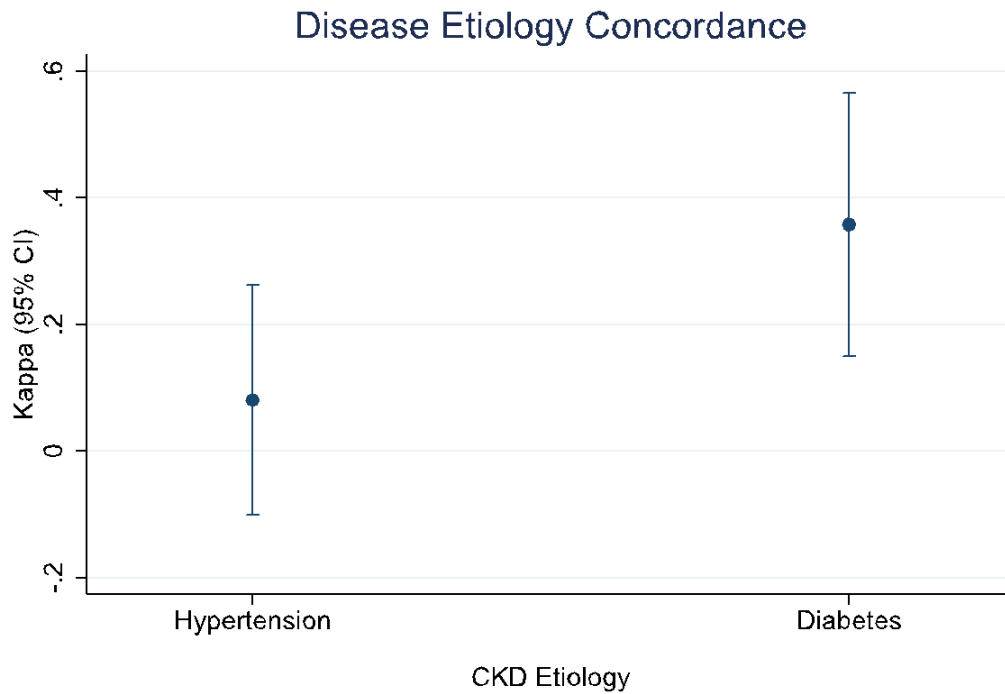
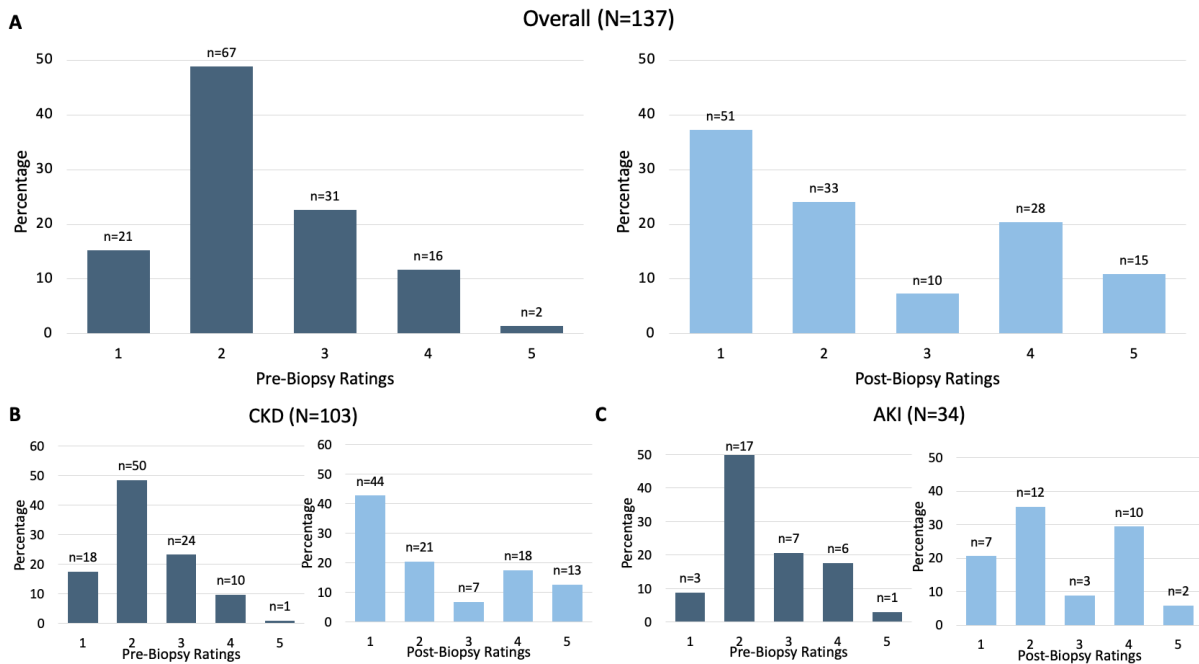


