

**OPTN Ad Hoc Disease Transmission Advisory Committee  
DTAC-Pediatric Workgroup  
Meeting Summary  
July 30, 2021  
Conference Call**

**Marian Michaels, MD, MPH, Chair**

## **Introduction**

The DTAC-Pediatric Workgroup met via Citrix GoToMeeting teleconference on 07/30/2021 to discuss the following agenda items:

1. CDC Data Review
2. UNOS Research Update
3. Blood Draw Education
4. Policy Change Discussion

The following is a summary of the Workgroup's discussions.

### **1. CDC Data Review**

A CDC liaison from the Office of Blood, Organ, and Other Tissue Safety (BOOTS) presented the following data collected by the CDC to the workgroup.

#### Current practice guidelines:

- Only ~1-5% of a healthy child's total blood volume can be drawn at any one time
- Blood volume in a child >3 months of age calculated as 75 mL/kg
  - For a 10 kg child → estimated blood volume = 750 mL
    - Maximum amount that should be drawn at any time ranges from 7.5 to 37.5 mL
    - This estimate applies to an average child who will return home with time to regenerate the blood volume and lost red cells
  - Obtaining required blood for pre-transplant studies can take weeks because only limited amount of blood can be drawn at one time (per HRSA estimate, ~30-50 mL total for heart, lung, liver, kidney)
  - Blood drawn from small patients is typically minimized
  - Drawing this blood hours before a major surgery is especially concerning
  - Have to consider high prevalence of anemia in these populations (e.g., ESRD, ESLD, CF, etc.)

#### HIV, HBV, and HCV Incidence in children:

- Rates of perinatal infection with hepatitis B are quite small
  - N=17 in 2019 in the United States; likely an underestimate
- More than 90% of 2-year-olds and adolescents have been vaccinated against hepatitis B in the United States
- Perinatal exposure is the most common mode of transmission for hepatitis C in children
- For very young children → no reason from a viral hepatitis standpoint to require pre-transplant testing for hepatitis B and hepatitis C "during hospital admission for transplant but before transplant" within certain age and weight limitations

- Post-transplant testing is far more important, especially for HCV
- Children <13 years: among the lowest risk group for HIV transmission in the United States
  - Most infections are perinatally acquired
- With perinatal testing + pediatric follow-up of exposed children (i.e., one of the parents is known to have HIV), **it's unlikely a very substantial number are missed** and would first be diagnosed at the time a deceased child's organs are collected or that a child with HIV would present with a need for an organ transplant for whom HIV status is not already known,
- The likelihood is **extraordinarily low that a child would acquire HIV** between the time they are worked up and listed for organ transplant until the time when transplantation takes place
- Seroconversions per se are not tracked, but after perinatal transmission has been excluded, incidence of all 3 should be exceedingly low in pre-adolescents/children not engaging in risky behavior
- For HIV, **exceedingly rare** non-perinatal routes of transmission include
  - Through pre-mastication of food by an infected person
  - Receipt of blood product where an infected unit was missed

Data CDC proposed for an OPTN research request to assess risk:

- Weight at time of transplant: <2 years, 2-5 years, 6-10 years
  - Brief review → weights for many pediatric patients with CKD are less than age-matched controls but still within "normal" range for age
  - Could use weight (as it relates to blood volume calculation) as a cut-off for an exception to the PHS screening policy
  - Could consider using age as a cutoff, depending on data
- Proportion of facilities that are standalone children's hospitals vs. combined with adult hospitals
  - With volumes of pediatric transplants (by age brackets/weight) at each
  - To assess how many facilities/transplants might not have access to lower volume testing platforms

Summary of discussion:

The workgroup discussed whether or not there is a necessity of repeating infectious disease testing for HIV, HBV, and HCV at time of transplant for young children. The workgroup unanimously agreed that there is still a need for baseline testing to occur prior to transplant, as there is still risk for perinatal transmission. The workgroup agreed that the current lack of flexibility in policy for the timing of pre-transplant HIV, HBV, and HCV testing is not warranted for young pediatric candidates.

Next steps:

The CDC-BOOTS group is attempting to obtain a further breakdown on risk for acquiring HIV, HBV, and HCV by age.

## **2. UNOS Research Update**

UNOS Research staff presented on the following data requests from the June 22, 2021 workgroup meeting.

