

Opioid Epidemic and Kidney Transplantation

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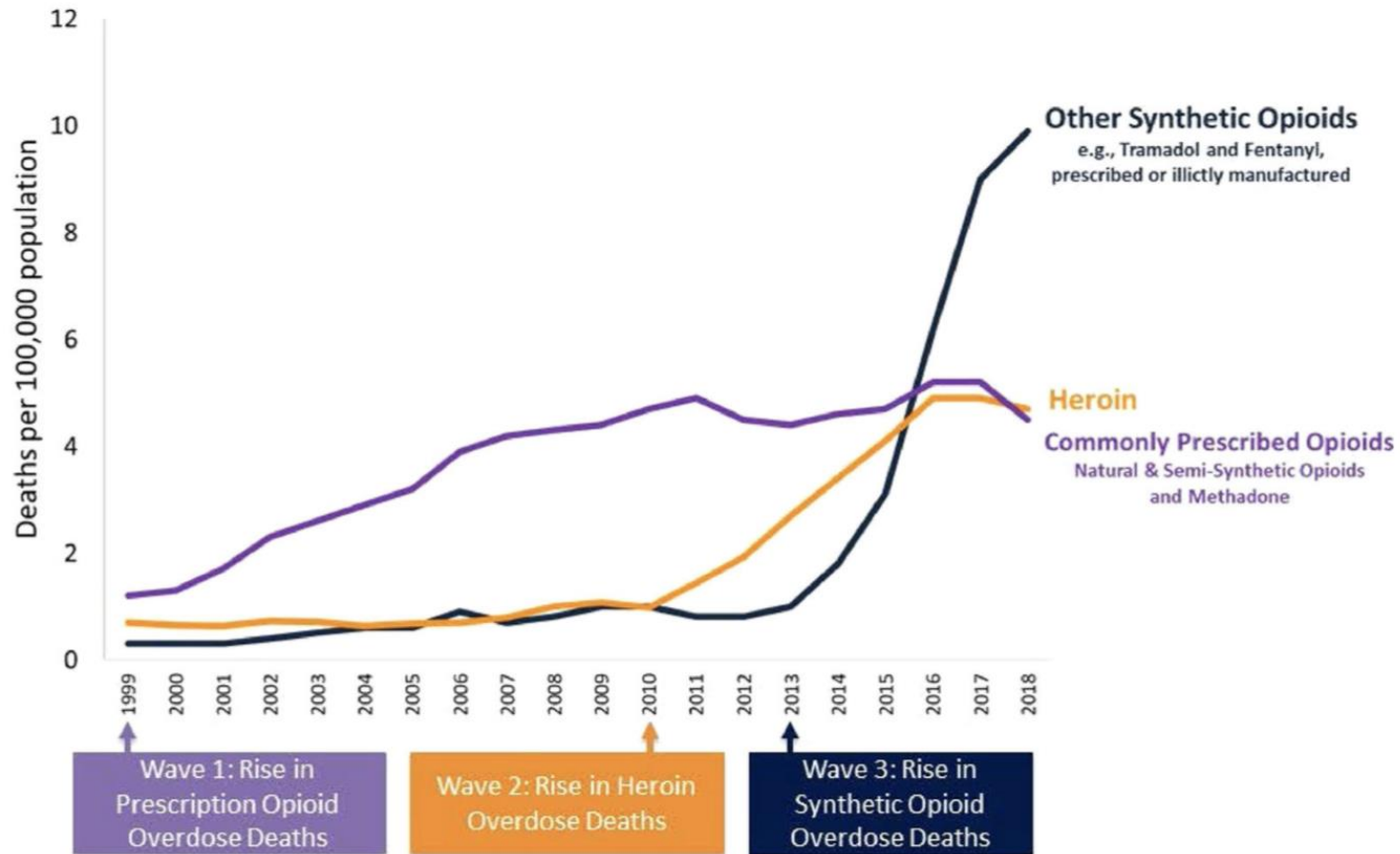
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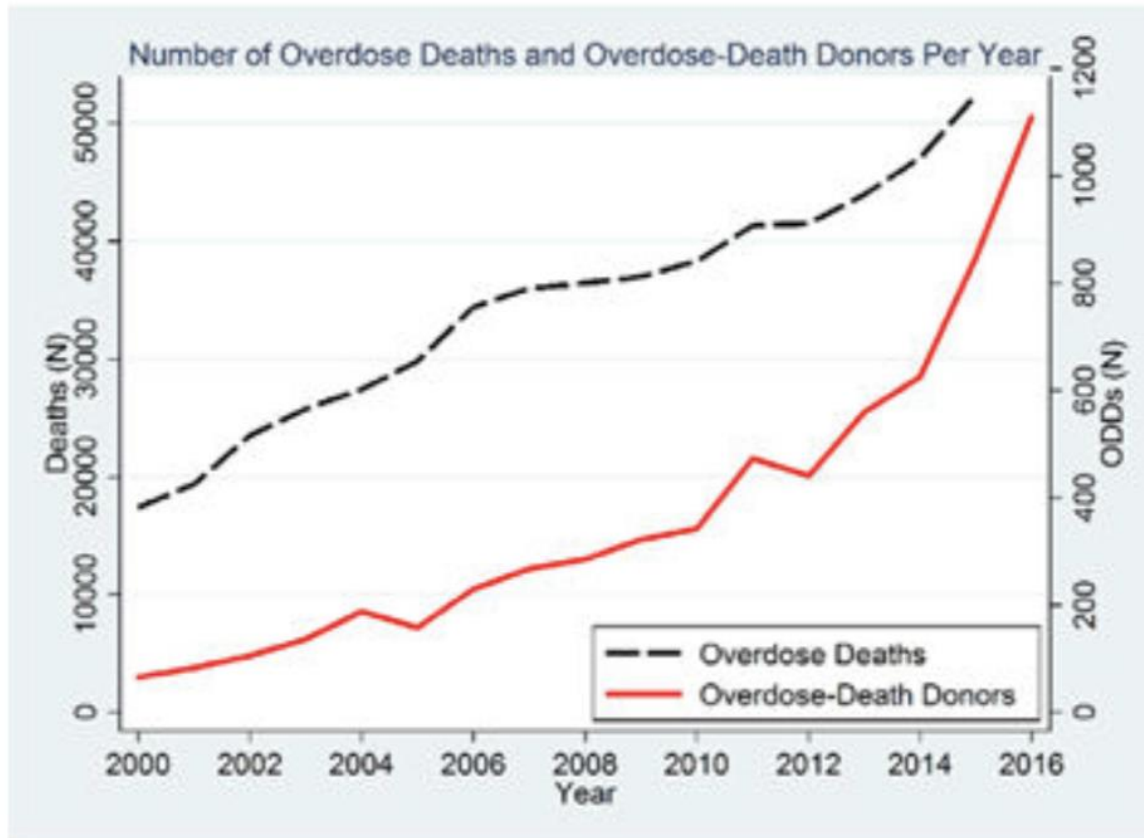
Objectives

- Opioid epidemic
- Deceased donor impact
 - PHS risk criteria
 - HCV+ donors
- Opioid use and transplant outcomes
 - Pre transplant
 - Post transplant
 - Living donors

