

BIOGRAPHICAL SKETCHNAME: **LESLEE L. SUBAK, MD**eRA COMMONS USER NAME (credential, e.g., agency login): **LSUBAK**POSITION TITLE: **Professor and Chair****EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Dartmouth College, Hanover, NH	A.B.	06/1983	Geology
Stanford University, Stanford, CA	M.D.	06/1991	Medicine
University of California, San Francisco (UCSF)	Fellowship	06/1997	Epidemiology and Biostatistics
University of California, San Francisco	Fellowship	06/1997	Urogynecology and Pelvic Surgery

A. Personal Statement

I am a physician-scientist (gynecologist, female pelvic medicine & reproductive surgeon) with synergistic clinical and research interests. My research program is focused on lower urinary tract function and urinary incontinence in women, with methodological expertise in epidemiology, cost-effectiveness, and clinical trials of lifestyle, behavioral, and pharmacologic interventions to improve urologic outcomes. My group pioneered studies of weight loss as a novel treatment for incontinence and I have designed and led several successful studies of weight loss to treat incontinence, including the Program to Reduce Incontinence by Diet and Exercise (PRIDE) multicenter randomized trial of weight reduction among 338 overweight and obese women with urinary incontinence. My team has developed and investigated novel interventions for female incontinence such as yoga, slow-paced respiration, yoga, weight loss, and mobile health applications, thus providing additional treatment options for women. I am a co-founder of the Reproductive Risks for Incontinence Study at Kaiser (RRISK) 15 year prospective cohort study of over 2400 racially/ethnically diverse women investigating UI, lower urinary tract symptoms, obesity, fecal incontinence, vaginal aging, menopausal symptoms and sexual dysfunction. I have a particular interest in the relationship between urinary incontinence and body habitus, and was awarded a K24 from the NIDDK with a research focus on obesity and urinary incontinence in women. Our team was the Coordinating Center and Clinical Site for the BRinging simple urge Incontinence DiaGnosis & treatment to providers (BRIDGES) 14-center randomized trial to evaluate the effect of a simple diagnostic tool on treatment outcomes for urgency incontinence in women. We also designed and completed a pilot study then NIA-funded randomized trial on slow-paced respiration to treat female urinary incontinence, and the pilot randomized trial of yoga as well as the expanded NIH-funded pilot RCT treat UI.

B. Positions and Honors**Positions and Employment**

1998-2004	Assistant Professor In-Residence, Departments of Obstetrics, Gynecology & Reproductive Sciences, and Epidemiology & Biostatistics UCSF
2004-2009	Associate Professor In-Residence, Departments of Obstetrics, Gynecology & RS and Epidemiology & Biostatistics, UCSF
2006-2017	Co-Research Director, UCSF Women's Reproductive Health Research Career Development Program (K12)
2006-2017	Director, UCSF Women's Health Clinical Research Center Fellowship
2007-2009	Associate Professor In-Residence, joint appointment in the Department of Urology, UCSF

2008-2017 Associate Director, Women's Health Fellowship, SF Veterans Affairs Medical Center
 2009-2017 Professor In-Residence, Departments of Obstetrics, Gynecology & RS, Epidemiology & Biostatistics, and Urology, UCSF
 2010-2017 Chief of Gynecology, Women Veterans Comprehensive Health Center, SF VAMC
 2010-2017 Co-Director, SFVAMC Advanced Fellowship in Women's Health Research
 2014-2017 Co-Director, UCSF Women's Health Clinical Research Center
 2017-present Professor and Chair, Department of Obstetrics & Gynecology, Stanford University School of Medicine

Other Experience and Professional Memberships

1997-present Sub-Committee Member, 1st, 2nd, 3rd, 4th, 5th and 6th International Consultations on Incontinence, World Health Organization, Committee on the Socio-Economic Impact of Urinary Incontinence
 2000-2002 Executive Committee, NIDDK International Research Collaboration on Bladder Dysfunction
 2006 Executive Committee, NIDDK International Symposium on Lower Urinary Tract Function in Women
 2007 Invited Speaker, NIH State-of-the-Science Conference "Prevention of Fecal and Urinary Incontinence in Adults"
 2008 Co-Chair, NIDDK KUH International Workshop *Urologic Complications of Obesity & Diabetes*
 2009 Invited Speaker, NIDDK New Research Directions for Urinary Incontinence Symposium
 2013 Invited Speaker, NIDDK Urologic Complications of Diabetes: Developing a Research Agenda
 2013 Awardee, NIH Office of Behavioral and Social Sciences Research, NIH-UCLA Summer Institute on Mobile Health (mHealth) Technology Research
 2014 Invited Speaker, NIDDK Summit on Urinary Incontinence Research on Women