Figure S1. Pre-Biopsy Clinician-Patient Concordance for CKD Disease Etiology (N=83)¹



¹Clinicians were asked "What renal insults do you think contributed to the participant's CKD?" Patients were asked "If you have been told you have or had chronic kidney disease, what did your doctor tell you was the cause or causes of your kidney disease?"

Figure S2. Pre vs. Post-Biopsy Clinician Ratings of Biopsy’s Ability to Impact Diagnosis^{1,2}



¹Wilcoxon signed-rank tests: Overall p=0.85; CKD p=0.84; AKI p=0.99.

²Pre-biopsy, the Likert scale is: (1) extremely unlikely, (2) somewhat unlikely, (3) neither likely nor unlikely, (4) somewhat likely, (5) extremely likely. Post-biopsy the Likert scale is: (1) very much not affected, (2) somewhat not affected, (3) neither affected nor not affected, (4) somewhat affected, (5) very much affected.

Item S1. Kidney Precision Medicine Project Collaborators

Stewart H. Lecker, Martha Catalina Morales, Isaac Stillman, Steve Bogen, Afolarin A. Amodu, Titlayo Ilori, Shana Maikhor, Insa Schmidt, Pranav Yadati, Guanghao Yu, Laurence H. Beck, Joel M. Henderson, Ingrid Onul, Ashish Verma, Mia R. Colona, Gearoid M. McMahon, M. Todd Valerius, Sushrut Waikar, Astrid Weins, Anna Greka, Nir Hacohen, Paul J. Hoover, Jamie L. Marshall, Mark Aulisio, Yijiang M. Chen, Andrew Janowczyk, Vidya S. Viswanathan, William S. Bush, Dana C. Crawford, Anant Madabhushi, Lakeshia Bush, Leslie Cooperman, Crystal A. Gadegbeku, Agustin Gonzalez-Vicente, Leal Herlitz, Stacey Jolly, Jane Nguyen, John O'toole, Ellen Palmer, Emilio Poggio, John Sedor, Dianna Sendrey, Cassandra Spates-Harden, Jonathan Taliercio, Petter M. Bjornstad, Laura Pyle, Carissa Vinovskis, Paul Appelbaum, Olivia Balderes, Jonathan M. Barasch, Cecilia Berrouet, Andrew S. Bomback, Pietro A. Canetta, Vivette D. D'Agati, Krzysztof Kirylyuk, Satoru Kudose, Karla Mehl, Maya Sabatello, Ning Shang, German Varela, Shweta Bansal, Theodore Alexandrov, Helmut Rennke, Tarek M. El-Achkar, Daria Barwinska, Sharon Bledsoe, Katy Borner, Andreas Bueckle, Yinghua Cheng, Pierre C. Dagher, Kenneth W. Dunn, Michael T. Eadon, Michael J. Ferkowicz, Debora Gisch, Bruce W. Herr, Katherine J. Kelly, Ricardo Melo Ferreira, Ellen M. Quardokus, Elizabeth Record, Marcelino Rivera, Austen Slade, Jing Su, Timothy A. Sutton, James C. Williams, Jr., Seth Winfree, Stephanie Wofford, Yashvardhan Jain, Lauren Bernard, Ashley R. Wang, Steven Menez, Chirag R. Parikh, Avi Rosenberg, Celia P. Corona-Villalobos, Yumeng Wen, Alan Xu, Camille Johansen, Sarah Chen, Isabel Donohoe, Sylvia E. Rosas, Neil Roy, Jennifer Sun, Mark