Opioid related deaths

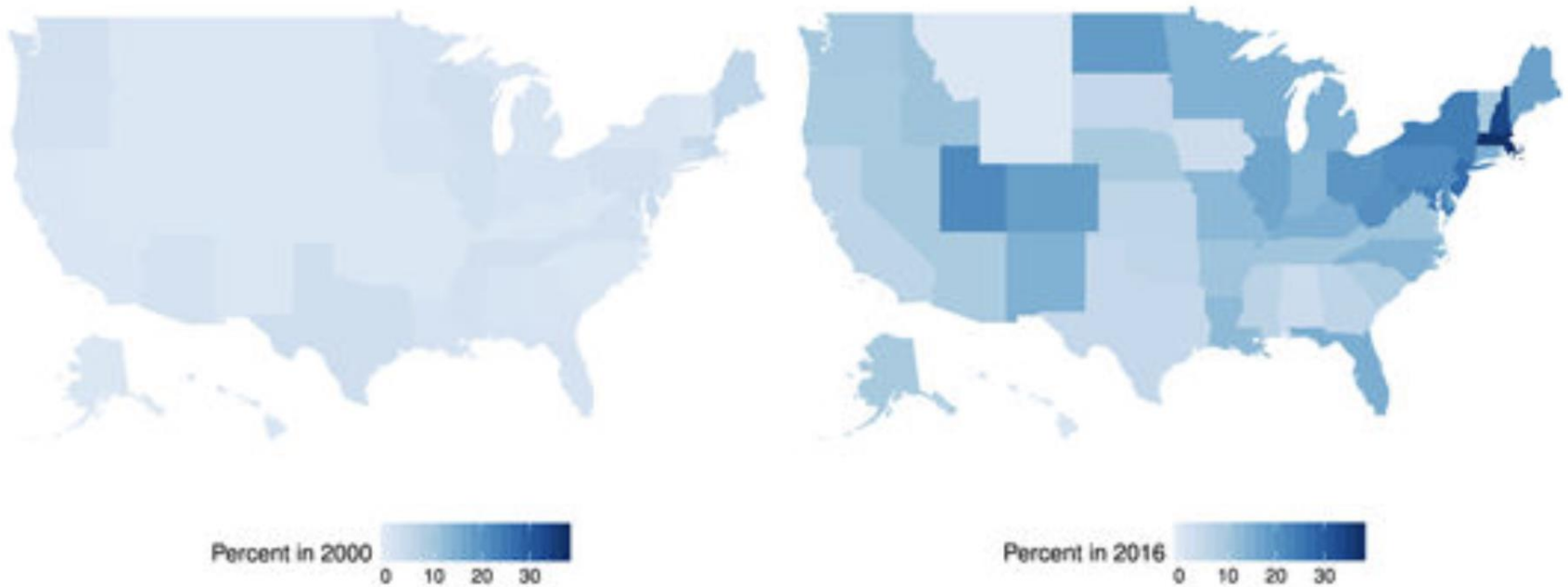


Increase in ODD



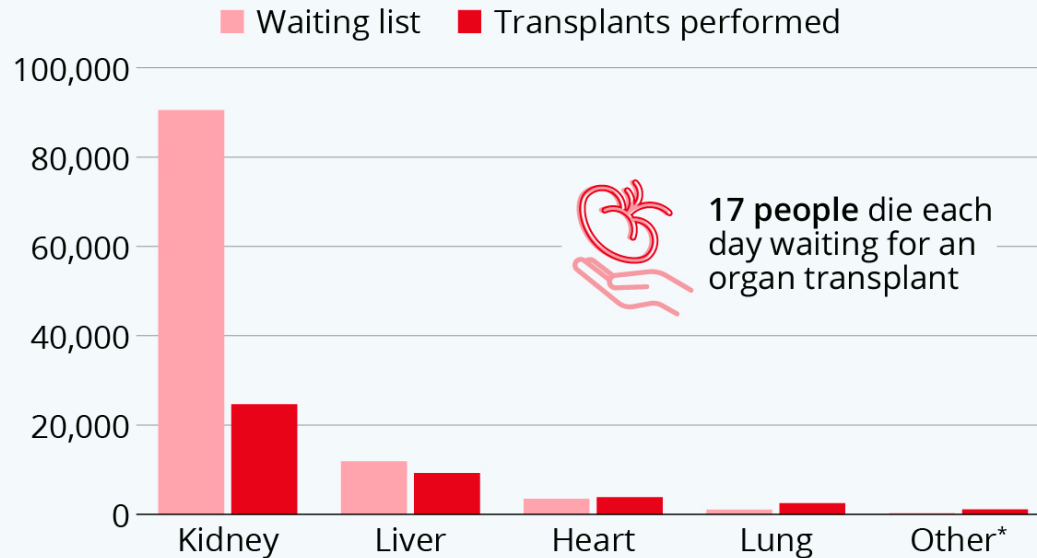
Geographic variation

(a) Percentage of ODDs in state-wide donor pool



The Organ Shortage Crisis in the U.S.

Number of patients on the waiting list versus patients that have received transplants in 2021, by organ



* Such as face, hands, and abdominal wall.

Source: Health Resources and Services Administration (HRSA)




statista

 **Piedmont**
TRANSPLANT

The New York Times

As Drug Deaths Soar, a Silver Lining for Transplant Patients

 Give this article

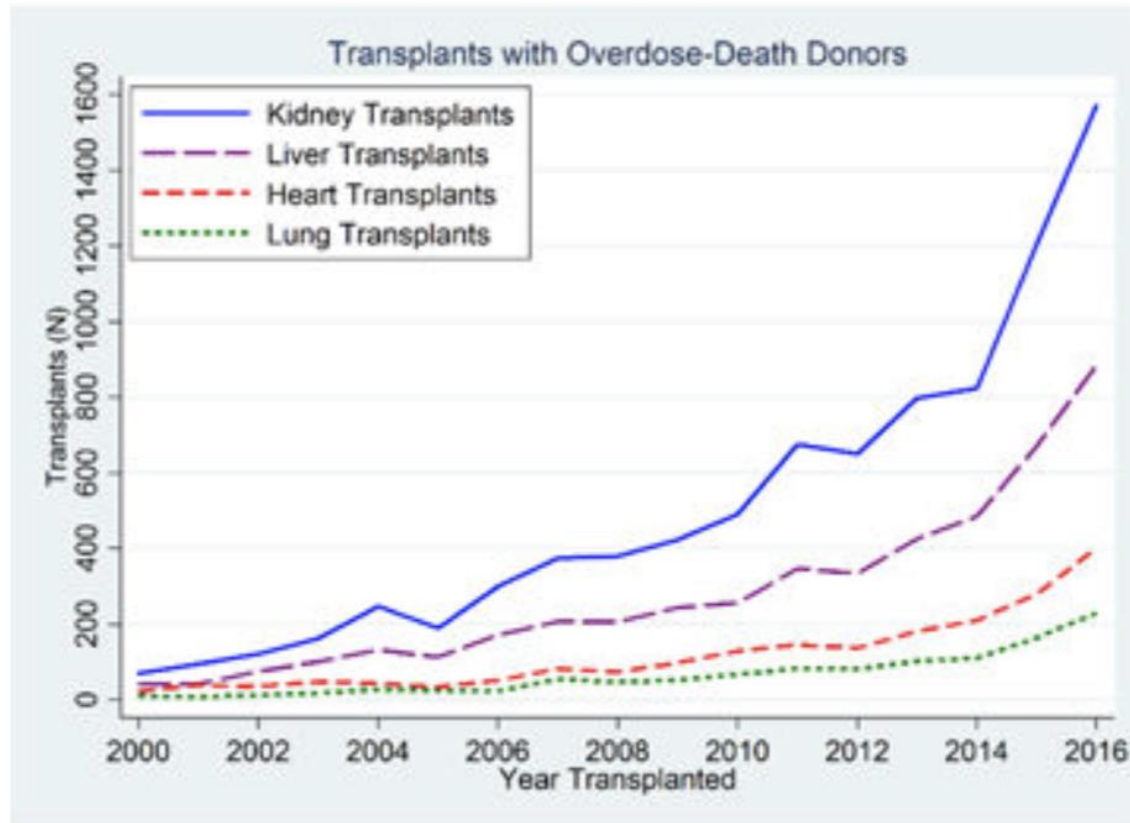


After a year on a waiting list, Rita Lottie received a liver transplant from an organ donor with hepatitis C. Alexandra Hootnick for The New York Times

OD donors

- 2010 to 2016: ODD increased by 277%
- Young donors (18-34) increased by 43%, and 66% of ODD are 21-40 yo
 - Less likely to have DM, HTN, CVD
 - Majority with KDPI <50
- ODD represented 13.5% of total adult kidney donors (2016)