Honors

1991-1992 Julius R. Krevans Award for Clinical Excellence, UCSF
 1994-1995 Outstanding Resident Consultant, UCSF
 1996 Rolex/ College Golf Foundation Lifetime Achievement Award
 2000-2003 UCSF Women's Reproductive Health Research (WRHR) Career Development Scholar (K12)
 2008-present NIDDK, Mid-Career Investigator Award in Patient Oriented Research (K24) and renewal, NIH
 2009 Women's Health Foundation Medical Activist award
 2009, 2010 Outstanding Faculty Award in Medical Student Teaching, UCSF Department of Obstetrics, Gynecology and Reproductive Sciences
 2013

C. Contribution to Science

With a focus on non-malignant urological and gynecological conditions, I conduct several types of studies with mentees involved in all aspects of my research. Most of the work is multi-disciplinary and collaborative.

1. *My research focuses on the association of weight and urinary incontinence (UI) in women and clinical trials evaluating strategies to improve outcomes in women's genitourinary health.* Epidemiological studies show that obesity is one of the strongest independent risk factors for prevalent and incident UI and body mass index (BMI) has the largest attributable risk for daily UI compared to other risk factors. Since obesity is a potentially modifiable risk factor for UI, I have done a series of studies to evaluate weight reduction as a treatment option. We observed significant improvement in UI in a prospective pilot study and a pilot randomized, controlled trial (RCT) of low calorie liquid diet programs, work that laid the foundation for a multi-center RCT of weight reduction to treat UI, the Program to Reduce Incontinence by Diet and Exercise (PRIDE; U01 DK067860;). Additional collaborations in NIH-studies -- Action for Health and Diabetes (LookAHEAD), Reproductive Risk Factors for Incontinence Study at Kaiser (RRISK) and the Longitudinal Aspects of Bariatric Surgery study (LABS; *Dr. Huang* was a Co-I for PRIDE, RRISK, LABS) -- confirmed the independent association of weight and/or weight loss and UI in women. I have led the development of multicenter, interdisciplinary research teams resulting in productive collaborations.
 - a. **Subak LL**, Wing R, West DS, Franklin F, Vittinghoff E, Creasman JM, Richter HE, Myers D, Burgio KL, Gorin AA, Macer J, Kusek JW, Grady D. Weight Loss to Treat Urinary Incontinence in Overweight and Obese Women. *N Engl J Med* 2009;360:481-90. PMID: 19179316
 - b. Wing R, West DS, Grady D, Creasman JM, Richter HE, Myers D, Burgio KL, Franklin F, Gorin AA, Vittinghoff E, Macer J, Kusek JW, **Subak LL**. Effect of Weight Loss on Urinary Incontinence in Overweight and Obese Women: Results at 12 and 18 Months. *J Urol*. 2010. PMID: 20643425