Williams, Richard Knight, Joseph Ardayfio, Jack Bebiak, Keith Brown, Catherine E. Campbell, Taneisha Campbell, Lynda Hayashi, Nichole Jefferson, Robert Koewler, Roy Pinkeney, Glenda V. Roberts, John Saul, Anna Shpigel, Christy Stutzke, Evren U. Azeloglu, Jens Hansen, Cijang He, Ravi Iyengar, Yuguang Xiong, Pottumarthi Prasad, Anand Srivastava, Sethu M. Madhavan, Samir Parikh, Brad Rovin, John P. Shapiro, Christopher R. Anderton, Jessica Lukowski, Ljiljana Pasa-Tolic, Dusan Velickovic, George (Holt) Oliver, Rachel Sealfon, Olga Troyanskaya, Aaron Wong, Katherine R. Tuttle, Ari Pollack, Yury Goltsev, Brandon Ginley, Nicholas Lucarelli, Brendon Lutnick, Pinaki Sarder, Blue B. Lake, Kun Zhang, Kavya Anjani, Patrick Boada, Jim Cimino, Zoltan G. Laszik, Tariq Mukatash, Garry Nolan, Minnie Sarwal, Tara Sigdel, Rita R. Alloway, Ashley R. Burg, Paul J. Lee, Adele Rike, Tiffany Shi, E. Steve Woodle, Heather Ascani, Ulysses GJ. Balis, Victoria M. Blanc, Nikole Bonevich, Ninive C. Conser, Sean Eddy, Renee Frey, Yougqun He, Jeffrey B. Hodgins, Matthias Kretzler, Chrysta Lienczewski, Jinghui Luo, Laura H. Mariani, Rajasree Menon, Edgar Otto, Jennifer Schaub, Becky Steck, Filitsa Bender, Adam Burgess, Michele M. Elder, Matthew Gilliam, Daniel E. Hall, John A. Kellum, Raghavan Murugan, Paul M. Palevsky, Parmjeet Randhawa, Matthew Rosengart, Roderick Tan, Mitchell Tublin, Tina Vita, James Winters, Charles E. Alpers, Ashley Berglund, Brooke Berry, Kristina N. Blank, Jonas Carson, Stephen Daniel, Ian H. De Boer, Ashveena L. Dighe, Frederick Dowd, Stephanie M. Grewenow, Jonathan Himmelfarb, Andrew N. Hoofnagle, Brandon Larson, Christine Limonte, Robyn L. McClelland, Sean D. Mooney, Yunbi Nam, Christopher Park, Kasra Rezaei, Natalya Sarkisova, Stuart Shankland, Jamie Snyder, Ruikang Wang, Adam Wilcox, Kayleen Williams, Shweta Bansal, Richard Montellano, Annapurna Pamreddy, Kumar Sharma, Manjeri Venkatachalam, Hongping Ye, Guanshi Zhang, Mujeeb Basit, S. Susan Hedayati, Allen H. Hendricks, Asra Kermani, Simon C. Lee, Christopher Y. Lu, Shihong Ma, R. Tyler Miller, Orson W. Moe, Harold Park, Jiten Patel, Anil Pillai, Kamalanathan Sambandam, Jose Torrealba, Robert D. Toto, Miguel Vazquez, Nancy Wang, Natasha Wen, Dianbo Zhang, Richard M. Caprioli, Nathan Patterson, Kavya Sharman, Jeffrey M. Spraggins, Raf Van de Plas, Jeanine Basta, Sabine M. Dieltman, Joseph P. Gaut, Sanjay Jain, Michael I. Rauchman, Anitha Vijayan, Tanima Arora, Lloyd G. Cantley, Vijaykumar R. Kakade, Dennis Moledina, Melissa M. Shaw, Ugochukwu Ugwuowo, Angela Victoria-Castro, and Francis P. Wilson