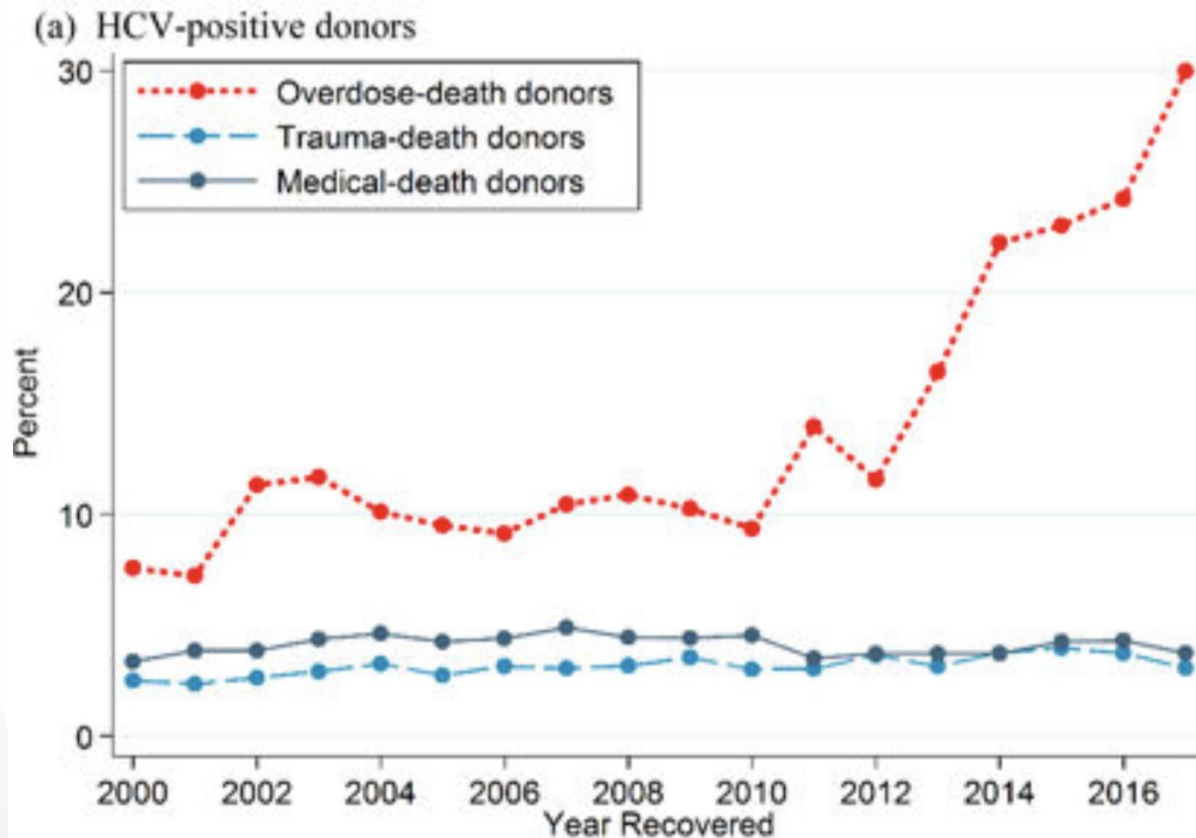
Increases in ODD by Organ Type



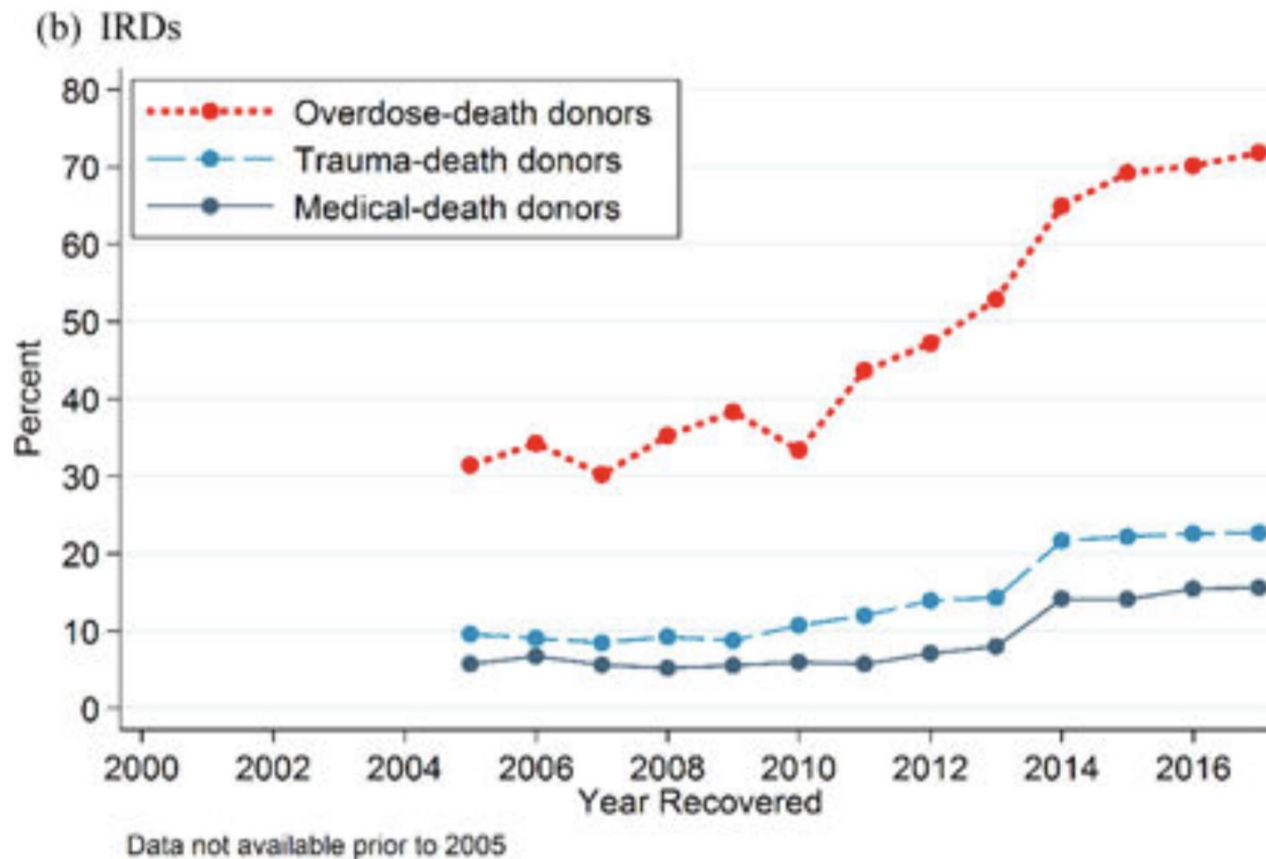
Factors impacting organ utilization

- Prevalence of HCV+
 - 18% vs 4% medical donors
- IRD designation
- Surgeon and patient perception of risk
 - Liver candidates: 41% acceptance rate
- Discard rates disproportional to organ quality

ODD and HCV serostatus



ODD and IRD



Public Health Service

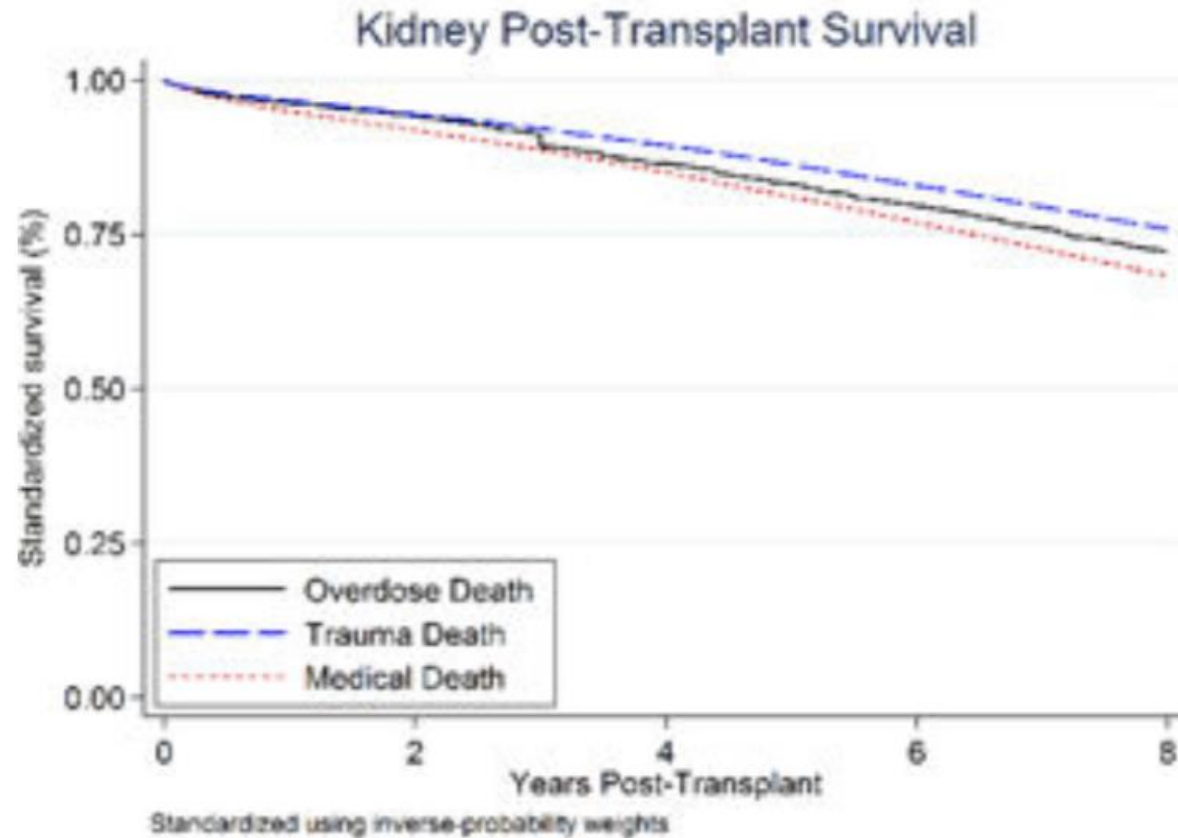
- 1994: high risk organ donor classification to reduce risk of HIV transmission
 - HIV testing by antibody testing
- 2013 CDC update addressed HBV and HCV transmission
- 2020: removed “increased risk” and reduced behavior window from 12 mo to 30d
- Advances in detection and treatment over time has reduced absolute risk

PHS risk criteria: 2020 update

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

1. 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
2. Man who has had sex with another man
3. Sex in exchange for money or drugs
4. Sex with a person who had sex in exchange for money or drugs
5. Drug injection for nonmedical reasons
6. Sex with a person who injected drugs for nonmedical reasons
7. Incarceration (confinement in jail, prison, or juvenile correction facility) for ≥ 72 consecutive hours
8. Child breastfed by a mother with HIV infection
9. Child born to a mother with HIV, HBV, or HCV infection
10. Unknown medical or social history

