

**OPTN Kidney Committee
Biopsy Best Practices Workgroup
Meeting Summary
August 3, 2021
Conference Call**

Andrew Weiss, MD, Chair

Introduction

The Biopsy Best Practices Workgroup (the Workgroup) met via teleconference on 08/03/2021 to discuss the following agenda items:

1. Welcome and Updates
2. Review Project Timeline
3. Data Standards Checklist: Standardized Biopsy Report

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

1. Welcome and Updates

The Workgroup was informed of OPTN Executive and Policy Oversight Committees' approval of both Workgroup projects.

Summary of Discussion:

The Workgroup had no questions or comments.

2. Review Project Timeline

The Workgroup reviewed the project scope, goals, and timeline leading up to public comment.

Summary of discussion:

The Workgroup had no questions or comments.

3. Data Standards Checklist: Standardized Biopsy Report

The Workgroup applied the OPTN Data Advisory Committee's data standards checklist to the standardized biopsy report, assessing the report and the proposed elements for relevancy, purpose, and reliability.

Data Summary:

Data Standards – Definition Questions:

- Is there an industry standard for this definition?
- What are the acceptable forms of documentation?
- What is the appropriate timeframe for the data element?
- What are the acceptable responses or response range for this data element? If a category response, can each response be mutually exclusive?
- If unknown values are acceptable responses, is there adequate instruction on when those values are appropriate?
- What unit of measurement?

- Is this definition suitable for the variety of users providing the data (clinical vs. non-clinical)?

Summary of discussion – Relevancy and Purpose Questions:

The Chair remarked that the definitions for biopsy, biopsy type, and tissue preparation technique are straightforward and meet the industry standard.

The Workgroup achieved consensus that the following definitions for biopsy, biopsy type, and tissue preparation technique are effective, meet industry standard, and are suitable for a variety of users. The Workgroup also agreed that the response options are mutually exclusive and acceptable.

- Biopsy – the process of removing tissue from patients for diagnostic examination
- Biopsy Type – the method by which tissue is removed from the patient for diagnostic examination
- Tissue Preparation Technique – the method by which biopsy material is prepared for histologic examination

A Workgroup member noted that the definitions provided by the renal pathologist subject matter expert are based off of three published consensus statements, and are all defined in peer review publication. The Chair agreed that this would constitute industry standard. The Workgroup achieved consensus that all provided definitions are industry standard.

Staff asked the Workgroup what would constitute an acceptable source of documentation for all the elements on the form, and if that included an attached or uploaded biopsy form. The Workgroup Chair agreed that a biopsy form including these parameters uploaded by the host organ procurement organization (OPO) would be a good documentation. Another member agreed. The Workgroup achieved consensus that an attached or uploaded biopsy form would be an acceptable form of documentation.

One member remarked that post-procurement is the appropriate time frame for donor kidney biopsies. It is rare for an OPO perform a needle biopsy pre-procurement. Another member agreed. The Workgroup achieved consensus that post-procurement is the appropriate time frame for donor kidney biopsies.

The Workgroup agreed that the following definitions for number of glomeruli, number of sclerosed glomeruli, and percent glomerulosclerosis are appropriate and suitable for a variety of users.

- Number of Glomeruli – total of all glomerular capillary tufts in the sample, including sclerotic and non-sclerotic tufts
- Number of Sclerosed Glomeruli – total of glomeruli exhibiting global (complete) collapse of glomerular capillary walls and consolidation of the glomerular tuft by extracellular matrix, causing capillary luminal obliteration
- Percent Glomerulosclerosis – percent of glomeruli exhibiting global (complete) collapse of glomerular capillary walls and consolidation of the glomerular tuft by extracellular matrix, causing capillary luminal obliteration

The Workgroup also agreed that the whole number count and percentage response options are appropriate. The Chair remarked that it would be unlikely for a pathologist to need an “unknown” response option for these elements. Another member agreed, noting that a report without number of glomeruli or number of sclerosed glomeruli may as well be disregarded.

Staff asked the Workgroup if they felt the definitions for nodular glomerulosclerosis, interstitial fibrosis, and tubular atrophy are suitable for a variety of users, and if there was any concern for understanding by non-clinical users. One member asked if this meant non-clinical coordinators inputting the values provided by the pathologist, instead of assessing the elements themselves. Staff clarified that it could be

for OPO and transplant coordinators, for example, who report to surgeons or nephrologists. The question asks if these definitions are clear enough to allow for effective reporting of pathology information.

