BIOGRAPHICAL SKETCH

NAME: Barnato, Amber E.

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

POSITION TITLE: John E. Wennberg Distinguished Professor in Health Policy and Clinical Practice and Director of the Dartmouth Institute for Health Policy and Clinical Practice

EDUCATION/TRAINING

INSTITUTION AND LOCATION	Degree or post-grad stage	Completion Date (MM/YYY)	FIELD OF STUDY
University of California, Berkeley, Berkeley, CA	BA	05/1989	Physiology
Harvard Medical School, Boston, MA	MD	06/1994	Medicine
University of California, Berkeley, Berkeley, CA	MPH	05/1997	Health Policy & Administration
Stanford University, Stanford, CA	MS	06/2001	Health Services Research
University of Colorado Health Sciences Center, Denver, CO	Resident	06/1995	General Surgery
California Department of Health Services, Sacramento, CA	Resident	06/1998	General Preventive Medicine and Public Health
Stanford University, Stanford, CA	Fellow	06/2001	Health Care Research & Policy
Dartmouth-Hitchcock Medical Center, Lebanon, NH	Fellow	12/2018	Hospice & Palliative Medicine

A. Personal Statement

I am a physician scientist with dual clinical training in public health and preventive medicine and in hospice and palliative medicine. My research seeks to identify the patient, provider, and organizational influences on medical decision making that account for systematic variation in intensive care unit (ICU) and life-sustaining treatment use for seriously ill older adults and to develop interventions to improve decision making. I focus on the interplay between organizational norms, implicit physician cognition, and racial segregation in US health care delivery. I have been continuously funded by the NIH since 2003 and have served as Principal Investigator or Project Leader on 25 extramurally funded grants. As outlined in Section C, my research methodology spans claims-based analysis of patient, provider, hospital, and region effects on end-of-life care using multi-level statistical modeling, ethnography, simulation experiments, and clinical trials. I have authored more than 170 peer-reviewed publications, and mentored more than 70 pre-doctoral and post-doctoral scientists. My academic program development work focuses on early career development for clinician-scientists, including establishing and directing the Clinical Scientist Training Program at the University of Pittsburgh and founding the Dartmouth Health Equity Research Pathways Program at Dartmouth. I am past Vice President of the Society for Medical Decision Making (SMDM) and will co-chair the 2024 SMDM annual meeting at Boston University. As part of my policy advocacy work, I oversee the Dartmouth Atlas of Health Care and am leading the development of the Dartmouth Health Equity Atlas. In addition to my academic work, I collect and share stories from diverse family members regarding their experiences making life-support decisions for patients in the ICU at the website www.ICUStoryWeb.org.

Ongoing and recently completed projects that I would like to highlight include:

1. K23MD015277
   Chuang (PI), **Barnato (Mentor)**
   09/18/2021-05/31/2025
   Targeting Bias to Reduce Disparities in End-of-Life Care (BRiDgE)
2. P01AG0178
   Barnato (Overall PI, Core Lead, Project Lead)
   08/15/2023-07/3/2028
   Causes and Consequences of Healthcare Inequities in Alzheimer's Disease and Related Dementias
3. 132358-RSG-18-017-01-CPHPS
   Barnato (PI)
   07/01/2018-06/30/2022
   Variation in Cancer Centers' End-of-Life Quality - Role of Norms

Each of the awards listed above focuses on the influences of racial identity, bias, and systemic racism on the care experience of seriously ill older adults (A1, A2, A3). The citations I would like to highlight include publications demonstrating experience conducting analysis of verbal and non-verbal communication in patient-provider encounters (A4, A5), ethnography (A6), and claims analysis (A7) related to inequity in healthcare among historically marginalized populations.

Citations:

