HIV Positive Organs
HIV Positive Recipients

How Did We Get Here?

Alan Taege, M.D.
Assistant Professor of Medicine
Department of Infectious Disease
HIV-positive Patients are living longer

- In the United States, a 20-year-old HIV-positive patient can now expect to live into his/her early 70s.

ART, antiretroviral therapy; PY, person years.
People ARE LIVING LONGER with HIV

Age-adjusted mortality rates and life expectancy at age 20 for people living with HIV and HIV-uninfected individuals\textsuperscript{a,b} (Kaiser Permanente, 1996-2011)

- In a large cohort study, age-adjusted mortality rates decreased while life expectancy at age 20 rose for people living with HIV
  - In 1996-1997, 20-year-olds living with HIV had a life expectancy of 19.1 years
  - In 2008, life expectancy for a 20-year-old living with HIV more than doubled to 47.1 years
  - In 2011, life expectancy in a 20-year-old living with HIV increased to 53.1 years

\textsuperscript{a}Kaiser Permanente cohort study of 24,768 people living with HIV and 257,600 HIV-uninfected individuals to estimate expected years of life remaining (“life expectancy”) at age 20.

\textsuperscript{b}Age-adjusted mortality rates for HIV-uninfected individuals showed no trend over time ($P=0.43$), whereas rates decreased for people living with HIV ($P<0.001$). Change in life expectancy at age 20 for HIV-uninfected individuals was not statistically significant overall. In contrast, increases in survival for people living with HIV were observed across all gender, race/ethnicity, and HIV-transmission risk groups from 1996–2007 to 2008–2011 ($P<0.001$ for all increases).

Life Expectancy Among Treated HIV Patients in the US and Canada (2000-2007)

- NA-ACCORD participants ≥20 years of age (n=22,937)
  - Treatment-naïve before initiating ART
- Crude mortality rate (2000-2007)
  - 19.8 per 1000 person-years (n=1622 deaths)
- Life expectancy at 20 years of age
  - Increased from 36.1 to 51.4 years from 2000-2002 to 2006-2007
- A 20-year-old HIV-positive person is expected to live into their early 70s

NA-ACCORD: North American AIDS Cohort Collaboration on Research and Design.
D:A:D Study (1999-2011):
Underlying Causes of Death in HIV Patients

A total of 3909 deaths over 308,719 person-years of follow-up.

Deaths (%)
- AIDS Related: 29%
- Non-AIDS Cancers: 15%
- Liver Related: 13%
- CVD Related: 11%
- Bacterial Infection: 7%
- Renal: 1%
- Lactic Acidosis/Pancreatitis: <1.0%

Overall Death Rate
12.7 per 1000 person-years
(95% CI 12.3-13.1)

Per-Person Survival Gains

- Cancer chemotherapy
- CABG
- BMT for lymphoma
- HAART for HIV

Months

Walensky et al, CROI 2005, Abs 143
Should solid organ transplantation be considered in HIV+ patients in this era of HAART?

Current considerations of efficacy in organ allocation can be summarized as follows. We have substantial evidence of diminished survival among HCV-positive patients, patients with diabetes, black patients, and patients requiring retransplantation, yet we do not prevent transplantation in these groups. In contrast, we have no evidence of poorer survival among otherwise healthy HIV-positive patients who are receiving antiretroviral therapy, yet both overt and covert barriers to transplantation remain. This contra-

“On ethical grounds alone, there is no justification for providing organs to these groups of patients but not to patients infected with HIV.”

• Surgeons have the same ethical obligations to render care to HIV-positive patients as they have to care for other patients.

• Surgeons should utilize the highest standards of infection control, involving the most effective known sterile barriers, universal precautions, and scientifically accepted infection control practices. This practice should extend to all sites where surgical care is rendered and to all patients who receive surgical care.

• Postexposure prophylaxis with antiretroviral chemotherapy is recommended.
Survival in HIV-positive transplant recipients compared with transplant candidates and with HIV-negative controls (HIVTR)

Conclusion: Kidney transplantation should be standard of care for well managed HIV-positive patients. Liver transplant in candidates with high MELD confers survival benefit; transplant is a viable option in selected candidates. The increased mortality risk compared with HIV-negative recipients was modest.
Motivation/Significance

• Prevalence of end stage kidney and liver disease in HIV+ increasing (Lucas CID 2014; Smith Lancet 2014)

• HIV+ candidates have higher waitlist mortality compared to HIV- (Trullas AIDS 2011, Ragni Liver Transpl 2005)

• Excellent outcomes with HIV- organs for HIV recipients (HIV D-/R+) (Roland AIDS 2016, Locke JASN 2015; Locke Transplantation 2016)
The Problem

• Shortage of organs
• Many die while waiting on transplant list
Tenets of Getting Things Done

1. Execution is a discipline
2. Execution is the major job of leadership
3. Execution must be core element of an organization’s culture
“We believe that, in the modern era of HIV care, a universal ban on transplants from HIV-infected donors may no longer be justified.”