A member asked the Workgroup if there was a major difference between nodular and general glomerular sclerosis. Another member shared that general glomerulosclerosis is when the entire tuft is scarred, whereas nodular glomerulosclerosis is a particular compartment of the tuft that is expanded by matrix, but with capillaries still open and free to filter. Nodular sclerosis is the quintessential finding of diabetic kidney disease, while general glomerulosclerosis features completely scarred glomeruli. The Chair noted that it was rare to see comments about nodular glomerulosclerosis in a pathology report, unless a nephrologist is looking at it. The Chair continued that the detail provided by nodular glomerular sclerosis is helpful and worth keeping in the form, but that an unknown option may be helpful if the pathologist did not look for it.

One member remarked that it would be important to keep the form somewhat simple, since much of the information is verbally transmitted by coordinators to surgeons. The member stressed granularity is important, but so is accurate transmission of data. Another member agreed, adding that in the grand scheme, the standardized biopsy report should be understandable and useable, and not overly granular. The Chair asked if the Workgroup wanted to remove nodular sclerosis as an element, and if it was too granular and not used with enough frequency. A member shared that most surgical pathologists have some experience recognizing diabetic lesions, particularly when assessing non-neoplastic renal parenchyma. Pathology reports for graded and staged renal tumors require comment on non-neoplastic parenchyma, and most surgical pathologists are very comfortable recognizing this lesion. The member added that, on the flip side, pathologists probably wouldn't share that information without being prompted. The member continued that some post-reperfusion zero-hour biopsies have shown advanced donor derived diabetes, which may have been useful to know ahead of time. Adding an unknown option allows this information to be gathered, while giving a pathologist uncomfortable making this distinction a way to avoid inaccurate reporting. The Chair agreed that nodular glomerulosclerosis information could be very helpful, particularly on a donor with a 5 year or less history of diabetes. Other members of the Workgroup agreed that keeping nodular glomerulosclerosis and adding an unknown response option would provide the best quality and granularity of information.

The Workgroup achieved consensus that the following definitions for nodular glomerular sclerosis, interstitial fibrosis, and tubular atrophy are suitable and appropriate for a variety of users. The Workgroup agreed that the mutually exclusive response categories were appropriate for interstitial fibrosis/tubular atrophy, and that the absent, present, and unknown response options were appropriate and clear for the nodular glomerular sclerosis element.

- Nodular Glomerular Sclerosis – rounded accumulation of collagenous matrix expanding one or more mesangial areas
- Interstitial Fibrosis – the accumulation of fibrous tissue between the tubules
- Tubular Atrophy – shrinkage of tubules with variable thickening of the tubular basement membrane and flattening of the tubular epithelium

The Workgroup achieved consensus that the following definitions for vascular disease and luminal narrowing are suitable and appropriate for a variety of users. The Workgroup also achieved consensus that the mutually exclusive response categories were appropriate and clear.

- Vascular Disease – fibrous thickening and/or hyalinosis of the intima of arteries and arterioles
- Luminal Narrowing – reduction in diameter of vessel lumens owing to vascular disease

The Workgroup achieved consensus that the following definitions for cortical necrosis and fibrin thrombi are suitable, and that the absent/present and percentage response options are appropriate.

- Cortical Necrosis – deaths of cortical cells, typically affecting all three tissue compartments
- Fibrin Thrombi – capillary lumen aggregate of coagulated blood containing fibrin and platelets, with or without entrapped cellular elements.

Data summary:

Availability, Burden, and Interoperability Questions:

- Is this element widely available for the population of patients for which it is sought to be collected?
- Does this element require additional testing (e.g. invasive procedure) or measurement that is not commonly done?
- Are the data easily and readily discovered by a clinical or non-clinical coordinator in the electronic medical record (EMR)?
- What calculations or interpretations are required before entering?
- Is the data element a candidate for seamless data exchange?
 - How is this data collected in the EMR? Is there a reason it should be programmed in UNetSM differently?
 - Is there an alternative commonly available in an EMR that should be considered?

Summary of discussion:

The Workgroup agreed that the biopsy type and tissue preparation information is widely available where a biopsy is being done. No calculations or interpretations are required for the biopsy type and tissue preparation technique elements.