OPTN data was not available for:

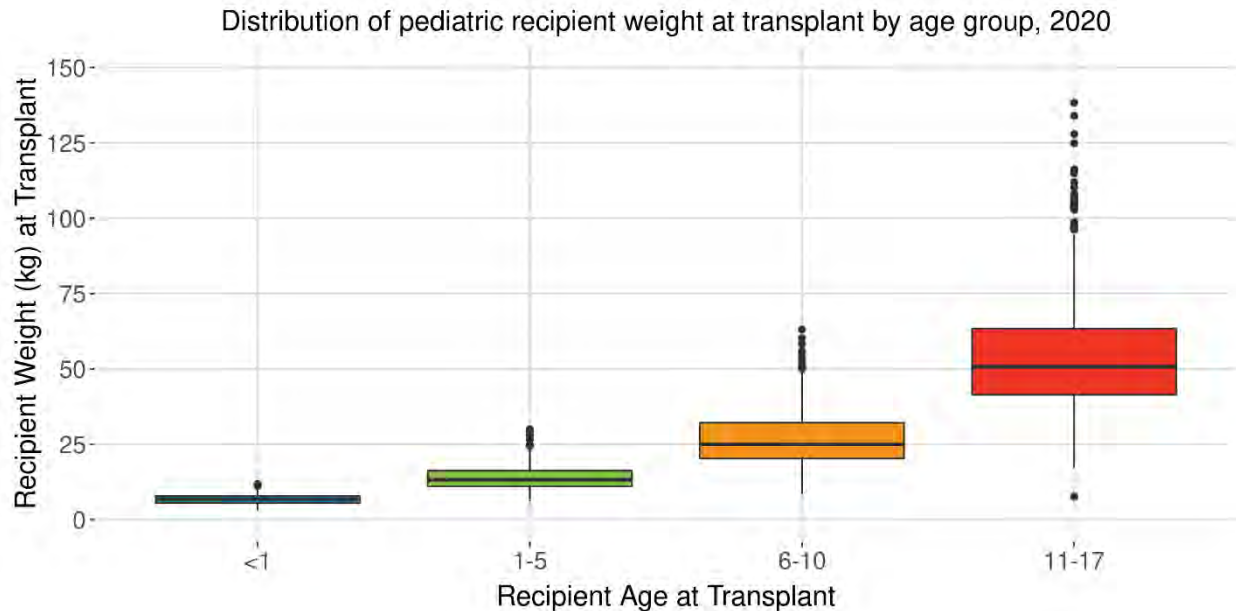
- The volume of blood drawn for testing
- The timing between the most recent HIV/HBV/HCV test and transplant
- The false positive rates of HIV/HBV/HCV required testing in pediatric or low risk populations

False positive rate literature review:

- HIV antibody false positive rate was 0.06-0.11% and NAT false positive rate is 0-0.30%<sup>1</sup>
- HBV surface antigen (HBsAg) estimated specificity is 99.55-99.99% for the Genetic Systems EIA 3.0, Abbott Alinity s, and Abbott PRSIM testing platforms<sup>2</sup>
- HBV core antibody (total anti-HBc) had high rates of false positives prior to 2002, but since 2002 the false positive rate is <2/1000 even in low risk individuals<sup>3</sup>
- HCV antibody (anti-HCV) had a false positive rate of 48.9% for all false positive tests in the NHANES 2007-2012 cohort, which is a nationally representative sample of the US non-institutionalized civilian population<sup>4</sup>
- “Among immunocompetent populations with anti-HCV prevalences <10% (e.g., volunteer blood donors, active duty and retired military personnel, persons in the general population, health-care workers, or clients attending sexually transmitted disease [STD] clinics), **the proportion of false-positive results with HCV EIA 2.0 or HCV Version 3.0 ELISA averages approximately 35% (range: 15%–60%)** (4–11; CDC, unpublished data, 2002).”<sup>5</sup>

Distribution of pediatric weight at transplant by age group

Research staff also presented the following figures.



