

BIOGRAPHICAL SKETCH

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NAME: Banta-Green, Caleb

eRA COMMONS USER NAME (credential, e.g., agency login): CALEBBG

POSITION TITLE: Principal Research Scientist

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Santa Cruz, CA	BA	06/1993	Biology
University of Washington, Seattle, WA	MSW	06/1996	Social Work, Administration & Policy
University of Washington, Seattle, WA	MPH	06/1997	Public Health, Health Services
University of Washington, Seattle, WA	PhD	06/2008	Public Health, Health Services Research

A. Personal Statement

I am a Principal Research Scientist at the University of Washington's Alcohol and Drug Abuse Institute and an Affiliate Associate Professor in the School of Public Health. I conduct health services and epidemiological research and evaluation. I oversee technical assistance to those implementing interventions for opioid use disorder and overdose for two SAMHSA projects awarded to the Washington State DSHS' Division of Behavioral Health and Recovery: *Washington State Project to Prevent Prescription Drug/Opioid Overdose (Evaluation director) and 3 sub-contracted State Targeted Response (STR) projects*. I am the PI of a Laura and John Arnold Foundation grant to develop and test the impact of opioid use disorder treatment decision making for recently released inmates. I was recently the PI on an NIH National Institute on Drug Abuse (NIDA) funded R01 clinical trial evaluating an opioid overdose prevention intervention. I am funded by the WA State substance abuse agency to run the Center for Opioid Safety Education to support professional, community, and patient overdose prevention education statewide. I am sub-contracted on a CDC grant to Washington's Department of Health to oversee buprenorphine training and education, consult on opioid overdose surveillance methods, and implement an opioid use disorder treatment decision making protocol at the Washington State Recovery Helpline. In 2012, I served as the Senior Science Advisor to the Director of the Office of National Drug Control Policy (ONDCP) working on issues related to opioid use disorder and overdose.

1. **Banta-Green C.J.**, Coffin PO, Merrill JO, Sears JM, Dunn C, Floyd AS, Whiteside LK, Yanez ND, and Donovan DM (2018). *Impacts of an opioid overdose prevention intervention delivered subsequent to acute care*. Inj Prev DOI: 10.1136/injuryprev-2017-042676.
2. Frost, M.C., Williams, E.C., Kingston, S., and **Banta-Green, C. J.** (In press). *Interest in Getting Help to Reduce or Stop Substance Use Among Syringe Exchange Clients Who Use Opioids*. J Addict. Med.
3. **Banta-Green, C.J.**, Maynard, C., Koepsell, T., Wells, E., Donovan, D. (2009). *Retention in methadone maintenance drug treatment for prescription type opioid primary users compared to heroin users*. Addiction 104: 775-783.
4. **Banta-Green, C.J.**, Von Korff, M., Sullivan, M., Merrill, J.O., Doyle, S., and Saunders, K. (2010). *The Prescribed Opioids Difficulties Scale: A Patient-Centered Assessment of Problems and Concerns*. Clin J Pain. 26: 489-97. PMID: PMC3286631.
5. **Banta-Green C.J.**, Coffin PO, Schoeppe JA, Merrill JO, Whiteside LK, Ebersol AK (2017). *Heroin and pharmaceutical opioid overdose events: Emergency medical response characteristics*. Drug Alcohol Depend. 10; 178:1-6.