The Workgroup also agreed that outside of performing relatively routine post-procurement donor kidney biopsy, none of these elements require additional or invasive testing or measurement not commonly performed. The Chair commented that formalin-fixed paraffin-embedded biopsy samples are rarely performed post-procurement.

One member remarked that donor biopsies typically don't appear in donor EMRs, and usually remain with the OPO office. The member continued that the donor EMR is usually shut by the time of recovery, and much of the donor management data stays within the OPO's record, not the patient's donor hospital EMR. Another member responded that the biopsy report is typically uploaded and attached to the donor summary in DonorNetSM. Another member agreed.

Staff clarified that the EMR would be the donor medical record, and asked the Workgroup if the biopsy information is available and accessible to those trying to evaluate the biopsy and related organ offers, if it's not available in the EMR or the EMR is closed at the point the information is collected. A member noted that specific transplant personnel have access to UNet, but not all clinicians. The member continued that it can be difficult to access any donor information preceding recovery if it's not already entered to DonorNet. There are really three separate EMRs – the donor EMR, DonorNet, and everything associated with the recipient's EMR – and none of these are particularly fluid. The Chair remarked that it's easily and readily discoverable via DonorNet, which on call personnel and those reviewing organ offers generally can access.

A member noted that different OPOs vary in the degree to which information is updated in DonorNet, and that not all donor information is updated consistently. The member continued that standardizing how biopsy information is reported and shared, in an accessible, consistent, readable, and collectible

way, is important. Another member shared that the majority of OPOs do upload biopsy reports to DonorNet, as it is most easily shared there. One member agreed that biopsy reports are typically uploaded, but other information like donor cultures are more difficult to access after the fact. The member continued that it could be helpful to require OPOs to fill out certain information into the biopsy section of DonorNet.

The Workgroup agreed that while the biopsy report is not discoverable in the EMR, it is readily available and easily discovered in DonorNet, often as an attachment. The Workgroup agreed that because biopsy information does not typically exist in the donor EMR, these elements cannot be seamlessly exchanged from an EMR.

The Workgroup achieved consensus that the number of glomeruli, number of sclerosed glomeruli, and percent glomerulosclerosis are widely available data elements for donor kidney biopsies, and that the calculation required for percent glomerulosclerosis is reasonable, simple, and not burdensome.

The Workgroup achieved consensus that the nodular glomerulosclerosis, interstitial fibrosis/tubular atrophy (IF/TA), vascular disease, cortical necrosis, and fibrin thrombi elements are widely available on routine procurement kidney biopsies, and that this information is reasonably un-burdensome to collect and report. The Workgroup agreed that interpretations for these data element provided by pathologists and reported by OPOs are appropriate and well within the spectrum of histological examination.

Data summary:

Alternative Data Sources Questions:

- Is this element already available via an external source?
- If so, could the OPTN acquire this element rather than programming?

Usability and Conformity Questions:

- Is this form usable for members?
- Does the arrangement/grouping of fields on the form make sense to the users?
- Are the right fields on the right forms?
- Is the label, as written, clear to the user with minimal explanation?

Summary of discussion:

The Workgroup achieved consensus that there is currently no central repository for biopsy reports, particularly not as reported data. This information is not readily available elsewhere and there are no alternative data sources.

The Workgroup achieved consensus that the form is usable, clearly labelled, and sensibly arranged. The Workgroup also agreed that the fields and elements present on the form are appropriately placed.

Upcoming Meeting

August 23, 2021 – Teleconference

Attendance

- **Committee Members**
 - Andrew Weiss
 - Dominick Santoriello
 - Arpita Basu
 - Catherine Kling
 - Jim Kim
 - Julianne Kemink
 - Mark Orloff
 - Meg Rogers
- **HRSA Representatives**
 - Jim Bowman
 - Marilyn Levi
- **SRTR Staff**
 - Bryn Thompson
 - Jon Miller
 - Nick Salkowski
- **UNOS Staff**
 - Lindsay Larkin
 - Amanda Robinson
 - Kayla Temple
 - Ross Walton
 - Lauren Motley
 - Savannah Holmes
 - Leah Slife
 - Ben Wolford
- **Other Attendees**
 - Guarav Gupta