## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Charlton, Mary Elizabeth

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

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

| INSTITUTION AND LOCATION | DEGREE *(if applicable)* | Completion Date MM/YYYY | FIELD OF STUDY |
|---|---|---|---|
| University of Iowa, College of Nursing, Iowa City, IA | BS | 1998 | Nursing |
| University of Iowa College of Public Health, Iowa City, IA | MS | 2002 | Epidemiology |
| Harvard School of Public Health, Boston, MA | | 2005 | PhD course work, summer program |
| University of Iowa College of Public Health, Iowa City, IA | PhD | 2008 | Epidemiology |
| Northwestern University, Feinberg School of Medicine, Chicago, IL | | 2016 | Advanced Qualitative Methods |
| University of Michigan, Ann Arbor, MI | | 2017 | Summer Institute in Survey Research Techniques |

**NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.**

### A. Personal Statement

As an epidemiologist and health services researcher at the University of Iowa College of Public Health, I have conducted numerous studies of risk factors, quality of care measures, practice pattern variation and outcomes related to cancer, with an emphasis rural populations. I gained valuable experience working for Wellmark Blue Cross Blue Shield of Iowa and South Dakota, where my analyst and leadership roles included quality improvement initiatives with health care providers. I have also worked closely with the Iowa Cancer Registry leadership and staff on analyses of SEER, SEER-Medicare and SEER Patterns of Care data. While Deputy Director of the Iowa City Veterans Affairs (VA) Rural Health Resource Center, I conducted intervention studies to increase colorectal cancer screening among rural veterans. My current National Cancer Institute (NCI)-funded K07 award has focused on developing qualitative and survey methodology expertise to determine how rural patients with rectal cancer make decisions about where to receive care, and how physicians make decisions about where to recommend treatment for patients diagnosed with rectal cancer. As part of the career development component of my K07, I have been working toward a leadership role in the Iowa Cancer Registry under the mentorship of the Principal Investigator, Dr. Charles Lynch, and am now serving as the Associate Director of the Registry. I am also on the Board of Directors of the Iowa Cancer Consortium, a statewide coalition of >400 health care providers, public health professionals, researchers, cancer survivors and advocates working together to reduce the burden of cancer in Iowa, and am a member of the American Cancer Society Iowa State Leadership Board. I am currently co-directing a NCI-funded supplement to the P30 Holden Comprehensive Cancer Center Support Grant in which we are implementing and evaluating approaches to engage rural critical access hospitals in cancer prevention and control initiatives.

## B. Positions and Honors

### Positions and Employment

| | |
|---|---|
| 1999–2001 | Staff Nurse, Department of Behavioral Health Services, University of Iowa Hospitals & Clinics, Iowa City, IA |
| 2001–2003 | Research Assistant, Departments of Epidemiology and Family Medicine, University of Iowa Hospitals & Clinics, Iowa City, IA |
| 2003–2008 | Group Leader, Analytics and Consulting, Business Intelligence and Reporting, Wellmark Blue Cross Blue Shield, Des Moines, IA |
| 2008–2009 | Assistant Professor, University of Nebraska Medical Center, Department of Health Services Research and Administration, College of Public Health |
| 2009–2010 | Adjunct Professor, Department of Epidemiology, University of Iowa College of Public Health, Iowa City, IA |
| 2009–2012 | Deputy Director, Veterans Midwest Rural Health Resource Center, Iowa City VAMC, Iowa City, IA |
| 2010-2013 | Clinical Assistant Professor, Department of Epidemiology (primary) and Department of Health Management and Policy (secondary), University of Iowa College of Public Health, Iowa City, IA |
| 2012–2015 | Core Investigator, VA Center for Comprehensive Access & Delivery Research and Evaluation (CADRE), Iowa City VAMC, Iowa City, IA |
| 2013-Present | Assistant Professor, Department of Epidemiology, University of Iowa College of Public Health, Iowa City, IA |
| 2018-Present | Associate Director, Iowa Cancer Registry |
| 2019-Present | Associate Professor, Department of Epidemiology, University of Iowa College of Public Health, Iowa City, IA |

### Other Experience and Professional Memberships

| | |
|---|---|
| 2010–2013 | University of Iowa Institutional Review Board (IRB-03) |
| 2003–2014 | Wellmark Foundation Grant Review Committee, Reviewer |
| 2012–2016 | VA Scientific Merit Review Board (Health Services Research Study Section), Member |
| 2012– | University of Iowa Holden Comprehensive Cancer Center Cancer Epidemiology Program, Member |
| 2013– | Iowa Cancer Consortium, Board of Directors, Member |
| 2014– | University of Iowa Holden Comprehensive Cancer Center Cancer Population Research Core Advisory Committee, Faculty Advisor |
| 2014– | North American Association of Central Cancer Registries, Member |
| 2015– | American College of Epidemiology, Member |
| 2015– | Telligen Foundation Grant Review Committee, Reviewer |
| 2017– | American Cancer Society State Leadership Board, Member |
| 2017– | Journal of Rural Health Editorial Board, Member |
| 2018- | Iowa Rural Health Association Board, Member |

## C. Contribution to Science

1. RURAL DISPARITIES IN CANCER CONTROL

My primary research area focuses on rural-urban differences in screening, treatment and quality of cancer care. My K07 award specifically focuses on how rural patients with rectal cancer decide where to seek treatment. In preparation to administer a survey to Iowa patients with rectal cancer, I conducted a qualitative study to gain context around their decision making process because there were no published studies in the literature to draw from. Our study demonstrated the heavy reliance of rural cancer patients on physician recommendations and familiarity with local providers and hospitals. I have also studied the variation of use in molecular testing and targeted therapy in rural populations and published the first studies demonstrating that rural cancer patients with metastatic colorectal cancer are less likely to receive KRAS testing compared to urban patients. In addition, I was invited by *Oncology* to develop a review paper on the challenges of rural cancer care in U.S.