8 year outcome by donor type

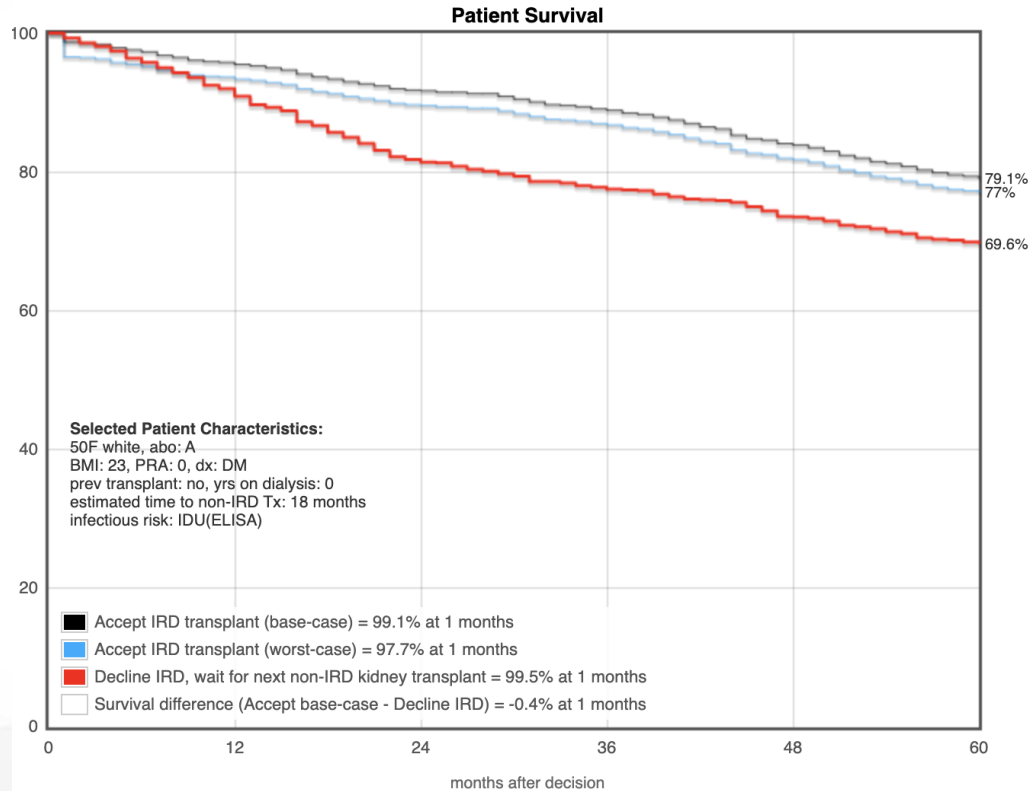


Accept vs Decline IRD

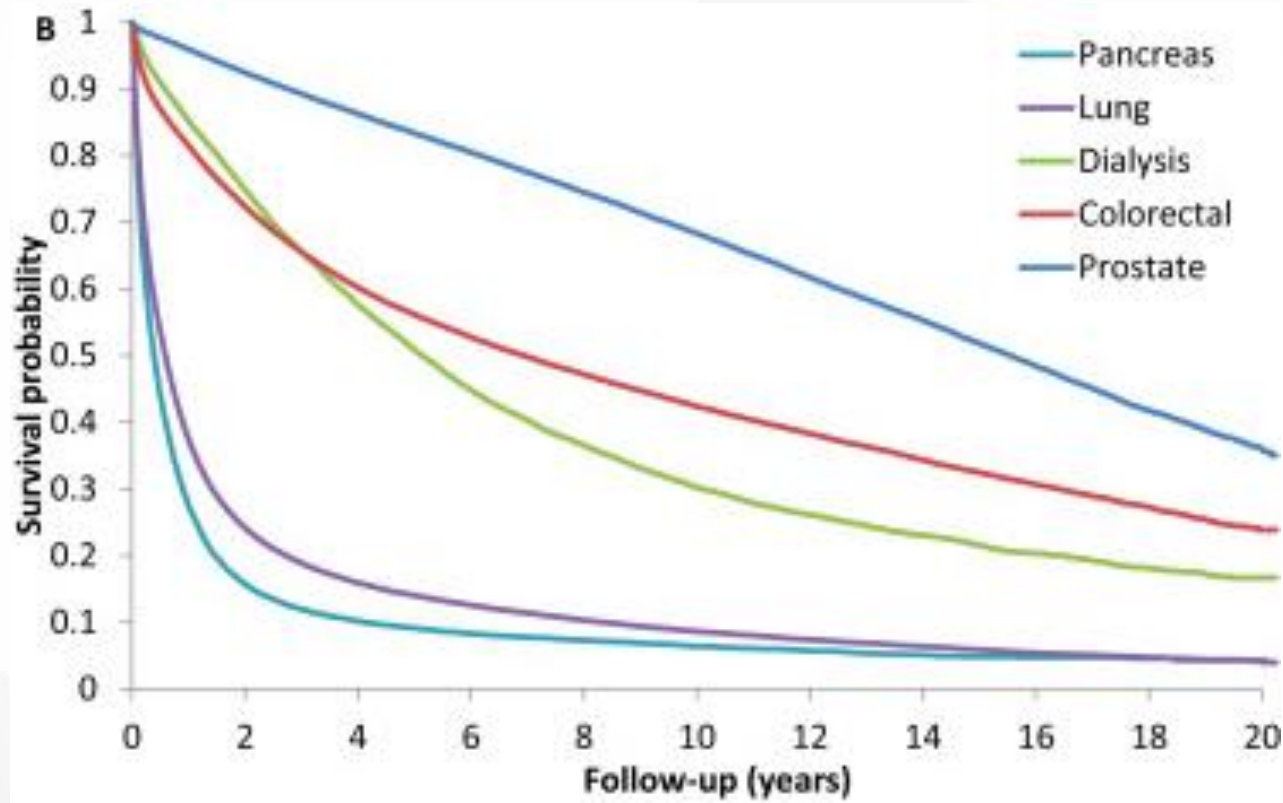
- Donor factors
 - Risk category – IVDU highest risk
- Recipient factors
 - Time on dialysis
 - Age
 - Blood type
 - Time to non-IRD offer
 - Access issues

Transplantmodels.com/ird

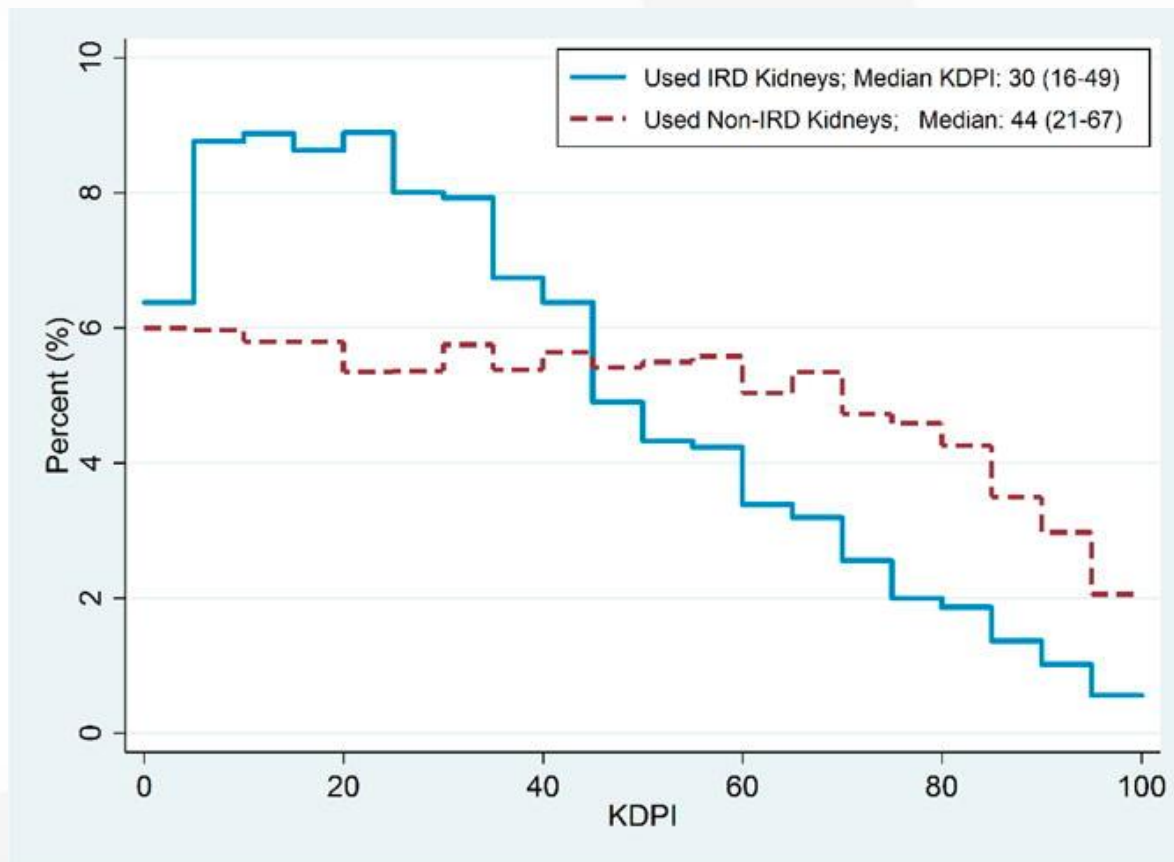
Johns Hopkins IRD Kidney Transplant Calculator