Table S1. Questions Asked for Disease Etiology to Patients and Clinicians^{1,2}

CKD		AKI	
<p>Patient: If you have been told you have or had chronic kidney disease, what did the doctor tell you was the cause or causes of your kidney disease? Completed: 83/124 (67%)</p>	<p>Clinician: What renal insults do you think contributed to the participant’s CKD? Completed: 117/124 (94%)</p>	<p>Patient: If you have been told you have or had acute kidney injury, what did the doctor tell you was the cause or causes of your kidney injury? Completed: 5/43 (12%)²</p>	<p>Clinician: What renal insults contributed to this participant’s AKI in your clinical judgment? Completed: 30/43 (70%)</p>
Aging <i>n</i> =1	Hypertension <i>n</i> =75	Cardiac arrest or heart stopped <i>n</i> =0	Hypotension <i>n</i> =5
Diabetes <i>n</i> =53	Diabetes <i>n</i> =89	Contrast or dye <i>n</i> =0	Hypoxemia <i>n</i> =0
Heart failure <i>n</i> =1	Aging <i>n</i> =15	Dehydration or volume depletion <i>n</i> =3	Infection without sepsis <i>n</i> =5
Hypertension <i>n</i> =28	Prior AKI <i>n</i> =9	Heart failure <i>n</i> =0	Infection with sepsis <i>n</i> =0
Kidney stones <i>n</i> =3	NSAID use <i>n</i> =6	Infection <i>n</i> =0	Volume depletion <i>n</i> =9
Narrowing of the renal blood vessels/arteries (i.e. renal artery stenosis) <i>n</i> =1	Other medications/drugs <i>n</i> =7	Liver failure <i>n</i> =0	Cardiorenal syndrome <i>n</i> =1
NSAIDs (e.g., motrin, ibuprofen, Aleve) <i>n</i> =5	Kidney stones <i>n</i> =1	Low blood pressure (hypotension) <i>n</i> =0	Hepatorenal syndrome <i>n</i> =0
Obesity <i>n</i> =7	Obstruction <i>n</i> =0	Low oxygen levels (hypoxemia) <i>n</i> =0	Surgery- non-cardiac <i>n</i> =0

Bernard et al, Kidney Med, “Kidney Biopsy Utility: Patient and Clinician Perspectives From the Kidney Precision Medicine Project”

Obstruction of the kidney or bladder <i>n=2</i>	Renal artery stenosis <i>n=1</i>	Medication <i>n=3</i>	Surgery- cardiac <i>n=0</i>
Other medications <i>n=0</i>	Low nephron mass <i>n=0</i>	Muscle cell breakdown, elevated CK <i>n=0</i>	Rhabdomyolysis <i>n=5</i>
Pregnancy complications (e.g., preeclampsia, eclampsia, HELLP syndrome) <i>n=0</i>	Obesity <i>n=14</i>	Other organ failure <i>n=0</i>	Cardiac arrest <i>n=0</i>
Prior episodes of acute kidney injury <i>n=0</i>	Reflux nephropathy <i>n=0</i>	Rhabdomyolysis <i>n=0</i>	Contrast exposure – iodinated <i>n=0</i>
Reflux of urine causing reflux nephropathy <i>n=0</i>	Cardiorenal syndrome <i>n=1</i>	Surgery (non-heart) <i>n=0</i>	Contrast exposure – non-iodinated <i>n=0</i>
Urinary tract infections <i>n=2</i>	Preeclampsia/eclampsia/HELLP <i>n=1</i>	Surgery (heart) <i>n=0</i>	Drug exposure <i>n=18</i>
Other <i>n=2</i>		Other <i>n=4</i>	
My doctor did not say <i>n=1</i>		My doctor did not say <i>n=1</i>	
Don't know <i>n=11</i>		Don't know <i>n=3</i>	

¹The form allowed for participants and clinicians to select multiple causes.

²The AKI question only appears within the REDCap form if the participant answered a prior question “Has a doctor or health care provider ever told you that you have or had any of the following conditions?” and selected acute kidney injury.

Table S2. Questions Asked Pre- and Post-Biopsy to Clinicians

	Pre-Biopsy	Post-Biopsy
Diagnosis (Figure S2)	Likelihood that KPMP kidney biopsy will identify a cause of kidney disease that is different than the clinical impression?	How different were the biopsy results from what you expected?
Clinical Management (Figure 1)	Likelihood that KPMP kidney biopsy will change clinical management?	How much did the biopsy results impact your clinical management?
Prognosis (Figure 2)	Likelihood that KPMP kidney biopsy will provide prognostic information regarding the expected future course of the kidney disease?	How much did the biopsy results affect your discussion with the participant regarding prognosis?

