

BIOGRAPHICAL SKETCH

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NAME Kerri Cavanaugh	POSITION TITLE Assistant Professor of Medicine Division of Nephrology & Hypertension		
eRA COMMONS USER NAME (credential, e.g., agency login) CAVANAK			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Dartmouth College, Hanover, NH	AB	06/95	Chemistry; Psychology
Yale University School of Medicine, New Haven, CT	MD	05/99	Medicine
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD	MHS	05/06	Clinical Epidemiology

A. Personal Statement

Dr. Cavanaugh's overall research objective is to identify mechanisms and interventions to facilitate patient-provider health communication about complex chronic kidney disease care to improve patient understanding, self-efficacy, participation in self-care and health outcomes. Our team has demonstrated that disease-specific knowledge in patients with kidney disease is less than expected even among those actively engaging in specialist care. In addition, those with less knowledge have worse clinical outcomes – such as blood pressure control, or the type of dialysis access used. Furthermore, we have identified health literacy as a risk factor for mortality in incident hemodialysis patients. Addressing health literacy in kidney disease care, as in other chronic diseases, may be a target to improve care however its underlying mechanisms remain unknown. In diabetes, we have demonstrated in two randomized controlled trials that a literacy and numeracy sensitive, educational intervention improves glycemic control greater than standard enhanced education. Dr. Cavanaugh has expertise in the evaluation of patient knowledge, self-efficacy, attitudes and behaviors among patients with complex chronic disease, including those at-risk or with kidney disease. She also has designed, executed and reported educational interventions to equip and motivate patients, especially vulnerable populations. Dr. Cavanaugh has experience and expertise in survey design, validation and administration, development of educational intervention materials, protocol and training development, and also execution of trials to examine educational/behavioral interventions. The application of this research aims to evolve the culture of the practice of medicine by developing and delivering patient-centered personalized effective team interactions, in heterogeneous care settings, to maximize health outcomes that are important to patients and their families.

B. Positions and Honors:

Professional Experience

1999-2002	Resident in Internal Medicine; Johns Hopkins University School of Medicine, Baltimore, MD
2002-2003	Clinical Fellow, Nephrology; Johns Hopkins University School of Medicine, Baltimore, MD
2003-2004	Instructor, Internal Medicine; Johns Hopkins University School of Medicine, Baltimore, MD
2004-2005	Clinical Fellow, Nephrology; Johns Hopkins University School of Medicine, Baltimore, MD
2005-2006	Instructor, Nephrology; Johns Hopkins University School of Medicine, Baltimore, MD
2006-2007	Instructor, Nephrology; Vanderbilt University Medical Center, Nashville, TN
2007-present	Assistant Professor of Medicine, Nephrology; Vanderbilt University Medical Center, Nashville, TN

Honors and Awards

1997	American Geriatrics Society: Best Poster Award 1997 AGS/AFAR Annual Scientific Meeting Case Studies from Clinical Practice Category
1998	John A. Hartford/AFAR Medical Student Geriatric Scholarship, Yale University
2002	Alpha Omega Alpha: Johns Hopkins University School of Medicine
2004	Assistant Chief of Service (Chief Resident), Department of Medicine, Johns Hopkins University School of Medicine, Faculty appointment: <i>Instructor</i>
2005	Fellow, Senior fellow representative, Department of Medicine, Division of Nephrology Johns Hopkins University School of Medicine

- 2006 Delta Omega (Alpha Chapter): Johns Hopkins Bloomberg School of Public Health
- 2007 National Kidney Foundation Young Investigator Award (2007-9)
- 2008 Elliot Newman Society, Vanderbilt University Medical Center
- 2010 Vanderbilt Clinic 5-Star Patient Satisfaction Award
- 2010 Fellow, NIH Office of Behavioral and Social Sciences Research
2010 Summer Institute on RCTs Involving Behavioral Interventions
- 2011 American Society of Nephrology Carl W. Gottschalk Research Scholar
- 2011 Fellow of the National Kidney Foundation
- 2012 AAMC Early Women Career Faculty Development Seminar Awardee
- 2013 Vanderbilt Clinic 5-Star Patient Satisfaction Award

Selected Other Experience and Committee Memberships

- 2010-present Member NKF-KDOQI Education Committee
- 2010-2011 Planning Committee, NKF Spring Clinical Meetings (2011, 2012)
- 2011-2013 Member NKF Scientific Advisory Board
- 2011-present Chair, Patient Education Task Force, ASN Communications Committee
- 2011-2013 Member NKF KEEP Steering Committee
- 2013 Reviewer, NIH Special Emphasis Panel/CRIC Cohort Studies (ZDK1 GRB-N (M1))
- 2013- Editorial Board, Section of Epidemiology, *BMC Nephrology*
- 2013- Editorial Board, *Advances in Chronic Kidney Disease*