<sup>1</sup> Durand et al. (2018). Organs from deceased donors with false-positive HIV screening tests: An unexpected benefit of the HOPE act. *AJT*. <https://pubmed.ncbi.nlm.nih.gov/29947471/>

<sup>2</sup> <https://www.fda.gov/media/73636/download>, <https://www.fda.gov/media/128015/download>, <https://www.fda.gov/media/149417/download>

<sup>3</sup> Gish et al. (2020). Hepatitis B Core Antibody: Role in Clinical Practice in 2020. *Current Hepatology Reports*. <https://link.springer.com/article/10.1007/s11901-020-00522-0> (citing Abbott Laboratories)

<sup>4</sup> Moorman et al. (2017). Prevalence of false-positive hepatitis C antibody results, National Health and Nutrition Examination Study (NHANES) 2007–2012. *J Clin Virol*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5675134/>

<sup>5</sup> CDC MMWR, February 2003 <https://stacks.cdc.gov/view/cdc/6831>

Age Group	N	Min	25th Percentile	Median	75th Percentile	Max
<1	280	3.1	5.6	6.9	7.9	11.9
1-5	475	6.2	11.1	13.3	16.3	30.0
6-10	274	8.6	20.3	25.0	32.2	63.1
11-17	730	7.7	41.5	50.8	63.4	138.3

### 3. Blood Draw Education

The workgroup chair discussed the following issue with the committee and worked with the committee to develop the educational statement below.

#### Issue:

- The risk of overdrawing blood volume for testing directly prior to transplant is greater for infants and small children than it is for other candidates;
- The risk of being positive for HIV, HBV and HCV prior to transplant or having disease transmission with this population is lower than it is with other candidates.
- While the risk is not zero and pre-transplant testing is still needed, the current timing requirement of testing may not be necessary or appropriate.

#### Suggested educational element:

- The OPTN DTAC and Pediatric Committees recommend a change of policy to avoid unnecessary repeat blood draws for children.
- Specifically, children under a certain age/weight range should be given a longer window period for getting the HIV, HBV, HCV pre-transplant testing
  - Testing should be repeated if not within 3 (or 6?) months of transplant
- For transparency and community inclusion, this potential policy change will be submitted for public comment and then to the OPTN Board for approval.
- In the meantime, the OPTN Committees recommend limiting blood volume draws for children to less than X% of the child's weight, along with consideration of other relevant factors such whether the child is anemic in ensuring patient safety for pediatric candidates to avoid unnecessary blood draws in this population

#### Next steps:

UNOS staff will work on the method to disseminate this information.

### 4. Policy Change Discussion

The workgroup chair opened the group to discussion on whether or not a policy change was warranted based on all of the presented information.

#### Summary of discussion:

The workgroup agreed that the data on the low incidence of disease, low incidence of exposures, and high incidence of false positive testing in a low risk/pediatric population supports changing the current policy requirement to have testing occur at the time of admission for transplant. The workgroup discussed what an appropriate time period would be to require retesting, and agreed that 3-6 months is likely not necessary based on the low incidence and low risk group. The workgroup also agreed that 5 years may be too long due to the fairly substantial number of blood transfusions some of these patients receive, which while small in risk is still an opportunity for additional transmission. The workgroup recommended looking at the time pediatric patients spend on the waiting list, as if only a small number

wait over a year that may be a reasonable timeframe. A workgroup member posed that a shorter timeframe for testing may most impact pediatric kidney patients, but another countered that while dialysis transmissions are now very low there is still a risk of hepatitis transmission through dialysis. One workgroup member also posed that a timeframe may not be necessary if most patients are transplanted fairly quickly.

Workgroup members discussed what an appropriate age group for this policy change was. Workgroup members were divided between 10 and 12, as the American Academy of pediatrics defines children as 10 or under, and the OPTN PELD score goes up to 12 years old.

Workgroup members did express concerns about the risks for disease transmission through transplantation, and agreed that the proposed post-transplant testing timeframe was still necessary and appropriate.

Next steps:

The workgroup will meet again to discuss potential policy changes.

**Upcoming Meeting**

- TBD

## Attendance

- **Workgroup Members**
  - Emily Perito
  - Evelyn Hsu
  - Lara Danziger-Isakov
  - Marian Michaels
  - Rachel Engen
- **HRSA Representatives**
  - Jim Bowman
  - Marilyn Levi
  - Raelene Skerda
- **CDC Staff**
  - Rebecca Free
  - Ian Kracalik
  - Pallavi Annambhotla
  - Sridhar Basavaraju
- **UNOS Staff**
  - Abby Fox
  - Courtney Jett
  - Katrina Gauntt
  - Leah Slife
  - Rebecca Brookman
  - Sarah Booker
  - Susan Tlusty