

BIOGRAPHICAL SKETCH

NAME: **Kripalani, Sunil**

eRA COMMONS USER NAME: skripal

POSITION TITLE: Professor of Medicine, Vanderbilt University Medical Center

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Rice University, Houston, TX	B.A.	05/1993	Psychology
Baylor College of Medicine, Houston, TX	M.D.	06/1997	Medicine
Emory University School of Medicine, Atlanta, GA	Residency	06/2000	Internal Medicine
Emory University School of Medicine, Atlanta, GA	Fellowship	08/2001	Hospital Medicine
Emory University, Atlanta, GA	M.Sc.	08/2001	Clinical Research

A. Personal Statement

As an established investigator whose research spans social determinants of health and implementation science, I am well suited to serve as a collaborator on this proposal. For approximately 20 years, with research support from NIH, AHRQ, CMS, and PCORI, I have led a program of research to better understand and address the effects of health literacy and other determinants on patient outcomes. I served as PI of the Vanderbilt Inpatient Cohort Study (VICS), an R01-funded initiative to examine how health literacy, social, behavioral, and functional risk factors affect outcomes after hospitalization; Dr. Nair will use data from this cohort study in one of her research aims. Currently I serve as PI of an NIH-funded K12 career development program in T4 translational research, and as the senior implementation scientist for another K12 and a T32 on Learning Health Systems. As Director of the Center for Clinical Quality and Implementation Research, and Director of the Center for Health Services Research, I oversee institutional infrastructure and training seminars in these areas. I am thus well-suited to guide Dr. Nair's training in implementation science.

B. Positions and Honors

Positions and Employment

2000 – 2002	Instructor, Department of Internal Medicine, Emory University School of Medicine
2002 – 2007	Assistant Professor, Department of Internal Medicine, Emory University School of Medicine
2007 – 2015	Founding Chief, Section of Hospital Medicine, Vanderbilt University Medical Center (VUMC)
2007 – 2015	Associate Director, Center for Effective Health Communication, VUMC
2007 – 2018	Associate Professor (tenured), Department of Internal Medicine, VUMC
2012 – 2017	Founding Director, Effective Health Communication Core, VUMC
2014 – present	Founding Director, Center for Clinical Quality and Implementation Research, VUMC
2016 – 2019	Director, Implementation Science Core, VUMC
2016 – 2020	Co-Director, Center for Effective Health Communication, VUMC
2018 – present	Professor, Department of Internal Medicine, VUMC
2020 – present	Director, Center for Health Services Research, VUMC

Honors and Awards (selected)

2003 – 2005	Pfizer Health Literacy Scholar (1 of 2 nationally)
2005	Young Investigator Award of Excellence, Society of Hospital Medicine (SHM)
2006 – 2007	Pfizer Visiting Professorship in Health Literacy, Drexel University
2009	Fellow in Hospital Medicine, SHM (inaugural class)
2010	Senior Fellow in Hospital Medicine, SHM (inaugural class)
2011	“Top Hospitalists” (1 of 10 nationally), American College of Physicians
2011	John M. Eisenberg Patient Safety and Quality Award for Innovation in Patient Safety and Quality at the National Level (given to SHM for mentored implementation programs including the Multicenter Medication Reconciliation Quality Improvement Study (MARQUIS))
2018	Vanderbilt School of Nursing Dean's Award for Outstanding Service to Faculty and Students

Other Experience, and Committee Memberships (selected)

2002 – 2006	Leader, Continuity of Care Task Force, SHM / Society of General Internal Medicine (SGIM)
2006	Chair, NIH Special Emphasis Panels for Health Literacy Research (ZRG1 RPHB-B 50 & 51)
2014 – 2015	PCORnet Patient Reported Outcomes Task Force
2015	Chair, Scientific Committee, International Conference on Communication in Healthcare
2016 – 2017	Participant Provided Information national planning committee, Precision Medicine Initiative
2017 – present	Dissemination, Implementation, and Knowledge Transfer Working Group, CTSA Consortium
2019 – present	Chair, AHRQ Health Care Effectiveness and Outcomes Research (HEOR) study section; Member (2015-2019)

C. Contributions to Science

1. Implementation and improvement sciences

As founding Director of the Center for Clinical Quality and Implementation Research at Vanderbilt, I provide guidance on the implementation of practice improvement efforts in inpatient and outpatient settings^a and lead rigorous evaluation of quality improvement and system interventions, including high-value care initiatives.^{b,c} We participate in regional and national collaboratives, such as the Hospital Medicine Reengineering Network (HOMERuN),^d and have a large research portfolio supported by awards from NIH, AHRQ, CMS, and PCORI. I serve as PI of an NIH-funded K12 career development program in implementation research, and as Implementation Science Lead Mentor on two other training grants funded by AHRQ and PCORI.