B. Positions and Honors

Positions and Employment

1995	Social Work Intern, Evergreen Treatment Services (Opioid treatment program), Seattle, WA
1995	Social Work Intern, Veterans Affairs Medical Center, Seattle, WA
1996–1997	Project Coordinator, Alcohol & Drug Abuse Institute, University of Washington, Seattle, WA
1997–1999	Research Coordinator, Alcohol & Drug Abuse Institute, Univ. of Washington, Seattle, WA
1999–2001	Program Analyst, Casey Family Programs, Seattle, WA
2001–2003	Research Consultant, Alcohol & Drug Abuse Institute, University of Washington, Seattle, WA
2003–2012	Research Scientist, Alcohol & Drug Abuse Institute, University of Washington, Seattle, WA
2012–2016	Senior Research Scientist, Alcohol & Drug Abuse Institute, Univ. of Washington, Seattle, WA
2012–2014	Affiliate Assistant Professor, School of Public Health, University of Washington, Seattle, WA
2012–2016	Senior Science Advisor, Office of National Drug Control Policy, Executive Office of the President, Washington, DC
2014–Present	Affiliate Associate Professor, School of Public Health, Univ. of Washington, Seattle, WA
2014–Present	Affiliate Faculty, Harborview Injury Prevention & Research Center, Univ. of Washington, Seattle, WA
2016–Present	Principal Research Scientist, Alcohol & Drug Abuse Institute, Univ. of Washington, Seattle, WA
2018–Present	Interim Director, Alcohol & Drug Abuse Institute, Univ. of Washington, Seattle, WA

Other Experience and Professional Memberships

2008–Present	Washington State Department of Health, Opiate Morbidity and Mortality Workgroup
2010–2012	Member University of Washington Human Subjects Review Committee
2011–Present	Washington State Epidemiological Outcomes Workgroup
2015–Present	Scientific Advisory Group, National Drug Early Warning System NIDA NIH

2008–current	Reviewer, Drug and Alcohol Dependence
2010–current	Reviewer, American Journal of Public Health
2010–current	Reviewer, Addiction
2011–current	Reviewer, American Journal of Preventive Medicine
2016–current	Adhoc reviewer, New England Journal of Medicine
2011–ad hoc	Small Grant Review, Alcohol and Drug Abuse Institute, University of Washington
2014	Peer Review Committee, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control
2016	Peer Review Committee, National Institute on Health, National Institute on Drug Abuse

Honors

Public Health – Seattle & King County – Enhancing the Field Award, 2006
National Research Service Award (T32), Agency for Healthcare Research and Quality, 2005–2006
Annual Public Health Leadership Award, Washington State Department of Health, 2016
Friend of Pharmacy Award, Washington State Pharmacy Association, 2017
Community Connector Award, WA State Recovery Helpline, 2018

C. Contributions to Science

1. Opioid use disorder treatment – Need, availability, and retention

Medications for treating opioid use disorder have an excellent evidence base. However, methadone programs were originally designed for heroin users. My dissertation examined the emergent population of pharmaceutical opioid abusers and their retention in methadone maintenance with a paper published in *Addiction*. I have also worked with the family medicine and rural training programs in the School of Medicine at the University of Washington, including a paper characterizing prescriber specialty and facility type in rural areas. I have overseen a statewide syringe exchange survey in 2015 and 2017, each year 18 syringe exchanges and over 1,000 clients participated, documenting their interest in access treatment. The group I oversee provides substantial technical assistance to communities and organizations to support the implementation of evidence based practices.

a) Kwamme, E., Catlin, M., **Banta-Green, C.J.**, Roll, J., and Rosenblatt, R. (2012). *Who Prescribes*

- Buprenorphine for Rural Patients: The Impact of Specialty, Location and Practice Type in Washington State*. Journal of Substance Abuse Treatment, 44(3):355-60. PMID: PMC3886338.
- b) **Banta-Green, C.J.**, Maynard, C., Koepsell, T., Wells, E., Donovan, D. (2009). *Retention in methadone maintenance drug treatment for prescription type opioid primary users compared to heroin users*. Addiction 104: 775-783.
 - c) Radin, S.M., **Banta-Green, C.J.**, Thomas, L.R., Kutz, S.H., and Donovan, D.M. (2012). *Substance Use, Treatment Admissions, and Recovery Trends in Diverse Washington State Tribal Communities*. Am J Drug Alcohol Abuse, 38(5):511-7. PMID: PMC3736985.
 - d) **Banta-Green CJ**, Newman A, Kingston S. Washington State Syringe Exchange Health Survey: 2017 Results. Alcohol & Drug Abuse Institute, University of Washington, January 2018.
 - e) Frost, M.C., Williams, E.C., Kingston, S., and **Banta-Green, C. J.** (In press). *Interest in Getting Help to Reduce or Stop Substance Use Among Syringe Exchange Clients Who Use Opioids*. J Addict. Med.