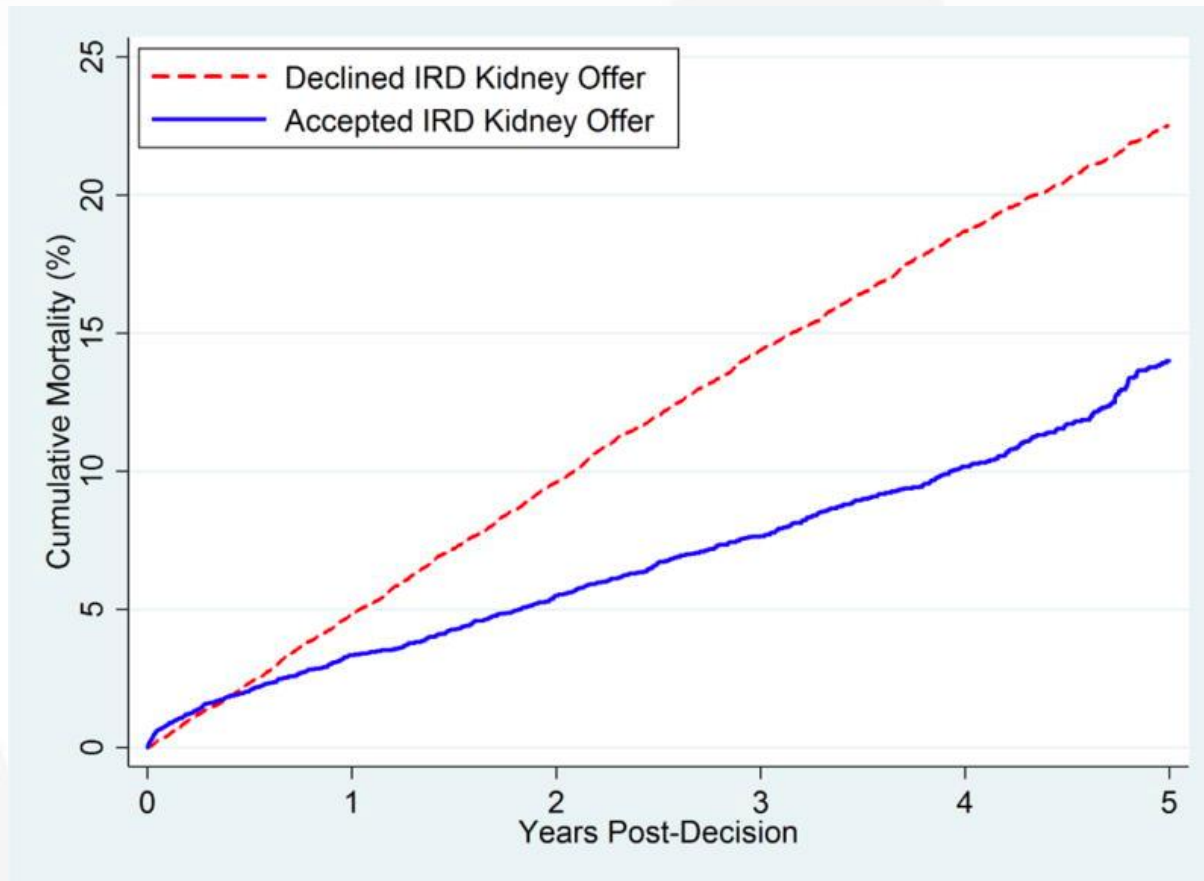
Mortality Dialysis vs Cancer



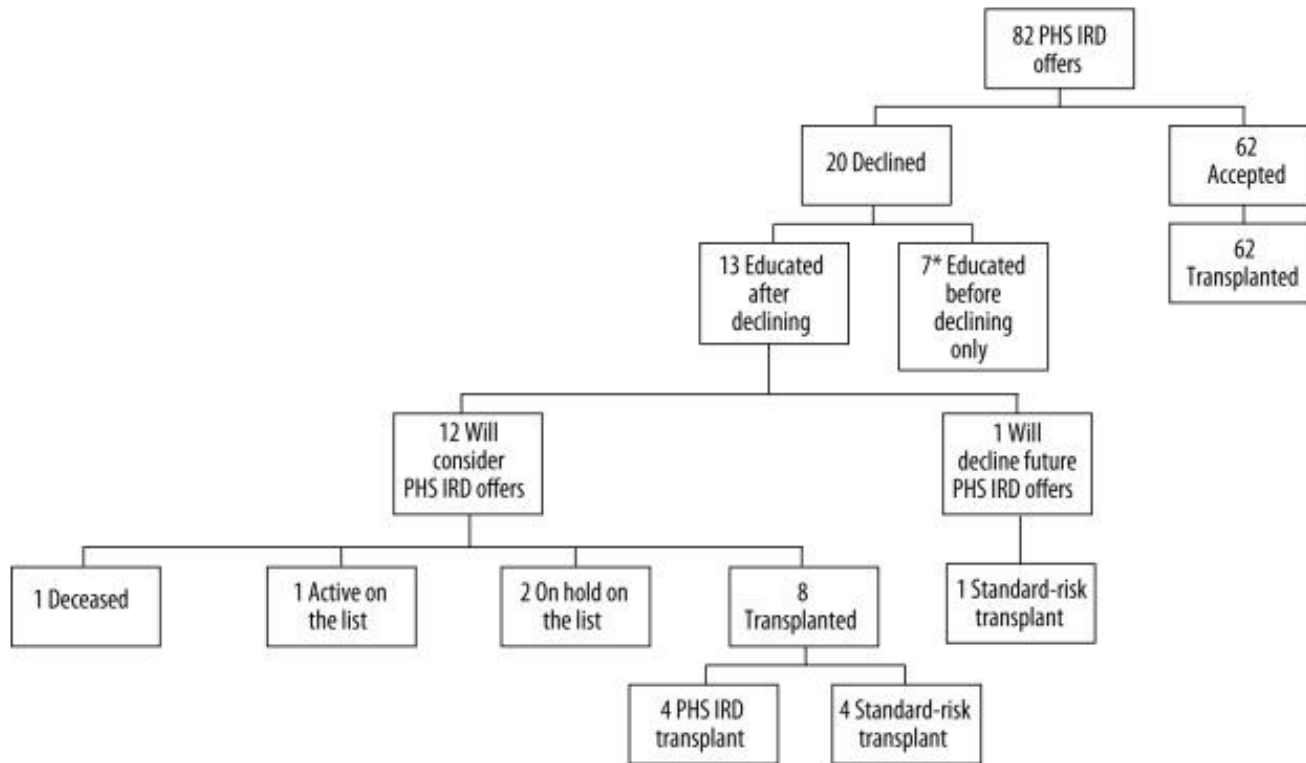
Lower KDPI of IRD kidneys



Outcomes after IRD decline



Impact of targeted education



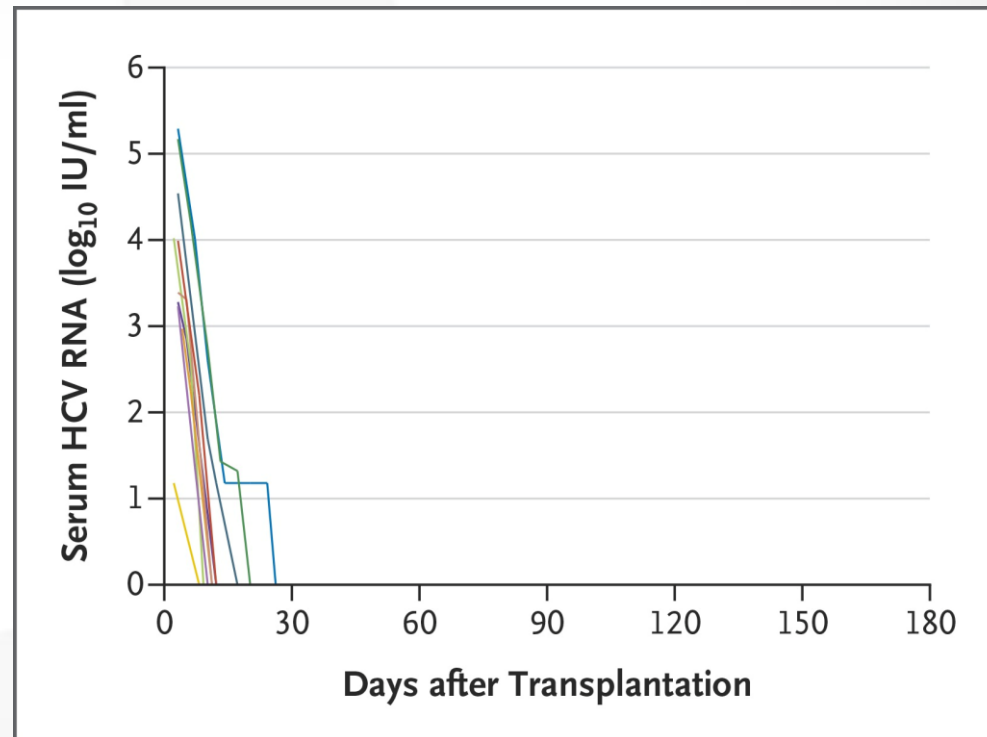
* Of those educated only prior to declining PHS IRD, 2 received PHS IRD transplants and 5 received standard-risk transplants.