Scale: 1 (extremely unlikely/unaffected) - 5 (extremely likely/affected)

Table S3. Questions Asked Post-Biopsy to Patients in Table 2

Biopsy Affected Understanding of Diagnosis	How have your kidney biopsy results changed the diagnosis of what's happening with your kidneys?
Biopsy Affected Medication	How have your kidney biopsy results changed the medications you have been prescribed for your kidneys?
Willing to Get Another Biopsy	Suppose if your health status were to change and another kidney biopsy was needed for your treatment, would you be willing to undergo this procedure?
With Research Tissue Collected	If yes, would you consider having an additional kidney tissue sample taken at the same time for research purposes?
Only for Research Purposes	Would you undergo another KPMP kidney biopsy just for research and not clinical reasons?

Responses: binary "yes" or "no," but for diagnosis and medications, participants were allowed to select "none," "a little" or "a lot." For measurement purposes, "a little" and "a lot" were then treated as "yes."

Table S4. Demographics of Respondents and Non-Respondents for the 28-day and 6-month Participant Surveys¹

Characteristics	28-Day		6-Month	
	Respondents (N=55) ¹	Non-Respondents (N=52)	Respondents (N=60) ¹	Non-Respondents (N=51)
Age, years	56.6 (14.1)	54.3 (11.9)	58.0 (14.8)	53.4 (13.0)
Female Sex	32 (58.2%)	31 (59.6%)	32 (53.3%)	30 (58.8%)
Race				
White	37 (67.3%)	24 (46.2%)	44 (73.3%)	27 (52.9%)
Black	16 (29.1%)	20 (38.5%)	14 (23.3%)	17 (33.3%)
Asian	2 (3.6%)	3 (5.8%)	2 (3.3%)	4 (7.8%)
Hispanic Ethnicity	8 (14.5%)	10 (19.2%)	9 (15.0%)	10 (19.6%)
Education				
<High School	6 (10.9%)	12 (23.1%)	5 (8.3%)	8 (15.7%)
High School Graduate	9 (16.4%)	10 (19.2%)	7 (11.7%)	8 (15.7%)
Some College or More	40 (72.7%)	27 (51.9%)	47 (78.3%)	33 (64.7%)
Employment				
Full-Time	19 (34.5%)	18 (34.6%)	19 (31.7%)	19 (37.3%)
Part-Time	3 (5.5%)	4 (7.7%)	4 (6.7%)	3 (5.9%)
Retired	19 (34.5%)	9 (17.3%)	23 (38.3%)	12 (23.5%)
Unemployed	8 (14.5%)	12 (23.1%)	9 (15.0%)	9 (17.6%)
Permanently Disabled	5 (9.1%)	6 (11.5%)	4 (6.7%)	3 (5.9%)

¹ For our study, respondents are defined as participants who answered three questions (i.e., if the biopsy affected diagnosis, medication, and willingness for future biopsy), which were present in versions 2/3 of the 28-day and 6-month surveys. Overall, 111 (66%) participants completed the 28-day survey and 87 (52%) participants completed the 6-month survey. Participants who completed versions 1 and 4 of these surveys were excluded from respondents (28-day excluded n=56; 6-month excluded n=27).

Table S5. Clinical Measures of Biopsy Value

Clinical Measure	Timing	Overall (N=132)		CKD (N=100)		AKI (N=32)	
		Mean (SD)	Pairwise t-test P-value	Mean (SD)	Pairwise t-test P-value	Mean (SD)	Pairwise t-test P-value
Diagnosis	Pre-Biopsy	2.36 (0.93)	0.43	2.29 (0.90)	0.52	2.56 (1.01)	0.62
	Post-Biopsy	2.47 (1.45)		2.40 (1.50)		2.69 (1.31)	
Clinical Management	Pre-Biopsy	2.78 (1.00)	0.01	2.68 (0.94)	0.02	3.09 (1.12)	0.44
	Post-Biopsy	3.07 (1.23)		3.00 (1.19)		3.28 (1.35)	
Prognosis	Pre-Biopsy	4.02 (0.95)	0.0002	3.99 (0.87)	0.002	4.09 (1.17)	0.06
	Post-Biopsy	3.61 (1.16)		3.61 (1.12)		3.63 (1.29)	

Pre-Biopsy Scale: (1) extremely unlikely, (2) somewhat unlikely, (3) neither likely nor unlikely, (4) somewhat likely, (5) extremely likely.

Post-Biopsy Scale: (1) very much not affected, (2) somewhat not affected, (3) neither affected nor not affected, (4) somewhat affected, (5) very much affected.