2. Opioid overdose interventions

Following the passage of WA State's 2010 opioid overdose intervention legislation I evaluated the legal intent and evaluation of this law, the second passed in the U.S. and the first to be evaluated (subsequently a majority of states have passed similar laws). Seeing poor implementation, I obtained funding to create and evaluate online overdose training tools, first locally and then for 3,000 drug courts on behalf of the National Association of Drug Court Professionals. I have also received funding from our state substance abuse agency for the Center for Opioid Safety Education, through which we have created relationships with organizations across WA State. I also run the website www.stopoverdose.org, which received visits from 22,000 unique visitors in the past year. For my clinical trial of overdose prevention our first peer-reviewed publication was recently accepted.

- a) Franklin, G., Sabel, J., Jones, C., Mai, J., Baumgartner, C., **Banta-Green, C.J.**, Neven, D., and Tauben, D. (2015). *A Comprehensive Approach to Address the Prescription Opioid Epidemic in Washington State - Milestones and Lessons Learned*. Am J Public Health 105(3):463-9.
- b) Roe, S. and **Banta-Green, C.J.** (2015). *An Initial Evaluation of Web-Based Opioid Overdose Education*. Subst Use Misuse. 28: 1-8. [mentored student paper]
- c) **Banta-Green, C.J.**, Beletsky, L., Schoeppe, J., Coffin, P.O. and Kuszler, P. (2013). *Police Officers' and Paramedics' Experiences with Overdose and Their Knowledge and Opinions of Washington State's Drug Overdose-Naloxone-Good Samaritan Law*. J Urban Health. 90(6):1102-11. PMID: PMC3853169.
- d) **Banta-Green, C.J.**, Coffin, P.O., Merrill, J.O., Sears, J.M., Dunn, C., Floyd, A.S., Whiteside, L.K., Yanez, N.D., and Donovan, D.M. (2018). *Impacts of an opioid overdose prevention intervention delivered subsequent to acute care*. Inj Prev (In press) DOI: 10.1136/injuryprev-2017-042676.

3. Epidemiology – Documenting Opioid Related Harms

Beginning in 2001 increases in pharmaceutical opioid involved mortality were evident but poorly characterized, and existing data did not differentiate heroin from pharmaceuticals well. In collaboration with a medical examiner and toxicologist, we improved methods for identifying and differentiating heroin and pharmaceutical involved overdoses. Working with a range of epidemiological and health services data I have helped describe this phenomenon, including a 2012 paper that was the first quantification of the transition from pharmaceutical opioids to heroin. We have also used large health services datasets to characterize overdose risk among pharmaceutical opioid users. In addition to the peer-reviewed publications below I have created four "Info Briefs" describing the phenomenon, the first in 2003 and the last in 2015, based on descriptive epidemiology that were released on ADAI's website and that have been heavily cited by media and legislators in WA State.

- a) **Banta-Green, C.J.**, Coffin, P.O., Schoeppe, J.A., Merrill, J.O., Whiteside, L.K., Ebersol, A.K. (2017). *Heroin and pharmaceutical opioid overdose events: Emergency medical response characteristics*. Drug Alcohol Depend. 10; 178:1-6.
- b) *Cedarbaum, E. and **Banta-Green, C.J.** (2016). *Health Behaviors of Young Adult Heroin Injectors in the Seattle Area*. Drug Alc Depend. 158:102-9. [mentored student paper]
- c) Harruff, R.C., Couper, F.J., **Banta-Green, C.J.** *Tracking the opioid drug overdose epidemic in King County, Washington using an improved methodology for certifying heroin related deaths*. Acad Forensic Pathol 2015;5(3):499-506.
- d) *Peavy, K.M., **Banta-Green, C.J.**, Kingston, S., Hanrahan, M., Merrill, J.O., Coffin, P. (2012).