Joint statement from four groups involved with transplantation issues

Donation dilemma
Should the ban on HIV-positive organ transplants be lifted?

Angela Townsend | Plain Dealer Reporter

As of Aug. 29, nearly 112,000 people in the United States are on the waiting list for an organ
Estimating the Available Pool

- Estimate - conservative
- Nationwide Inpatient Sample (NIS), HIV Research Network, UNOS.
- 20 donors discarded annually – unexpectedly HIV +
- Estimated 500-600 potential HIVDD (481-652)
  - ~63 kidney only
  - ~221 liver only
  - ~250 multiple organ donors
- Potential to help 1000 patients!
- Untapped potential - - - - shorten waiting list for HIV and other patients
- Feasible?
- Has it been done?

Am J Transp 2011
Roadblocks

- National Organ Transplant Act 1984 section 273 forbids: “shall adopt and use standards of quality for the acquisition and transportation of donated organs, including standards for preventing the acquisition of organs that are infected with the etiologic agent for acquired immune deficiency syndrome” An absolute contraindication to donation.

- OPTN Final Rule – HIV infection is an absolute contraindication to deceased organ donation in the United States.

- Public opinion

- Centers willing to perform – harvest/transplantation?

- Should medical decision making be governed by law?
H.R. 710 (110th): Charlie W. Norwood Living Organ Donation Act

110th Congress, 2007-2009

An Act to amend the National Organ Transplant Act to provide that criminal penalties do not apply to human organ paired donation, and for other purposes.

Introduced: Jan 29, 2007


Status: 
Broadening Pool of Donors …for HIV infected recipients

• HIV infected donors?
  • Use of HIV infected donors was illegal
  • Estimated 500 additional donors/yr, 1000 kidneys

• Renal transplantation: HIV+ donors and HIV+ recipients
  • Muller, et al. NEJM 2010
  • South Africa!
  • Caveat: low rates of ARV resistance
S Africa: HIV D+/R+ Kidney Transplant

Muller et al, NEJM 2010: 362: 2336-7
From Cape Town to the U.S.

- NEJM letter: 4 kidney recipients from HIV+ donors in 2008
- Great deal of debate in U.S. transplant community:
  - Benefits: increasing donor pool for everyone
  - Risks: super-infection, HIV + cadaveric donors risk of developing renal disease, surgical risk
Background and details

- South Africa
- Resource limited
- Limited ability to use dialysis
- Renal failure – often sent home to die
- Four renal transplants 2008:
  - HIV + organs to HIV + patients

NEJM 362;24:2336-7
HIV Positive to Positive Kidney Transplants 3-5 Years

Figure 1. Graft and Patient Survival among 27 Human Immunodeficiency Virus (HIV)–Positive Patients Who Received Kidney Transplants from HIV-Positive Donors.

N = 27
November 2013
HIV Organ Policy Equity (HOPE) Act
Legalized positive to positive donation in research setting

Protocol and Pilot Study
January 2016, Pilot protocol (NCT02602262)

March 2016, First in US HIV D+/R+ kidney and liver transplants

Courtesy C. Durand
HOPE IN ACTION

HIV-to-HIV Transplants Save Lives

Lives Saved by Transplant

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11 Organ Donor Heroes

18 Transplant Center Partners

12 Organ Procurement Organizations

Visit transplantepl.org for more about HOPE
Register to be an organ donor at registerme.org

March 2017
Biologic risks

- HIV superinfection
- HIV nephropathy
- Donor derived infections
- Rejection
The Way Forward

• Tragedy does not have to end in total loss – Drug Epidemic/donation
• Stay ahead of the virus – new drugs: ART, Immunosuppression
• Understand rejection more completely; new and better approaches
• Continue innovating
• HCV+ HIV+ organ donation?
Go Boldly Where No Man Has Gone Before

Captain James Kirk
Starship Enterprise
Thus in silence in dreams' projections,
Returning, resuming, I thread my way through the hospitals;
The hurt and wounded I pacify with soothing hand,
I sit by the restless all dark night - some are so young;
Some suffer so much - I recall the experience sweet and sad...

Walt Whitman, *Leaves of Grass*, 1876