- a) Lynch CS, Wajnberg A, Jervis R, Basso-Lipani M, Bernstein S, Colgan C, Soriano T, Federman AD, **Kripalani S**. Implementation science workshop: a novel multidisciplinary primary care program to improve care and outcomes for super-utilizers. *J Gen Intern Med* 2016; 31(7):797-802. PMID: PMC4907941.
- b) Iams W, Heck J, Kapp M, Leverenz D, Vella M, Szentirmai E, Naverette I, Theobald C, Goggins K, Flemmons K, Sponsler K, Penrod C, Kleinholz P, Brady D, **Kripalani S**. A multidisciplinary housestaff-led initiative to safely reduce daily laboratory testing. *Acad Med* 2016; 91(6):813-20. PMID: 27028031.
- c) Trumbo SP, Iams WT, Limper HM, Goggins K, Gibson J, Oliver L, Leverenz DL, Samuels LR, Brady DW, **Kripalani S**. De-implementation of routine chest x-rays in adult intensive care units. *J Hosp Med* 2019;14(2):83-89. PMID 30785415.
- d) Auerbach AD, Patel MS, Metlay JP, Schnipper JL, Williams MV, Robinson E, **Kripalani S**, Lindenauer PK. The Hospital Medicine Reengineering Network (HOMERuN): A learning organization focused on improving hospital care. *Acad Med* 2014;89(3):415-20. PMID: PMC4876026.

2. Effect of health literacy and other social and behavioral determinants on health outcomes

I lead a program of research that is assessing the effects of health literacy and other social, behavioral, and functional determinants of health on patient outcomes. As PI on the Health Literacy Screening study (R21 HL096581), I led the incorporation of routine health literacy assessment into the Vanderbilt electronic health record.^a Now with data on more than 200,000 patients, this successful effort has changed the paradigm for health literacy research by enabling population-level studies. Our research team has examined the effect of health literacy on blood pressure control, readmissions and mortality in hospitalized patients with heart failure,^b and post-operative outcomes. As PI the Vanderbilt Inpatient Cohort Study (VICS, R01 HL109388), I have led an interdisciplinary research team which has assessed the effects of health literacy and other social/behavioral determinants on transitions of care and post-discharge outcomes including readmission and mortality.^{c,d} Some of our approaches were incorporated into the All of Us national precision medicine initiative.

- a) Cawthon C, Mion LC, Willens DE, Roumie CL, **Kripalani S**. Implementing routine health literacy assessment in hospital and primary care patients. *Jt Comm J Qual Patient Saf* 2014;40(2):68-76. PMID: PMC4072202.
- b) McNaughton CD, Cawthon C, **Kripalani S**, Liu D, Storrow AB, Roumie CL. Health literacy and mortality: a cohort study of patients hospitalized for acute heart failure. *J Am Heart Assoc* 2015;4(5):1-9. PMID: PMC4599411.
- c) Osborn CY, **Kripalani S**, Goggins KM, Wallston KA. Financial strain is associated with medication nonadherence and worse self-rated health among cardiovascular patients. *J Health Care Poor Underserved* 2017;28(1):499-513. PMID: PMC5492520.
- d) **Mayberry LS**, Schildcrout JS, Wallston KA, Goggins K, Mixon AS, Rothman RL, **Kripalani S**, for the Vanderbilt Inpatient Cohort Study. Health literacy and 1-year mortality: Mechanisms of association among adults hospitalized for cardiovascular disease. *Mayo Clin Proc* 2018;93(12):1728-1738. PMID:

3. Development of communication standards, frameworks, and methods in transitions of care research

My primary area of research concerns transitions of care for hospital patients. Hospital discharge remains a vulnerable time for patients, as evidenced by 30-day readmission rates of approximately 20% for many medical conditions. On behalf of two professional societies, I led the development of standards for the content of hospital discharge summaries.^a My colleagues and I created the Ideal Transition in Care Framework to guide intervention development and evaluation.^b We developed a 360° approach to study the preventability of hospital readmissions, and used it to determine key contributors to readmission in a national cohort.^c We also evaluated readmission risk adjustment methodologies that are used to compare hospitals for public reporting.^d

- a) **Kripalani S**, LeFevre F, Phillips CO, Williams MV, Basaviah P, Baker DW. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA* 2007;297(8): 831-841. PMID: 17327525.
- b) Burke RE, **Kripalani S**, Vasilevskis EE, Schnipper JL. Moving beyond readmission penalties: creating an ideal process to improve transitional care. *J Hosp Med* 2013;8(2):102-9. PMID: PMC3650641.
- c) Auerbach AD, **Kripalani S**, Vasilevskis EE, Sehgal N, Lindenauer PK, Metlay JP, Fletcher G, Ruhnke GW, Flanders SA, Kim C, Williams MV, Thomas L, Giang V, Herzig SJ, Patel K, Boscardin J, Robinson EJ, Schnipper JL. Preventability and causes of readmissions in a national cohort of general medicine patients. *JAMA Intern Med* 2016; 176(4):484-93. PMID: 26954564.
- d) Kansagara D, Englander H, Salanitro AH, Kagen D, Theobald C, Freeman M, **Kripalani S**. Risk prediction models for hospital readmission: a systematic review. *JAMA* 2011;306(15):1688-1698. PMID: PMC3603349.