- c. **Subak LL**, King WC, Belle SH, Chen JY, Courcoulas AP, Ebel FE, Flum DR, Khandelwal S, Pender JR, Pierson SK, Pories WJ, Steffen KJ, Strain GW, Wolfe BM, Huang AJ. Urinary Incontinence Before and After Bariatric Surgery. *JAMA Intern Med.* 2015 Aug;175(8):1378-87. PMID: PMC4529061
 - d. Phelan S, Kanaya AM, **Subak LL**, Hogan PE, Espeland MA, Wing RR, Burgio KL, DiLillo V, Gorin AA, West DS, Brown JS. Weight loss prevents urinary incontinence in women with type 2 diabetes: results from the Look AHEAD trial. *J Urol.* 2012 Mar; 187(3):939-44. PMID: 22264468. PMID: PMC2613830
2. Novel interventions for UI. One of the goals of my research program is to reduce barriers to the diagnosis and treatment of women with lower urinary tract symptoms. To reach more women with incontinence and encourage diagnosis and treatment, we developed an evidence-based diagnostic strategy that is feasible and effective in a primary care setting. The simple, 3-item, self-administered screening questionnaire, the 3 Incontinence Questions (3IQ), is accurate for classification of urgency and stress incontinence among women in primary care settings. We then completed a multi-center RCT of anti-muscarinic therapy in women with urgency-predominant incontinence identified solely by the 3IQ. With several mentees, we have developed and tested novel and easily accessible treatments for UI, including weight loss (see above), yoga, slow-paced respiration, and a simple group-based behavioral therapy. Pilot RCT's showed promising results for feasibility and treatment efficacy leading to two NIH-funded RCT's now in progress.
 - a. Huang AJ, Hess R, Arya LA, Richter HE, **Subak LL**, Bradley CS, Rogers RG, Myers DL, Johnson KC, Gregory WT, Kraus SR, Schembri M, Brown JS. Pharmacologic treatment for urgency-predominant urinary incontinence in women diagnosed using a simplified algorithm: a randomized trial. *Am J Obstet Gynecol.* 2012 May; 206(5):444.e1-11. PMID: 22542122. PMID: PMC2593129
 - b. Brown JS, Bradley CS, **Subak LL**, Richter HE, Kraus SR, Brubaker L, Lin F, Vittinghoff E, Grady D. The sensitivity and specificity of a simple test to distinguish between urge and stress urinary incontinence. *Ann Intern Med.* 2006 May 16; 144(10):715-23. PMID: 1670258
 - c. Huang AJ, Jenny HE, Chesney MA, Schembri M, **Subak LL**. A group-based yoga therapy intervention for urinary incontinence in women: a pilot randomized trial. *Female Pelvic Med Reconstr Surg.* 2014 May-Jun; 20(3):147-54. PMID: 24763156. PMID: PMC1557396.
 - d. Subak LL, Quesenberry CP, Posner SF, Cattolica E, Soghikian K. The effect of behavioral therapy on urinary incontinence: a randomized controlled trial. *Obstet Gynecol.* 2002 Jul; 100(1):72-8. PMID: 12100806
 3. Epidemiology. Our multi-disciplinary team investigates the epidemiology of female lower urinary tract and pelvic floor disorders to identify risk factors, particularly those that are modifiable. The Reproductive Risks for Incontinence Study at Kaiser (RRISK; Dr. Huang was a Co-I), a 15 year prospective cohort study of over 2400 racially/ethnically diverse women implemented as a UCSF-KPNC collaboration, we investigated the prevalence of and risk factors for UI, lower urinary tract symptoms, fecal incontinence, vaginal aging, menopausal symptoms and sexual dysfunction, and the association of childhood and adult lower urinary tract symptoms. Several studies examined differences in prevalence of these conditions by race/ethnicity.
 - a. Thom DH, van den Eeden SK, Ragins AI, Wassel-Fyr C, Vittinghof E, **Subak LL**, Brown JS. Differences in prevalence of urinary incontinence by race/ethnicity. *J Urol.* 2006 Jan; 175(1):259-64. PMID: 16406923
 - b. Thom DH, Brown JS, Schembri M, Ragins AI, **Subak LL**, Van Den Eeden SK. Incidence of and risk factors for change in urinary incontinence status in a prospective cohort of middle-aged and older women: the reproductive risk of incontinence study in Kaiser. *J Urol.* 2010 Oct; 184(4):1394-401. PMID: 20727544. PMID: PMC2807921
 - c. Huang AJ, Thom DH, Kanaya AM, Wassel-Fyr CL, Van den Eeden SK, Ragins AI, **Subak LL**, Brown JS. Urinary incontinence and pelvic floor dysfunction in Asian-American women. *Am J Obstet Gynecol.* 2006 Nov; 195(5):1331-7. PMID: 16643821
 4. Economics, Cost-Effectiveness, and Health Utility Assessments. My team has estimated the cost of illness and of women's personal management cost for urinary incontinence, cost of pelvic organ prolapse surgery, and the cost-effectiveness of treatments for urinary incontinence, LUTS, and weight loss. We did within-trial cost-effectiveness analyses similar to what is proposed for this study. We developed and tested a novel instrument to estimate incontinence resource use and evaluated change in management costs of

incontinence following treatment. We have also done pioneering work measuring health-related quality of life (HRQOL or utilities), the change in HRQOL following treatment, and predictors of HRQOL.

- a. Leahey TM, Thomas G, Fava JL, **Subak LL**, Schembri M, Krupel K, Kumar R, Weinberg B, Wing RR. Adding evidence-based behavioral weight loss strategies to a statewide wellness campaign: a randomized clinical trial. *Am J Public Health*. 2014 Jul; 104(7):1300-6. PMID: 24832424. PMCID: PMC4056209
- b. **Subak LL**, Goode PS, Brubaker L, Kusek JW, Schembri M, Lukacz ES, Kraus S, Chai T, Leng W, Norton P, Tennstedt S. Urinary Incontinence Management Costs are Reduced at 24 Months Following Burch or Sling Surgery for Stress Incontinence. *Am J Obstet Gynecol*. 2014;14:217-8. PMID: 24631433
- c. Pinto AM, **Subak LL**, Nakagawa S, Vittinghoff E, Wing RR, Kusek JW, Herman WH, West DS, Kuppermann M. The effect of weight loss on changes in health-related quality of life among overweight and obese women with urinary incontinence. *Qual Life Res*. 2012 Dec; 21(10):1685-94. PMID: 22161726. PMCID: PMC2877497
- d. Appa AA, Creasman J, Brown JS, Van Den Eeden SK, Thom DH, **Subak LL**, *Huang AJ*. The impact of multimorbidity on sexual function in middle-aged and older women: beyond the single disease perspective. *J Sex Med*. 2014 Nov; 11(11):2744-55. PMID: 25146458