Risk of viral transmission

- Window period infection depends on behavior
- HCV
 - 300 per 10,000 IVDU
 - 0.8 per 10,000 incarcerated
 - Risk of HCV infection on hemodialysis
 - DAA achieving SVR in 95%+

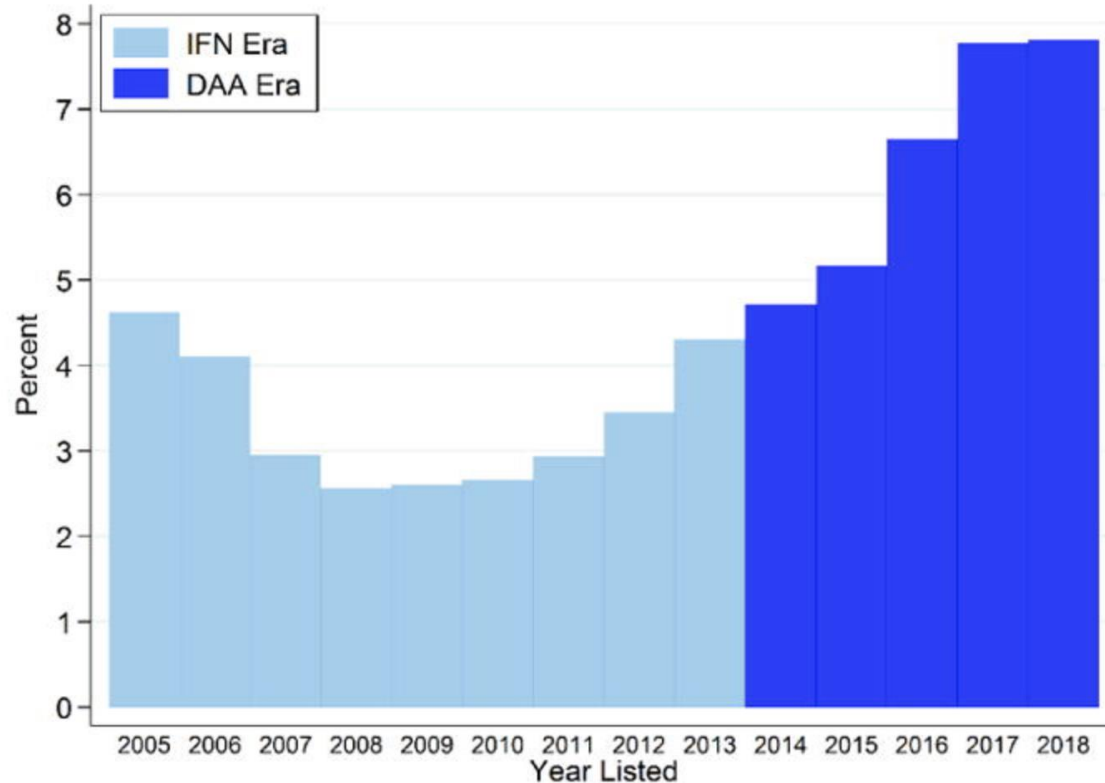
DAA, HCV + transplant: THINKER

- 10 recipients
- Median 59 yo
- Median KDPI 42
- 100% viremic POD3
- Zepatier x 12 weeks
- 100% SVR
- Median 6mo sCr 1.1

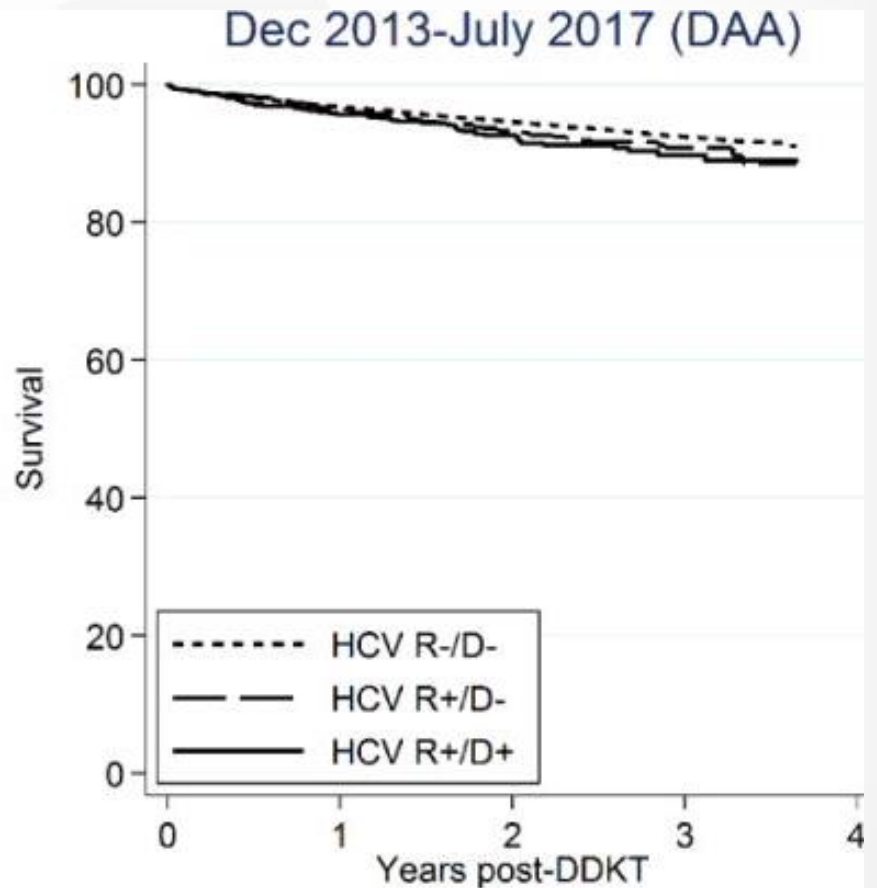
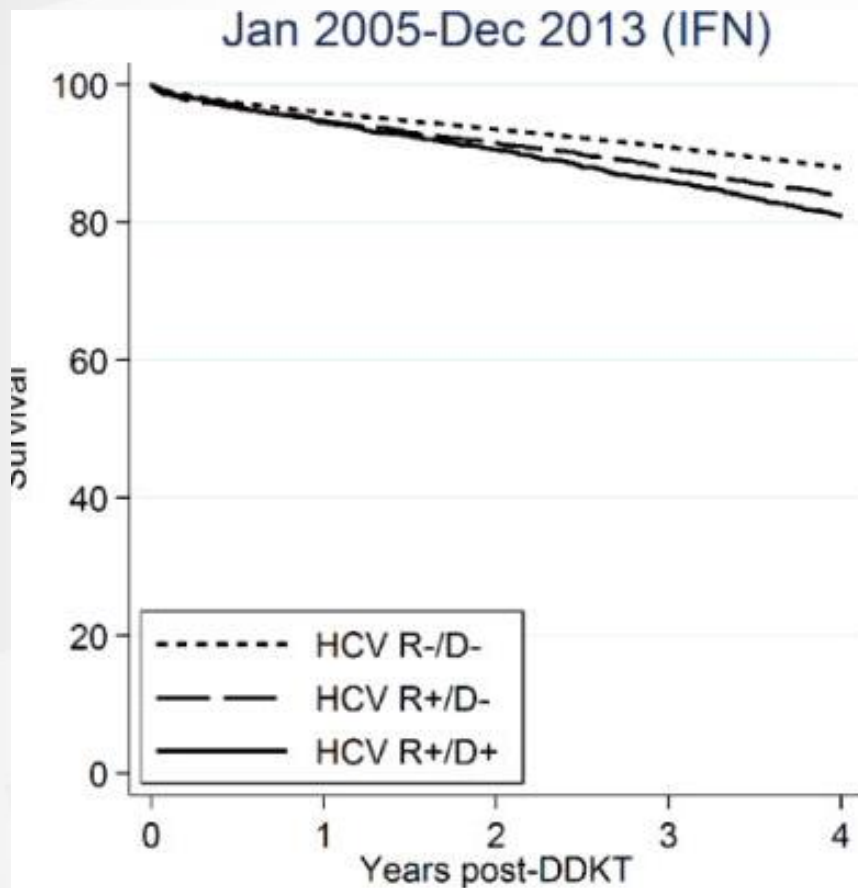


HCV+ transplants in DAA era

a) Percent of incident waitlist candidates willing to accept an HCV+ donor kidney