4. Development and evaluation of interventions to improve transitions of care and medication management

Throughout my career I have developed and tested interventions to improve transitions of care, medication adherence, and medication safety, with a focus on patient-centered interventions appropriate for patients who may have low health literacy. This research has included developing “pill cards,” a visual depiction of the medication regimen that shows patients what to take at each time of day (disseminated through the AHRQ Pharmacy Health Literacy Center website). In several randomized controlled trials, we have demonstrated that health literacy-sensitive interventions such as pill cards and pharmacist counseling are effective in reducing non-adherence, medication errors, and hospital readmission among high-risk patients, but less so among average risk patients.^{a-c} We have incorporated these patient-centered techniques into robust quality improvement interventions for medication reconciliation.^d

- a) **Kripalani S**, Schmotzer B, Jacobson TA. Improving Medication Adherence through Graphically Enhanced interventions in Coronary Heart Disease (IMAGE-CHD): a randomized controlled trial of two low-literacy interventions. *J Gen Intern Med* 2012;27(12):1609-17. PMID: PMC3509298.
- b) **Kripalani S**, Roumie CL, Dalal AK, Cawthon C, Businger A, Eden SK, Shintani A, Sponsler KC, Harris LJ, Theobald C, Huang RL, Scheurer D, Hunt S, Jacobson TA, Rask KJ, Vaccarino V, Gandhi TK, Bates DW, Williams MV, Schnipper JL, for the PILL-CVD study group. Effect of a pharmacist intervention on clinically important medication errors after hospital discharge: a randomized controlled trial. *Ann Intern Med* 2012;157:1-10. PMID: PMC 3575734.
- c) Bell SP, Schnipper JL, Goggins K, Bian A, Shintani A, Roumie CL, Dalal AK, Jacobson TA, Rask KJ, Vaccarino V, Gandhi TK, Labonville SA, Johnson D, Neal EB, **Kripalani S**, for the PILL-CVD Study Group. Effect of a pharmacist counseling intervention on healthcare utilization after hospital discharge: a randomized controlled trial. *J Gen Intern Med* 2016;31(5):470-7. PMID: PMC4835388.
- d) Schnipper JL, Mixon AS, Stein J, Wetterneck TB, Kaboli PJ, Mueller S, Labonville S, Minahan JA, Burdick E, Orav EJ, Goldstein J, Nolido NV, **Kripalani S**. Effects of a multi-faceted medication reconciliation quality improvement intervention on patient safety: final results of the MARQUIS study. *BMJ Qual Saf* 2018;27(12):954-964. PMID: 30126891.

Link to Bibliography (> 190 peer-reviewed references):