Hooked on prescription-type opiates prior to using heroin: Results from a survey of syringe exchange clients. Journal of Psychoactive Drugs, 44(3):259-65. [mentored student paper]

- e) Dunn, K.M., Saunders, K.W., Rutter, C.M., **Banta-Green, C.J.**, Merrill, J.O., Sullivan, M.D., Weisner, C.M., Silverberg, M.J., Campbell, C.I., Psaty, B.M., and Von Korff, M. (2010). *Opioid Prescriptions for Chronic Pain and Overdose: A Cohort Study.* Annals of Internal Medicine. 152: 85-92. PMID: PMC3000551.

4. Characterizing opioid use problems among chronic pain patients

In reviewing epidemiological data, it became clear that approximately half of those dying from an opioid-involved overdose had a prescription at the time of death, and many heroin users reported initially being dependent on pharmaceutical opioids. We initially approached this work to determine the prevalence of opioid addiction among chronic pain patients, however the psychometric tools were not performing well, so we adapted and conducted latent class analyses to characterize the different types of opioid users. From this work we developed a patient-centered tool to describe opioid related problems to facilitate clinical conversations.

- a) **Banta-Green, C.J.**, Von Korff, M., Sullivan, M., Merrill, J.O., Doyle, S., and Saunders, K. (2010). *The Prescribed Opioids Difficulties Scale: A Patient-Centered Assessment of Problems and Concerns.* Clin J Pain. 26: 489-97. PMID: PMC3286631.
- b) **Banta-Green, C.**, Merrill, J.O., Doyle, S., Boudreau, D.M., Calsyn, D.A. (2009). *Measurement of Opioid Problems among Chronic Pain Patients in a General Medical Population.* Drug Alcohol Depend. 104: 43-49. PMID: PMC2716215.
- c) **Banta-Green, C.**, Merrill, J.O., Doyle, S., Boudreau, D.M., Calsyn, D.A. (2009). *Opioid use behaviors, mental health and pain-Development of a typology of chronic pain patients.* Drug Alcohol Depend. 104:34-42. PMID: PMC2716214.
- d) Merrill, J.O., Von Korff, M., **Banta-Green, C.J.**, Sullivan, M.D., Saunders, K.W., Campbell, C.I., Weisner, C. (2012). *Prescribed Opioid Difficulties, Depression, and Opioid Dose Among Chronic Opioid Therapy Patients.* General Hospital Psychiatry; 34(6):581-7. PMID: PMC3665511.

5. Creating novel epidemiological tools for medications and drugs of abuse

Drug use epidemiology is limited by poor tools. Municipal wastewater testing for medications and drugs of abuse provides a reliable, valid, quantifiable measure of drug use. The original research in Europe was conducted by chemists and engineers, and I was engaged early to provide insights as a drug epidemiologist. I have worked to improve the statistical treatment of the data to provide valid epidemiological data have given three invited presentations to the European Monitoring Center on Drugs and Drug Abuse to share findings.

- a) **Banta-Green, C.J.**, Brewer, A.J., Ort, C., Helsel, D.R., Williams, J.R., Field, J.A. (2016). *Using wastewater-based epidemiology to estimate drug consumption-Statistical analyses and data presentation.* Sci Total Environ. 15;856-63. doi: 10.1016/j.scitotenv.2016.06.052.
- b) Brewer, A.J., **Banta-Green, C.J.**, Ort, C., Robel, A.E., Field, J. (2014). *Wastewater testing compared with random urinalyses for the surveillance of illicit drug use in prisons.* Drug Alcohol Rev. doi: 10.1111/dar.12185.
- c) **Banta-Green, C.J.**, Field, J.A., Chiaia, A.C., Sudakin, D.L., Power, L., de Montigny, L. (2009). *The spatial epidemiology of cocaine, methamphetamine and MDMA use: A demonstration using a population measure of community drug load derived from municipal wastewater.* Addiction 104: 1874-1880. PMID: PMC3225199.