Survival after DD in DAA era

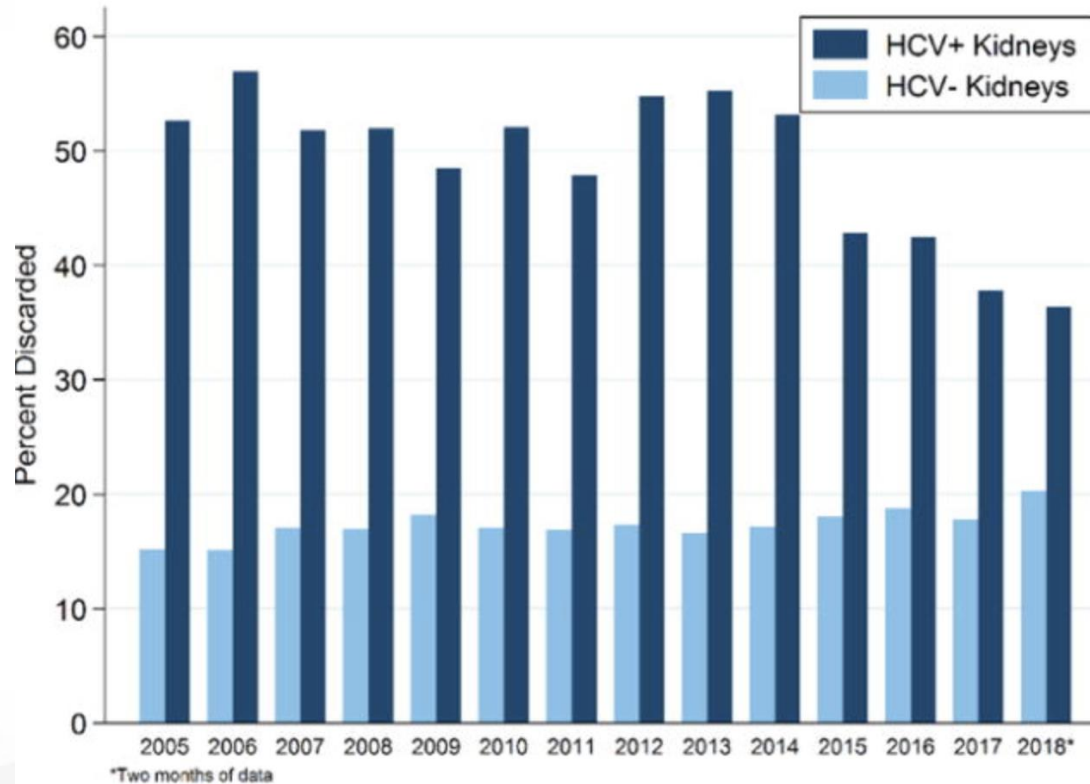


HCV+ acceptance in DAA era

- SRTR analysis of 18,936 candidates 2005-2013
- In DAA era, candidates were 2.2 times more likely to accept HCV+ kidney.
- KDPI of HCV+ donors decreased from 77 to 53, HCV- kidneys remained unchanged at 45-47.
- Discard rate HCV+ kidneys 3.7x non-HCV
- 23% of centers performed 75% of HCV+ transplants

Discard rate HCV+ donors

a) Percent of HCV+ and HCV- deceased-donor kidneys discarded



Summary: ODD and DD

- Opioid epidemic has resulted in increased drug overdose donors; particularly kidneys
- Absolute risk of accepting PHS donor lower due to advances in detection and treatment
- Targeted education can reduce ODD decline by transplant team and candidate
- ODD donors represent an important resource to bridge the transplant gap

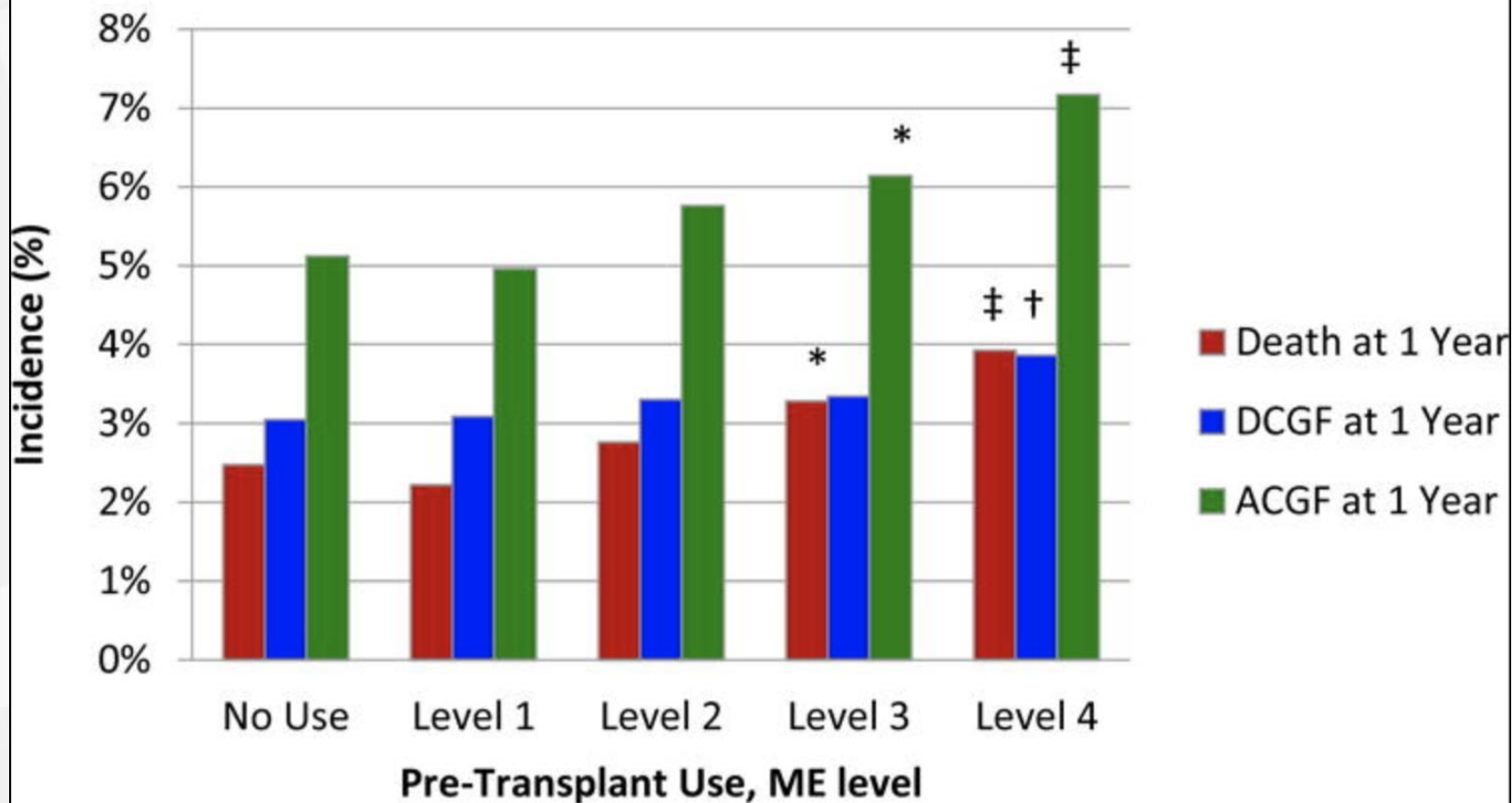
Opioids in Transplant Candidates and Recipients



Opioid use in dialysis population

- Pain etiologies: kidney (PKD), bone disease, access (steal), neuropathy, calciphylaxis
- 85% report analgesic use
- 327,344 dialysis patients
 - High dose use (>120 mg morphine equivalent/d) in 15% by 2 years on dialysis
 - High dose associated with 1.63-fold increase in mortality