4. Elliot AM, Alexander SC, Mescher CA, Mohan D, **Barnato AE**. Differences in physicians' verbal and non-verbal communication with black and white patients at the end of life. Journal of Pain and Symptom Management. 2016 Jan;51(1):1-8. PMID: 26297851; PMCID: PMC4698224.
5. Knutzen KE, Sacks OA, Brody-Bizar OC, Murray GF, Jain RH, Holdcroft LA, Alam SS, Liu MA, Pollak KI, Tulsky JA, **Barnato AE**. Actual and missed opportunities for end of life care discussions with oncology patients: A qualitative study. JAMA Netw Open. 2021 Jun 1;4(6):e2113193. doi: 10.1001/jamanetworkopen.2021.13193. PMID: 34110395; PMCID: PMC8193430.
6. Schifferdecker KE, Butcher RL, Murray GF, Knutzen KE, Kapadia NS, Brooks GA, Wasp GT, Eggly S, Hanson LC, Rocque GB, Perry AN, **Barnato AE**. Structure and integration of specialty palliative care in three NCI-designated cancer centers: a mixed methods case study. BMC Palliat Care. 2023 May 16;22(1):59. doi: 10.1186/s12904-023-01182-9. PMID: 37189073; PMCID: PMC10185464.
7. **Barnato AE**, Johnson GR, Birkmeyer JD, Skinner JSS, O'Malley AJ, Birkmeyer NJO. Advance care planning and treatment intensity before death among black, hispanic, and white patients hospitalized with COVID-19**.** J Gen Intern Med**.** 2022 Apr 11;1-7. doi: 10.1007/s11606-022-07530-4. Online ahead of print. PMID: 35412179. PMCID: PMC9002036.

B. Positions, Scientific Appointments, and Honors Positions and Scientific Appointments

2021 -	Director, The Dartmouth Institute for Health Policy & Clinical Practice, Geisel School of Medicine at Dartmouth, Lebanon, NH
2021 -	John E. Wennberg Distinguished Professor in Health Policy & Clinical Practice, The Dartmouth Institute, Geisel School of Medicine, Hanover, NH
2019 -	Director, Levy Health Care Delivery Incubator, Geisel School of Medicine and Dartmouth-Hitchcock Medical Center, Lebanon, NH
2017 -	Professor, Department of Medicine, Division of Hospice and Palliative Medicine, Geisel School of Medicine, Lebanon, NH
2017 - 2021	Susan J. and Richard M. Levy 1960 Distinguished Professor in Health Care Delivery, The Dartmouth Institute for Health Policy & Clinical Practice, Geisel School of Medicine at Dartmouth, Lebanon, NH
2014 - 2017	Director, Section of Decision Sciences, Division of General Internal Medicine, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA
2013 - 2016	Director, Training Early Academic Career Mentors Program, Institute for Clinical Research

	Education, University of Pittsburgh, Pittsburgh, PA
2008 - 2017	Associate Professor (tenure awarded 2011), Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA
2008 - 2017	Associate Professor, Department of Health Policy and Management, University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA
2007 - 2013	Co-Leader, Doris Duke Clinical Research Fellowship Program, Institute for Clinical Research Education, University of Pittsburgh School of Medicine, Pittsburgh, PA
2003 - 2015	Director, Clinical Scientist Training Program, Institute for Clinical Research Education, University of Pittsburgh School of Medicine, Pittsburgh, PA
2002 - 2003	Visiting Scholar, Congressional Budget Office, Washington, DC
2001 - 2008	Assistant Professor, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA
2001 - 2008	Assistant Professor, Department of Health Policy and Management, University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA

Other Experience and Professional Memberships

2023 - 2024	Co-Chair, 46th Annual Meeting, Society for Medical Decision Making
2019 - 2020	Design Team, AcademyHealth Paradigm Project
2013 - 2014	Vice President, Society for Medical Decision Making
2012 - 2014	Co-Chair, Education Committee, Society for Medical Decision Making
2012 - 2016	Editorial Board Member, Health Services Research
2011 - 2015	Co-Chair, Lee Lusted Prize Committee, Society for Medical Decision Making
2009 - 2013	Trustee, Society for Medical Decision Making
2005 -	Fellow, American College of Preventive Medicine

Honors

2022 - 2023	Competitively selected participant, *Hedwig van Ameringen* Executive Leadership in Academic Medicine (ELAM) program, Drexel University School of Medicine
2013	Distinguished Mentor Award, Institute for Clinical Research Education, University of Pittsburgh School of Medicine
2013	Junior Faculty Scholar Award, University of Pittsburgh School of Medicine
2006	Best Geriatrics Abstract, Society of General Internal Medicine
2005	Nomination for Article of the Year (2004), AcademyHealth
2005	Top Ten Abstract, Society for Critical Care Medicine
2002	Outstanding Short Course, Society for Medical Decision Making
1991	Certificate of Distinction in Teaching, Harvard University
1989	Phi Beta Kappa, University of California, Berkeley

C. Contributions to Science

1. Epidemiology of end-of-life treatment intensity. My early research focused on the epidemiology of end of-life (EOL) intensive care unit (ICU) and life-sustaining treatment use among older adults. Using Medicare claims and state hospital discharge data, I described national trends in EOL treatment intensity (C1a), demonstrating that costs has affected survivors and decedents identically (C1b), Black patients' greater EOL treatment intensity is largely due to the higher treatment intensity of minority-serving hospitals for Black and White patients alike (C1c), and that in-hospital CPR survival rates have been unchanged over decades (C1d).