Complete List of Published Work in PubMed: <http://www.ncbi.nlm.nih.gov/pubmed/?term=subak+>

D. Research Support

Ongoing Research Support

2K24DK080775-06 Subak, LL (PI) 07/01/2015 – 06/30/2020
Patient Oriented Research and Mentoring in Obesity and Urinary Incontinence
This is a 5-year K24 Midcareer Investigator Award in Patient-Oriented Research (POR) renewal to expand mentoring work with early career patient oriented researchers and promote a multidisciplinary, translational research paradigm focused on the association of weight and weight loss with UI and LUTS.
Role: PI

1R01AG047894-A1 Huang, AJ (PI) 04/15/14-03/31/2018
A Behavioral Slow-Breathing Exercise Program for Female Overactive Bladder
The goal is to determine the effect of a 12-week behavioral slow-paced respiration intervention on the severity, bothersomeness, and impact of overactive bladder syndrome in women, and to explore changes in anxiety and stress and autonomic nervous system balance as potential mediators of treatment effects.
Role: Co-Investigator

1R34AT008028-01A1 Huang, AJ (PI) 09/01/14-06/30/17
Yoga to Enhance Behavioral Self-Management of Urinary Incontinence in Women
This is a pilot study to test and refine procedures for a full-scale efficacy trial of yoga to treat incontinence.
Role: Co-Investigator

5R01AG043383-02 Diokno A (PI) 09/2013 - 08/2017
Group Learning Achieves Decreased Incidents of Lower Urinary Tract Symptoms (GLADIOLUS)
This is a three-site RCT to compare the effectiveness and cost-effectiveness of a group-administered treatment program to no treatment.
Role: Site PI; Project Co-Investigator for cost-effectiveness analyses

Completed Research Support (selected and relevant):

1K12DK111028-01 Subak, LL (PI) 07/01/2016 – 04/30/17
UCSF-Kaiser Urological Epidemiology Research Career Development Program
The goal of this K12 program is train and mentor junior faculty clinician-researchers to develop emerging academic research leaders in the epidemiology of non- malignant urology research
Role: PI

2K12D001262-16 Norton, M (PI) 09/01/15-04/30/17
Women's Reproductive Health Research Award

The goal of this K12 program is to continue to choose, train and mentor junior faculty clinician-researchers to develop a cadre of successful independent investigators in women's health.

Role: Co-Research Director

Private Industry Subak, LL (PI) 5/1/2015-4/30/17

Astellas Investigator Initiated Trial (IIT)

Pilot Feasibility study of Mirabegron to treat UUI in elderly women

This is pilot RCT of Mirabegron compared to Tolterodine in elderly women with urgency urinary incontinence to determine the feasibility of a larger study and evaluate the safety, tolerability and satisfaction of both therapies.

Role: PI

VHA Subak, LL & Kerikowske, K (Co-PI) 01/01/12 - 4/30/17

Department of Veterans Affairs, Veterans Health Administration, Office of Academic Affiliations
The San Francisco Veterans Affairs Medical Center Advanced Fellowship in Women's Health Program

This is a 2-year fellowship with formal didactic training, structured mentoring, and focused clinical, epidemiological, translational or policy research within gynecology, obstetrics and women's health.

Role: Co-PI

U01 DK067860 Subak, LL (PI) 9/30/03-6/30/09

Program to Reduce Incontinence by Diet & Exercise (PRIDE)

This was a multi-site RCT to determine the effect of a standard weight loss program on frequency and severity of stress and urge urinary incontinence among overweight and obese women with UI.

Role: PI

1 R01 DK070196 Subak, LL (PI) 8/15/05-07/31/09

EPRIDE: Economic Analysis of the EPRIDE

This was a within-trial cost-effectiveness analysis of the PRIDE RCT to treat incontinence women.

Role: PI

R01 DK078172 Subak, LL (PI) 4/01/08 - 3/31/11

Economic Analysis of the Urinary Incontinence Treatment Network (E-UITN)

The goal was to evaluate the costs and cost-utility of UITN RCTs investigating treatments for incontinence.

Role: PI