Complete List of My 41 Published Works in MyNCBI:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/caleb.banta-green.1/bibliography/49727766/public/?sort=date&direction=ascending>

D. Research Support

Ongoing Research Support

1365-90004 Task Order C & E Banta-Green (PI)
Washington State Department of Social and Health Services (DSHS)
Center for Opioid Safety Education

11/01/14–06/30/19

The purpose of this project is to implement an opioid safety education and intervention center to address individual, community and professional needs regarding prevention, treatment and interventions to address morbidity and mortality associated with opioid use and abuse.

6 H79 SP022135-02M001 Long (PI) 09/01/16–08/31/19
Substance Abuse and Mental Health Services Administration (SAMHSA)
Washington State Project to Prevent Prescription Drug/Opioid Overdose (WA-PDO)
Implement a statewide network of organizations mobilizing communities, providing overdose response training, and distributing naloxone through syringe exchange programs in four high-need areas (HNA).
Role: PI of Subaward

Banta-Green (PI)
Laura and John Arnold Foundation 08/01/16–01/31/19
WA State Innovation Initiative – Medication Assisted Treatment Upon Release from Prison
To develop, implement, and assess the feasibility of procedures to provide effective services for offenders with opioid use disorder releasing from WA State Department of Corrections prisons, with the aim to facilitate linkage to ongoing medication assisted treatment in the community following release from custody.

1365-90004 Task Order J Banta-Green (PI) 08/01/17–04/30/19
Washington State Department of Social and Health Services (DSHS)
STR Technical Assistance
The Contractor, ADAI, shall subcontract to develop a buprenorphine-first model to induce and stabilize highly vulnerable people with opioid use disorder on buprenorphine for this Substance Abuse and Mental Health Services Administration (SAMHSA) funded project.

1365-90004 Task Order K Banta-Green (PI) 08/01/17–04/30/19
Washington State Department of Social and Health Services (DSHS)
STR Technical Assistance
To provide training and technical assistance services to the WA-Opioid STR Hub and Spoke's six regional networks for this Substance Abuse and Mental Health Services Administration (SAMHSA) funded project.

1365-90004 Task Order I Banta-Green (PI) 08/01/17–04/30/19
Washington State Department of Social and Health Services (DSHS)
WA-STR - Naloxone Distribution
To implement Naloxone distribution under the Washington State Targeted Response to the Opioid Crisis grant for this Substance Abuse and Mental Health Services Administration (SAMHSA) funded project.

HED22101 Sabel (PI) 08/01/16–08/31/19
Washington State Department of Health (DOH)
Prescription Drug Overdose Prevention for States
Create an opioid overdose surveillance system using electronic emergency medical system databases and to provide professional development and community education about opioid use disorder treatment and pain.
Role: PI of subaward

1 R34 DA045620-01 Stekler (PI) 08/01/17–06/30/20
Interventions to Improve the HIV PrEP Cascade among Methamphetamine Users
This proposal describes the development and preliminary evaluation of two interventions designed to increase PrEP adherence and persistence among persons at highest risk for HIV infection in Washington State.
Role: Co-Investigator

Completed Research Support

5 R01 DA030351-04 Banta-Green (PI) 05/15/12–04/30/18
A Trial to Prevent Opioid Overdose: E.D. Based Intervention & Take-home Naloxone
This randomized controlled study tested an intervention with heroin and pharmaceutical opioid users at high risk for overdose. The intervention included a brief behavioral change counseling session, overdose education and take-home naloxone. Outcomes include OD risks, OD occurrence, and health services utilization.