C. Selected Peer-reviewed Publications (Selected from 45)

Most relevant to the current application

1. **Cavanaugh K**, Huizinga MM, Wallston KA, Gebretsadik T, Shintani A, Davis D, Gregory RP, Fuchs L, Malone R, Cherrington A, Pignone M, DeWalt DA, Elasy TA, Rothman RL. Association of numeracy and diabetes control. *Ann Intern Med.* 2008;148:737-46. PMID 18490687
2. **Cavanaugh K**, Wingard RL, Hakim RM, Eden S, Shintani A, Huizinga MM, Wallston KA, Elasy TA, Rothman RL, Ikizler TA. Low health literacy associates with mortality in ESRD. *J Am Soc Nephrol.* 2010 Nov;21(11):1979-85. PMC3014012
3. **Cavanaugh KL**, Wingard RL, Hakim RM, Elasy TA, Ikizler TA. Higher patient dialysis knowledge is associated with arteriovenous fistula or graft use in chronic hemodialysis. *Clin J Am Soc Nephrol.* 2009 May;4(5):950-6. PMC2676183
4. **Cavanaugh K**, Wallston KA, Gebretsadik T, Shintani A, Huizinga MM, Davis D, Gregory R, Malone R, Pignone M, DeWalt D, Elasy TA, Rothman RL. Addressing Literacy and Numeracy to Improve Diabetes Care: Two Randomized Controlled Trials. *Diabetes Care* 2009, 32(12):2149-55 PMC2782967
5. Nunes JW, Greene J, Wallston K, Eden S, Shintani A, Elasy T, Rothman R, Ikizler TA, **Cavanaugh K**. Pilot study of a physician-delivered education tool to increase patient knowledge about chronic kidney disease. *Am J Kidney Dis.* 2013 Jul; 62(1): 23-32. PMC3686835

Additional recent publications of importance to the field (in chronological order)

1. Huizinga MM, Elasy TA, Wallston KA, **Cavanaugh K**, Davis D, Gregory RP, Fuchs LS, Malone R, Cherrington A, Dewalt DA, Buse J, Pignone M, Rothman RL. Development and validation of the Diabetes Numeracy Test (DNT). *BMC Health Serv Res.* 2008;8:96. PMC2390531
2. **Cavanaugh KL**, Merkin SS, Plantinga LC, Fink NE, Sadler JH, Powe NR. Accuracy of patients' report of comorbid disease and their association with mortality in ESRD. *Am J Kidney Dis.* 2008;52:118-27. PMC2587104
3. Wolff K, **Cavanaugh K**, Malone R, Hawk V, Gregory BP, Davis D, Wallston K, Rothman RL. The Diabetes Literacy and Numeracy Education Toolkit (DLNET): Materials to Facilitate Diabetes Education and Management in Patients With Low Literacy and Numeracy Skills. *Diabetes Educ.* 2009; Mar-Apr;35(2):233-45. PMID:19240246; NIHMS146693
4. Smith K, Coston M, Glock K, Elasy TA, Wallston KA, Ikizler, TA, **Cavanaugh KL**. Patient Perspectives on Fluid Management in Chronic Hemodialysis. *J Ren Nutrition* 2010 Sep;20(5):334-41. PMC 2888683

5. Osborn CY, **Cavanaugh K**, Wallston KA, Rothman RL. Self-efficacy links health literacy and numeracy to glycemic control. *J Health Communication* 2010; 15 Suppl 2:146-58. PMC3082364
6. Wright JA, Wallston KA, Elasy TA, Ikizler TA, **Cavanaugh KL**. Development and Results of a Kidney Disease Knowledge Survey Given to Patients with CKD. *Am J Kidney Dis*. 2011 Mar; 57(3): 387-95. PMC3053083
7. Wright Nunes JA, Wallston KA, Eden S, Shintani A, Ikizler TA, **Cavanaugh KL**. Associations among perceived and objective disease knowledge and satisfaction with physician communication in patients with chronic kidney disease. *Kidney Int* 2011 Dec;80(12): 1344-51. PMC3712792
8. Osborn CY, **Cavanaugh K**, Wallston KA, Kripalani S, White RO , Elasy TA, Rothman RL. Health literacy explains racial disparities in diabetes medication adherence. *Journal of Health Communication*. 2011, 16, 268-278. PMID: 21951257 NIHMS436237
9. Nunes JW, Luther M, Ikizler TA, **Cavanaugh KL**. Patient Knowledge of Blood Pressure Target is Associated with Improved Blood Pressure Control in Chronic Kidney Disease. *Patient Education and Counseling* 2012 Aug;88(2):184-8. PMC3404190
10. Maripuri S, Arbogast P, Ikizler TA, **Cavanaugh KL**. Rural and Micropolitan residence and mortality in patients on dialysis. *Clin J American Society of Nephrology* 2012 Jul;7(7):1121-9. PMC3386672