<http://www.ncbi.nlm.nih.gov/pubmed?term=Kripalani%2C%20Sunil%5BAuthor%5D>

D. Research Support

Ongoing

- 5K12HL137943-03 (NIH/NHLBI) Kripalani (PI), Roumie (PD) 9/1/17-8/31/22
Vanderbilt Scholars in T4 Translational Research (V-STTaR) Program
This career development training program will develop a cadre of T4 translational researchers focused on heart, lung, blood, or sleep disorders.
Role: Principal Investigator
- 5U54MD010722-05 (NIH/NIMHD) Wilkins, Cox, Lima, Weiss (MPIs) 5/19/16-3/31/21
Center of Excellence in Precision Medicine and Population Health
This collaborative Vanderbilt / Meharry / University of Miami Center is conducting primary research and implementation studies on the use of precision medicine techniques in the context of health disparities.
Role: Co-Investigator; Director, Implementation Core
- 5U54TR002243-05 (NIH/NCATS) Bernard (PI) 6/01/17-2/28/22
The Vanderbilt Institute for Clinical and Translational Research
This Clinical and Translational Science Award (CTSA) provides infrastructure for patient-oriented research.
Role: Co-Investigator (Learning Health Systems platform)
- R01DK100694-06 (NIH/NIDDK) Mayberry (PI) 7/21/14-4/30/21 NCE
Improving Medication Adherence among Underserved Patients with Type 2 Diabetes
This randomized controlled trial is testing a text messaging based intervention to promote diabetes medication adherence, other self-care behaviors, and glycemic control among low-income, racially diverse adults.
Role: Co-Investigator
- VUMC57425 (PCORI/Duke) Hernandez, Roe (MPIs) 9/15/15-3/31/21 NCE
Aspirin Dosing: A Patient-centric Trial Assessing Benefits and Long-term Effectiveness (ADAPTABLE)
This large pragmatic clinical trial is comparing the effectiveness of low-dose vs. regular dose aspirin in the secondary prevention of cardiovascular events in high-risk patients with coronary artery disease.
Role: Principal Investigator for Vanderbilt (#1 enrolling site in U.S.) and Mid-South CDRN
- 5R01AG053264-06 (NIH/NIA) Simmons, Vasilevskis (MPIs) 9/30/16-4/30/21
A Randomized Controlled Trial to Deprescribe for Older Patients with Polypharmacy Transferred from the Hospital to Skilled Nursing Facilities
This randomized trial is evaluating a patient-centered medication deprescribing protocol (ShedMeds).
Role: Co-Investigator
- 1R56AG061522-01A1 (NIH/NIA) Barr, Cavanaugh, Massel (MPIs) 9/15/19-5/31/24
The Impact of Sharing Audio Recorded Clinic Visits on Self-Management in Older Adults: A Multisite Trial
This award is testing the feasibility of audio recording clinic appointments to enhance self-management.
Role: Co-Investigator
- 1K12HS026395-02 (AHRQ) Roumie, Rothman (MPI) 9/30/18-9/29/23
Learning Health System Scholar Program at Vanderbilt
This career development training program will train faculty to perform research in a learning health system.
Role: Executive Committee, Implementation Science Lead Mentor
- 1T32HS026122-02 (AHRQ) Roumie, Grijalva (MPI) 7/1/18-6/30/23
Learning Health System training program: PROgRESS--Patient/ pRactice Outcomes and Research in Effectiveness and Systems Science
This T32 supports the training of post-doctoral fellows to perform research in a learning health system.
Role: Executive Committee, Implementation Science Lead Mentor

PCORI Bachmann (PI) 4/1/19-12/31/20 NCE
Implementation of Patient-Reported Outcomes Measurement in Routine Clinical Practice for Heart Failure Patients in PCORnet
This award supports the routine collection and storage of PROMs in the health record and research databases.
Role: Co-Investigator

Bristol-Myers-Squibb Kripalani (PI) 6/1/19-10/31/20
Anticoagulation for Atrial Fibrillation: A Population-Based Approach to Closing the Evidence-Practice Gap
This quality improvement study is developing and testing an approach to close unexplained treatment gaps in use of anticoagulation among high-risk patients with atrial fibrillation.
Role: Principal Investigator

Completed (selected, last 3 years)

R01HL109388 (NIH/NHLBI) Kripalani (PI) 8/17/11-4/30/18
Health Literacy, Hospital Discharge, and Cardiovascular Outcomes
The Vanderbilt Inpatient Cohort Study (VICS) evaluated the effect of health literacy and other factors on the quality of hospital discharge and post-discharge medication management, health care utilization, and mortality.
Role: Principal Investigator

FDA/FNIH/ICON Kripalani (Site PI) 7/1/17-3/31/19
Evaluation of the Measurement Properties of Patient-Reported Outcome Instruments in Patients with Community-Acquired Bacterial Pneumonia and Acute Bacterial Skin and Skin Structure Infections
This study used mobile devices to collect and validate patient-reported symptom scores during recovery.
Role: Site Principal Investigator

3U54AT007748-04S3 (NIH/NCCIH) Hernandez, Kripalani, Brown, Vreeman (MPIs) 9/30/16-8/31/19
Health Care Systems Research Collaboratory – Administrative Supplement: ADAPTABLE
This supplement compared patient-reported vs. claims-based data for clinical outcomes.
Role: Multiple Principal Investigator

R18 HS023757 (AHRQ/Brigham & Women's) Schnipper (PI) 9/30/15-9/29/19
Implementation of a Medication Reconciliation Toolkit to Improve Patient Safety – MARQUIS 2
This project implemented an evidence-based toolkit at 18 hospitals to improve medication reconciliation.
Role: Co-Investigator

CDRN-1306-04869 (PCORI) Rothman (PI) 9/12/15-9/11/18
The Mid-South CDRN Phase II
This award supported the continued development of infrastructure for patient-centered clinical research across multiple partnered health care systems, including integrated data and informatics tools.
Role: Co-Investigator, lead for patient-reported outcomes and the coronary disease cohort

1L1CMS331549-03-00 (CMS) Rothman (PI) 9/29/15-9/28/19
Mid-South Practice Transformation Network (PTN)
The Mid-South PTN supported practice transformation and value-based care to improve population health across a large network of hospitals and clinics.
Role: Co-Investigator, lead for reducing excess Emergency Department utilization