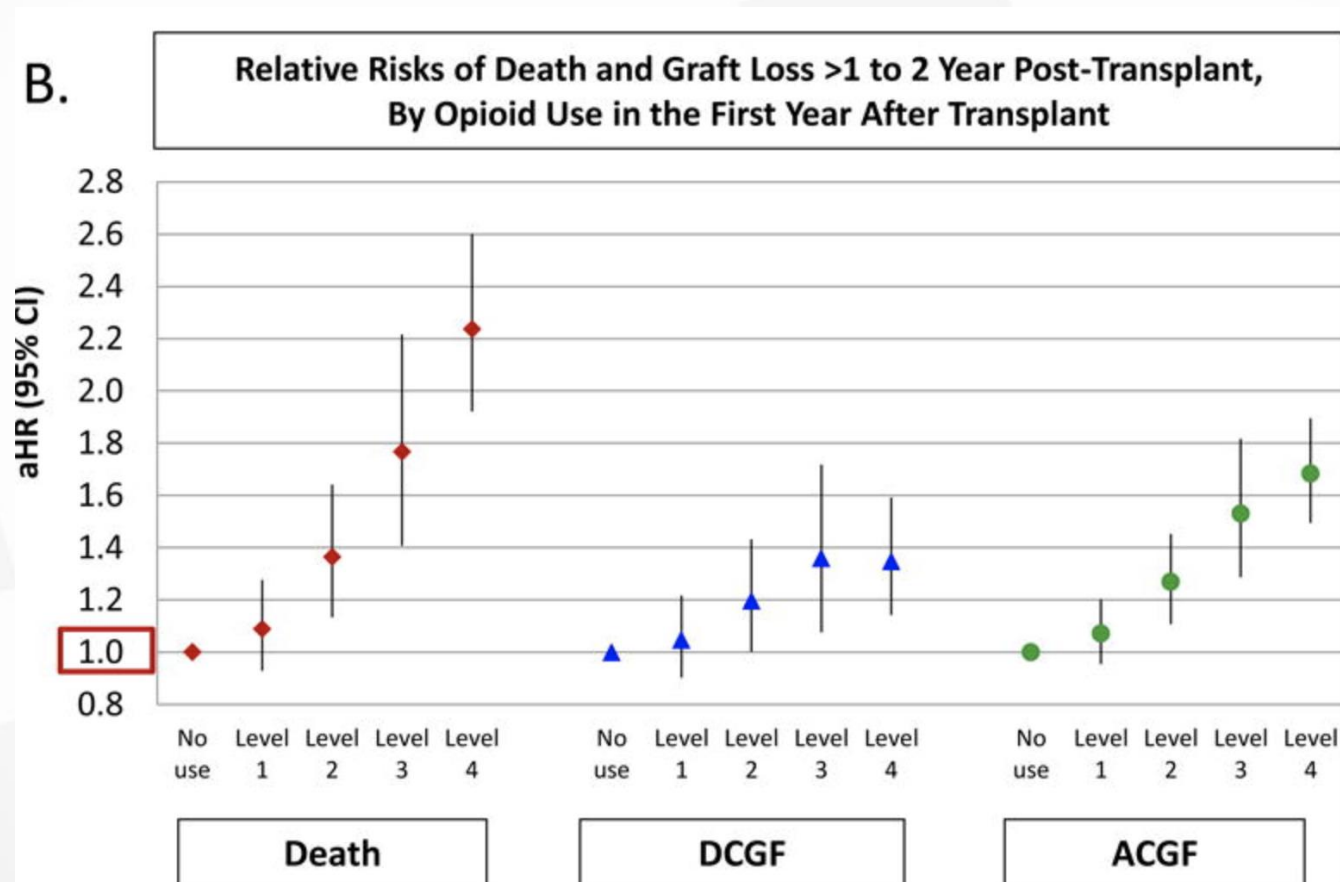
Death and Graft Loss Over the First Year Post-Transplant, By Opioid Use in the Year Before Transplant



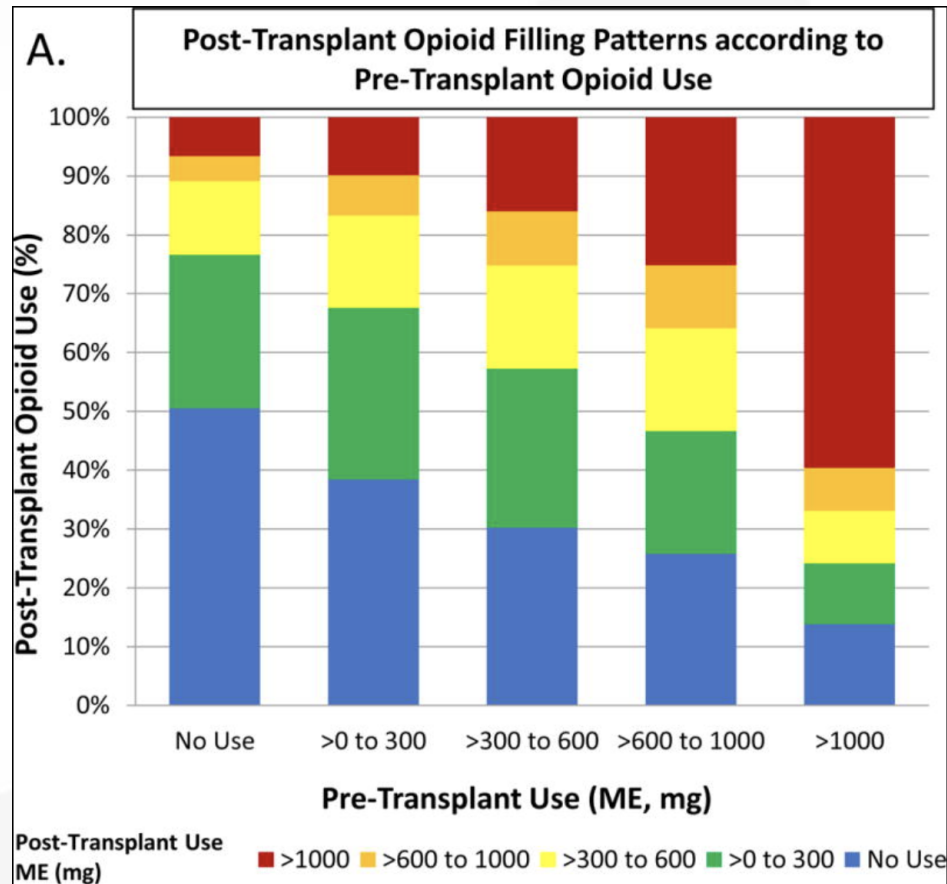
Opioid use pre transplant

- Level 1 <300 mg; level 4 >1000 mg per year
- 29% of transplant candidates filled opioid prescriptions in the year before transplant
- Pre transplant use associated with post-transplant ventricular arrhythmias, mental status changes, alcohol abuse, accidents
- Adherence to medications and follow-up

Post-txp opioids and outcomes



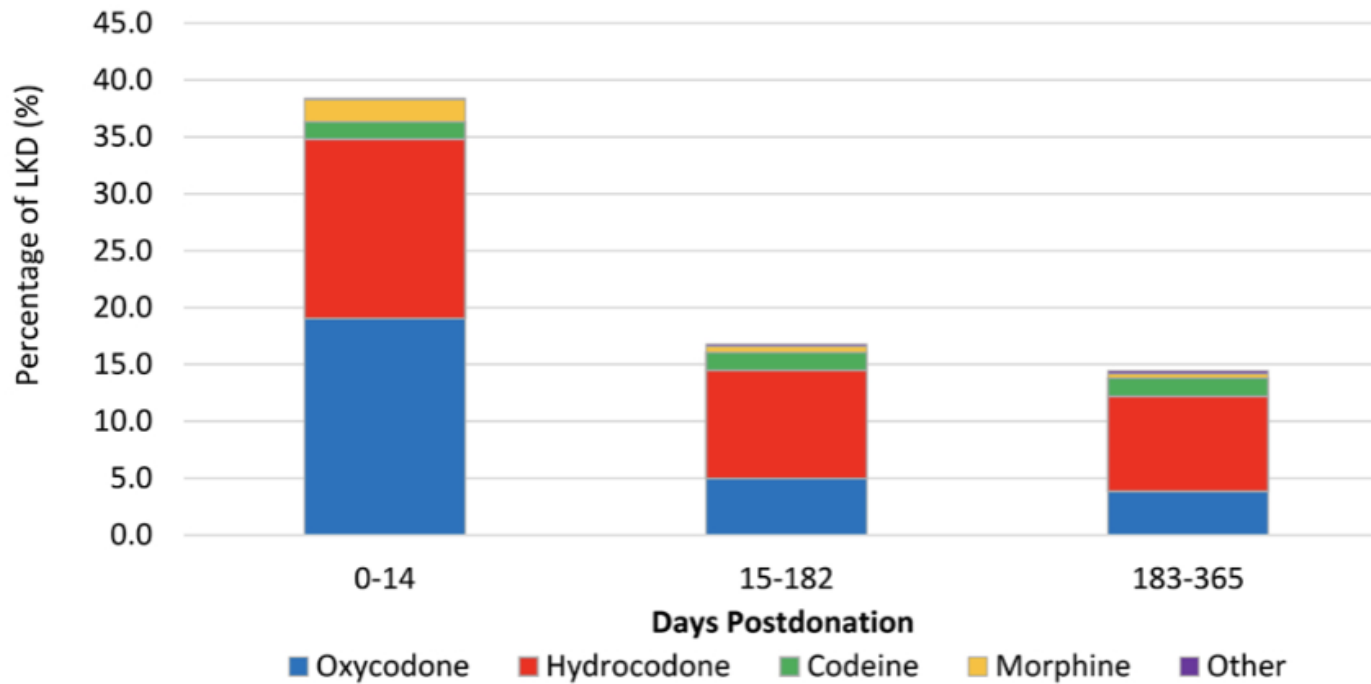
Opioid use pre and post txp



Opioid use in kidney donors

A.

Prescription Opioid Fill Patterns in First Year Postdonation,
by Class and Time Period



Summary

- Opioid use is prevalent in the dialysis population, including transplant candidates
- Pre and post-transplant opioid use is associated with mortality in the first 2 years post-transplant
- Pre transplant use is associated with post-transplant use
- Opioids are used in 15% of donors and associated with outcomes

Thank you for your attention!