a) Angus DC, **Barnato AE**, Linde-Zwirble WT, Weissfeld LA, Watson RS, Rickert T, Rubenfeld GD. Use of intensive care at the end of life in the United States: an epidemiologic study. Crit Care Med. 2004 Mar;32(3):638-43. PMID: 15090940.
b) **Barnato AE**, McClellan MB, Kagay CR, Garber AM. Trends in inpatient treatment intensity among Medicare beneficiaries at the end of life. Health Serv Res. 2004 Apr;39(2):363-75. PMID: 15032959; PMCID: PMC1361012.
c) **Barnato AE**, Berhane Z, Weissfeld LA, Chang CC, Linde-Zwirble WT, Angus DC. Racial variation in

end-of-life intensive care use: a race or hospital effect? Health Serv Res. 2006 Dec;41(6):2219-37. PMID: 17116117; PMCID: PMC1955321.

d) Ehlenbach WJ, **Barnato AE**, Curtis JR, Kreuter W, Koepsell TD, Deyo RA, Stapleton RD. Epidemiologic study of in-hospital cardiopulmonary resuscitation in the elderly. N Engl J Med. 2009 Jul 2;361(1):22-31. PMID: 19713448; PMCID: PMC2917337.

2. Measurement of and returns to greater EOL treatment intensity. I advanced the state of the science for measuring EOL treatment patterns. I used a prospective admissions-based approach with a cohort of patients at high risk of dying rather than the decedent-follow back method, criticized for bias. This work provided several key insights. Hospitals have "fingerprints:" patterns of EOL treatment intensity that are invariant whether measured retrospectively (among decedents) or prospectively (among patients who were at high probability of dying upon admission, C2a) and which contribute to racial disparities in burdensome treatment at the end of life (C2d). Only half of the variation in EOL treatment intensity can be explained by hospital case mix, structure and processes, leaving a considerable amount of unexplained variation (C2b). Admission to a hospital with lower EOL treatment intensity is associated with higher 30-day mortality, but the benefit of admission to a higher EOL intensity hospital disappears by 180 days (C2d).

a) **Barnato AE**, Farrell MH, Chang CC, Lave JR, Roberts MS, Angus DC. Development and validation of hospital "end-of-life" treatment intensity measures. Med Care. 2009 Oct;47(10):1098-105. PMID: 19820614; PMCID: PMC2777615.

b) Lin CY, Farrell MH, Lave JR, Angus DC, **Barnato AE**. Organizational determinants of hospital end-of-life treatment intensity. Med Care. 2009 May;47(5):524-30. PMID: 19318999; PMCID: PMC2825686.

c) **Barnato AE**, Chang CH, Lave JR, Angus DC. The paradox of end-of-life hospital treatment intensity among black patients: A retrospective cohort study. J Palliat Med. 2018 Jan;21(1):69-77. PMID: 29106315; PMCID: PMC5757087.

d) **Barnato AE**, Chang CC, Farrell MH, Lave JR, Roberts MS, Angus DC. Is survival better at hospitals with higher "end-of-life" treatment intensity? Med Care. 2010 Feb;48(2):125-32. PMID: 19820614; PMCID: PMC3769939.

3. Isolating mechanisms underlying variations in EOL intensity. To explore mechanisms underlying variations in EOL treatment intensity, I have used population-based survey of Medicare beneficiaries, participant observation/ethnography in purposive samples of U.S. hospitals, high fidelity simulation and behavioral experiments to isolate mechanisms underlying this variation. Key findings of this work are that patient preferences (C3a) do not explain regional variations in EOL intensity but that provider and organizational decision making norms and heuristics (C3b, C3c) are potentially explanatory, and these may influence patient's choices through framing and non-verbal communication (C3d).