D. Research Support

Active

National Institutes of Health

4/2008-3/2015

NIDDK

1 K23 DK080952-01

Title: Addressing Literacy and Numeracy in Self-care & Clinical Outcomes in ESRD

Role: Principal Investigator

Mentor: T. Alp Ikizler, M.D.; Co-mentors: Tom Elasy, M.D., MPH, Kenneth Wallston, PhD

Goals: Mentored patient-oriented research career development award to explore the impact of health literacy and numeracy in self-care in chronic hemodialysis patients. This will include development and validation of the Kidney Numeracy Test (KNT), a prospective cohort evaluation of associations with clinic outcomes and a pilot provider educational intervention to improve communication with patient to overcome barriers in low numeracy patients.

National Institutes of Health

9/2011 – 8/2014

NIDDK

R34 RFA-DK-10-011

Title: Decision support interventions to improve renal replacement therapy preparation

P.I.: L. Ebony Boulware, MD MPH (Johns Hopkins University School of Medicine)

Role: Co-Investigator

Goals: To examine using rigorous quantitative and qualitative research methodology the effectiveness and feasibility of implementing system, provider and patient-decision-support interventions to improve patients' renal replacement therapy preparation in three diverse health systems.

American Society of Nephrology

7/2011-6/2014

ASN Career Development Grant

Title: Targeting social determinants to improve chronic kidney disease care

Role: Principal Investigator

Goals: To characterize social factors including health literacy and numeracy skills of CKD patients and examine associations with knowledge, self-efficacy, self-care behaviors, and clinical outcomes and also to examine the impact of an efficient interactive educational intervention to facilitate patient-provider communication in a cluster-randomized controlled trial design.

National Institutes of Health

9/2011-8/2013

NIDDK

1R03 DK093852-01

Title: Facilitating Anemia Treatment Risk Communication for Patients with Kidney Disease

Role: Principal Investigator

Goals: To characterize current practice, preferences, and barriers to counseling about anemia management in kidney disease among a national sample of nephrologists and to develop and examine the feasibility of an

efficient educational tool for facilitating provider-patient communication to improve patient anemia knowledge and treatment satisfaction.

National Institutes of Health
NIDDK U01DK099923-01

7/1/2013 – 6/30/2018

Title: Anti-Inflammatory Interventions in Maintenance Hemodialysis Patients (T. Ikizler; J. Himmelfarb)

Role: Co- Investigator

Goals: The overarching aim of this proposal is to study the safety, feasibility and efficacy of promising pharmacological interventions in maintenance hemodialysis patients through a U01 collaboration mechanism. We hypothesize that 6-month therapy of IL-1ra or Fish Oil is feasible and safe in MHD patients with systemic inflammation. We further hypothesize that these therapies will effectively and persistently improve inflammatory markers, and *patient-reported outcomes*, when compared to placebo.

Completed

Epidemiology of renal diseases

7/2004-6/2005

Principal Investigator: Michael Klag, M.D., M.P.H.

5 T32 DK07732

NIH/NIDDK

Role: Research fellow/trainee

Diabetes Research Training Center - Vanderbilt University Medical Center

4/2007-3/2009

Pilot & Feasibility Grant Program

5P60 DK 020593-28

NIH/NIDDK

Title: Impact of literacy on patient-provider communication for patients with diabetes

Role: Principal Investigator

Goals: To describe the impact of literacy and numeracy patient skills on the communication between patients with chronic disease and their primary providers using methods of direct observation and audiotape analysis.

National Kidney Foundation

7/2007-6/2009

Young Investigator Award

Title: Literacy & numeracy impact on self-management (Interdialytic weight gain) in ESRD

Role: Principal Investigator

Mentor: T. Alp Ikizler, M.D.

Goals: Development and validation of a fluid management knowledge and self-efficacy scale. To determine the association between interdialytic weight gain knowledge and clinical outcomes. To evaluate the possible role of health literacy/numeracy in this relationship.

National Institutes of Health

9/2009 – 8/2011

NIDDK

K23 DK080952 ARRA Supplemental Funding

Role: Principal Investigator

Goals: To characterize patient kidney knowledge in CKD and examine the impact of a worksheet to facility patient-provider communication about basic CKD care principles.