to the next designated airport.	Driver hands kidney directly to the pilot or crew member of chartered aircraft. OR Driver hands kidney to commercial airline personnel who takes kidney to plane where it is scanned and placed in hold (baggage compartment). ²	After landing, pilot/crew member of the chartered aircraft hand kidney to driver. OR Driver picks kidney up at the special cargo area. ³		

¹ Most airlines require that kidney is tendered to designated flight a minimum of 1 hour prior to flight departure. TSA regulations mandate that a shipment can only be tendered to a commercial airline by a Certified Indirect Air Courier

² Courier confirms kidney is on designated flight

³ It can take up to 1 hour after flight arrival for the kidney to be offloaded and handed off to the driver

⁴ Kidney is put through scanner. The on board courier is provided a letter (attached) that explains the content of the box to present to TSA if questioned

⁵ This location may vary based on the type of aircraft and space available

How are kidneys tracked during transport?

Couriers notify transplant hospitals and UNOS of the kidneys locations at various points in transit via email.

Driver arrives at donor recovery hospital.	Driver receives the kidney and is in route to next destination.	(Flying) Driver has tendered the kidney to designated commercial flight or handed off to charter pilot/crew	(Flying) Kidney confirmed on board flight and flight is airborne	(Flying) Driver receives kidney from airline/on board courier and is in route to recipient hospital	Driver has delivered kidney to recipient hospital. Email includes time of deliver and name of person who signed for kidney.
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Are GPS systems used when transporting kidneys?

- UNOS does not utilize GPS devices for kidney transportation; however, certain couriers may use GPS devices if requested.
- The Federal Aviation Administration restricts how GPS devices are used on aircraft, they must shut off shortly after takeoff.
- Transplant hospitals who wish to use GPS devices may buy/rent an FAA-compliant GPS device and provide it to the donor recovery hospital to package with the kidney.

What are the risks involved in transporting living donor kidneys?

Risks include delay, loss, or damage of the kidney as a result of a disaster or incident. Examples include but are not limited to:

- Natural disasters: flood, earthquake, fire, or hurricane
- Unnatural disasters: terror attack, random incidents of violence
- Transportation incidents:
 - The car or plane transporting the kidney may be in an accident
 - The kidney may be lost or temporarily misplaced in transport such as:
 - Sent to the wrong place at the airport, placed on the wrong plane; failure to be placed on the plane prior to departure; failure to remove from the plane upon arrival
 - The kidney container may be damaged or opened accidentally during transport
 - TSA may refuse kidney on board plane (on board courier)
 - Kidneys may be left in extreme heat, cold or rain while handlers transport and load them into airplanes from the tarmac (cargo)
 - After loading, kidneys may sit in undesirable conditions until the airplane takes off and the climate control kicks in (cargo)
 - Once in air, an unexpected change or malfunction in the temperature and pressure may subject the kidney to harsh conditions (cargo)
 - Kidney may be delayed in transport due to:
 - A delay in the driver receiving the kidney from donor recovery hospital; flight delay or cancelation; traffic; driver lost

What is done to minimize transportation risks?

- All commercial flights transporting living donor kidneys receive a special, “Lifeguard” call sign to indicate medical urgency and the need for expeditious handling. Air Traffic Control gives these flights priority for takeoff and landing.
- The courier provides frequent communication about the location of the kidney.
- On-board courier provides a letter, describing contents of package, to present to TSA.

How will transplant hospitals be notified if a transportation issue occurs?

The ability to identify a transportation issue is dependent on the method of transportation and the “visibility” of the shipment while in transit. Real-time notifications are provided to transplant hospitals as transportation issues are identified. Notifications may be from the courier or UNOS and may be via email or phone call, depending on the situation and severity of the issue.

What is the data on OPTN KPD kidneys transportation issues?

UNOS began collecting KPD kidney transportation data through a OPTN organized KPD exchanges in May 2014.

Definitions:

- *Shipment:* A transportation arrangement to move an organ from point A to point B.
- *Failure:* Organs that do not make it to their original intended destination transplant center or those that arrive at the original intended destination but with a delay significant enough for the organ to be unacceptable for transplant.
- *Near Miss:* Delays of two or more hours from the original estimated time of arrival to transplant hospital.
- *Delay:* Kidney arrived at transplant hospital between 0 – 119 minutes from original estimated time of arrival.

Data May 19, 2014 - December 31, 2018

- 187 kidneys recovered
 - 15 transplanted at recovery hospital
 - 172 transported from recovery hospital to transplant hospital
- 135/172 arrived at or before ETA
 - Zero transportation failures, 5 Near misses, 32 delays less than 2 hours

Near miss summary data

Month	Reason	Original planned method of transportation	Primary flight utilized?	Back-up plan used?	Time delay
Nov 2014	Flight delay, weather	Direct commercial airline	Yes	N/A	2:20
May 2016	Flight delay. Direct flight diverted to another airport and placed on connecting flight to final destination	Direct commercial airline	Yes	N/A	2:36
May 2016	Recovery hospital delayed in getting kidney to courier	Connecting commercial flight using on board courier	No	Yes	3:36
Aug 2016	Kidney not offloaded from flight, went back to originating city can chartered to candidate hospital	Direct commercial airline	Yes	N/A	6:25
June 2017	Recovery hospital delayed in getting kidney to courier	Charter flight	Yes	N/A	2:40