8. **Barnato AE**, Herndon MB, Anthony DL, Gallagher PM, Skinner JS, Bynum JP, Fisher ES. Are regional variations in end-of-life care intensity explained by patient preferences? A study of the US Medicare population. Med Care. 2007;45(5):386-93. PMID: 17446824. PMCID: PMC2147061.
9. **Barnato AE**, Tate JA, Rodriguez KL, Zickmund SL, Arnold RM. Norms of decision making in the ICU: a case study of two academic medical centers at the extremes of end-of-life treatment intensity. Intensive Care Med. 2012 Nov;38(11):1886-96. PMID: 2294055; PMCID: PMC3684418.
10. **Barnato AE**, Mohan D, Lane RK, Huang YM, Angus DC, Farris C, Arnold RM. Advance care planning norms may contribute to hospital variation in end-of-life ICU use: a simulation study. Med Decis Making. 2014 May;34(4):473-84. PMID: 24615275; PMCID: PMC4026761.
11. Elliot AM, Alexander SC, Mescher CA, Mohan D, **Barnato AE**. Differences in physicians' verbal and non-verbal communication with black and white patients at the end of life. Journal of Pain and Symptom Management. 2016 Jan;51(1):1-8. PMID: 26297851; PMCID: PMC4698224.

4. Novel behavioral interventions to improve decision making. My more recent work focuses on developing and testing novel behavioral interventions based on behavioral decision theory to improve

clinical communication and decision making. These include narrative disclosure for ICU surrogates to reduce emotional distress (C4a), provider- and patient-facing behavioral economics incentives to increase advance care planning (C4b), and "serious games" to recalibrate physician (C4c, C4d).

a) **Barnato AE**, Schenker Y, Tiver G, Dew MA, Arnold RM, Nunez ER, Reynolds CF. Storytelling in the early bereavement period to reduce emotional distress among surrogates involved in a decision to limit life support in the ICU: A pilot feasibility trial. Crit Care Med. 2017 Jan;45(1):35-46. PMID: 27618273. PMCID: PMC5567736.
b) **Barnato AE**, Moore R, Moore CG, Kohatsu ND, Sudore RL. Financial incentives to increase advance care planning among Medicaid beneficiaries: Lessons learned from two pragmatic randomized trials. J Pain Symptom Manage. 2017 Jul;54(1):85-95.e1. PMID: 28450218.
c) Mohan D, Fischhoff B, Angus DC, Rosengart MR, Wallace DJ, Yealy DM, Farris C, Chang CCH, Kerti S, **Barnato AE**. Serious games may improve physician heuristics in trauma triage. PNAS. 2018 Sep 11;115(37):9204-9209. PMID: 30150397; PMCID: PMC6140476.
d) Mohan D, O'Malley AJ, Chelen JC, MacMartin M, Murphy M, Rudolph M, Engel JA, Barnato AE. Using a video game intervention to increase hospitalists' advance care planning conversations with older adults: a stepped wedge randomized clinical trial. JGIM. 2023 Nov;38(14):3224-3234. doi: 10.1007/s11606-023-08297-y. Epub 2023 Jul 10.

5. Health care delivery changes in response to the COVID-19 pandemic. Like many scientists, I rapidly pivoted to apply my research skills to study the COVID-19 pandemic. We conducted a national study of ventilator allocation protocols (C5a), the influence of COVID-19 on non-COVID hospitalizations (C5b), and variations in advance care planning conversations and treatment limitations for COVID-19 patients from marginalized groups, including Black and Hispanic patients (C5c) and those with ADRD (C5d). This work highlights my ability to bring research expertise to new clinical contexts.

a) Chelen JSC, White DB, Zaza S, Perry AN, Feifer DS, Crawford M, **Barnato AE**. U.S. Ventilator Allocation and Patient Triage Policies in Anticipation of the COVID-19 Surge. Health Secur. 2021 Sep-Oct;19(5):459-467. PMID: 34107775.
b) Birkmeyer J, Birkmeyer NJ, **Barnato AE,** Skinner JS. The impact of the COVID-19 pandemic on medical admission rates in the United States. Health Affairs. 020 Nov;39(11):2010-2017. PMID: 32970495; PMCID: PMC7769002.
c) **Barnato AE,** Johnson GR, Birkmeyer JD, Skinner JSS, O'Malley AJ, Birkmeyer NJO. Advance care planning and treatment intensity before death among black, Hispanic, and white patients hospitalized with COVID-19**.** J Gen Intern Med**.** 2022 Apr 11;1-7. PMID: 35412179; PMCID: PMC9002036.
d) **Barnato AE,** Birkmeyer JD, Skinner JSS, O'Malley AJ, Birkmeyer NJO. Treatment intensity and mortality among COVID-19 patients with dementia: A retrospective observational study. J Am Geriatr Soc. 022 Jan;70(1):40-48. PMID: 34480354.

Complete List of Published Work in My Bibliography:
https://pubmed.ncbi.nlm.nih.gov/?term=barnato%2C+a+%5Bau%5D&sort=date