1. **Charlton ME**, Shahnazi AF, Gribovskaja-Rupp I, Lin C, Hunter L, Mengeling MA, Chrischilles EA, Lynch CF, Ward MM. Determinants of Rectal Cancer Patients' Decisions on Where to Receive Surgery: a Qualitative Analysis. Journal of Gastrointestinal Surgery. 2019; 23(7): 1461-1473. PMID: 30203231. PMCID: PMC6409182.
2. Pagedar NA, Kahl AR, Tasche KK, Christensen AJ, Howren MB, **Charlton ME**. Incidence trends for upper aerodigestive tract cancers in rural United States Counties. *Head & Neck*. Mar 2019; [epub ahead of print]. PMID: 30843640.
3. **Charlton ME**, Matthews K, Gaglioti A, Bay C, McDowell B, Ward MM, Levy B. Is travel time associated with late-stage colorectal cancer among Medicare beneficiaries in Iowa?" *Journal of Rural Health.* 2016 Sep;32(4):363-373.
4. **Charlton ME**, Chioreso C, Schlichting JA, Vikas P. Challenges of rural cancer care in the United States. *Oncology*. 2015; 29(9):633-640.

2. VARIATION IN TREATMENT OF COLORECTAL CANCER AND ASSOCIATED OUTCOMES
Since 2009 I have been investigating the treatment patterns for colorectal cancer and associated patient and provider factors using data from SEER and the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS) datasets. These studies, one of which I was PI and two of which I was a co-investigator, were among the first to demonstrate how real-world treatment patterns varied by patient demographics, geographic location and rurality, and by clinical and provider characteristics. I went on to be the PI of a study of outcomes associated with treatment variation based on CanCORS data, which contributed a more compelling rationale for the guideline-recommended administration of neoadjuvant chemotherapy and radiotherapy, for which quality of life scores were superior to those who received adjuvant therapy. Furthermore, these results were among the first to illustrate effects of treatment sequence across real-world settings among patients of all ages and states of health, and across several regions of the United States.

1. **Charlton ME**, Stoltenberg KB, Lin C, Schlichting JA, Halfdanarson TR, Juarez GY, Pendergast JF, Chrischilles EA, Wallace RB. Predictors of long-term quality of life for Stage II/III rectal cancer survivors in the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS). *Journal of Oncology Practice*. July 2015.11(4):e476-86. PMID: 26080831.
2. **Charlton ME**, Hrabe JE, Wright KB, Schlichting JA, McDowell BD, Halfdanarson TR, Lin C, Stitzenberg KB, Cromwell JW. Hospital characteristics associated with guideline concordant staging and treatment of stage II/III rectal cancer: Analysis of Surveillance, Epidemiology and End Results (SEER)-Medicare data. *Journal of Gastrointestinal Surgery* May 2016; 20(5):1002-11.
3. Ellis CT, **Charlton ME**, Stitzenberg KB. Patient-Reported Roles, Preferences, and Expectations Regarding Treatment of Stage I Rectal Cancer in the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS). *Diseases of the Colon and Rectum*. Oct 2016; 59(10): 907-915.
4. Chrischilles EA, McDowell BD, Rubenstein L, **Charlton ME**, Pendergast J, Arora NK. Survivorship care planning and its influence on long-term patient-reported outcomes among colorectal and lung cancer survivors: The CanCORS disease free survivor follow-up study. *Journal of Cancer Survivorship*. Jun 2015; 9(2):269-78. PMID: 25354481; PMCID: PMC4416063.

3. INTERVENTIONS TO IMPROVE COLORECTAL CANCER (CRC) SCREENING IN RURAL VETERANS
A series of projects funded through the VA Rural Health Resource Center have involved assessing urban rural differences in CRC screening, and mailing of fecal immunochemical tests (FITs) to Eastern Iowa Veterans overdue for colorectal cancer screening to determine the feasibility of this approach. Results from the pilot projects for which I secured funding and was the PI, have demonstrated that people overdue for CRC screening are willing to take FITs mailed to their home, an overwhelming majority are also amenable to taking it again one year later, participants reported high level of satisfaction with this method, and overall that the mailing approach transcends distance barriers in improving CRC screening rates. Other VA Medical Centers are now evaluating similar approaches on a larger scale.

1. **Charlton ME**, Mengeling MA, Halfdanarson TR, Makki N, Malhotra A, Klutts JS, Levy BT, Kaboli PJ. Evaluation of a home-based colorectal cancer screening intervention in a rural state. *Journal of Rural Health*. Summer 2014; 30(3): 322-32. PMID: 24164375. PMCID: PMC4266988.
2. Schlichting JA, Mengeling MA, Halfdanarson TR, Makki N, Malhotra A, Klutts JS, Levy BT, Kaboli PJ, **Charlton ME**. Increasing colorectal cancer screening in an overdue population: participation and cost

impacts of adding telephone calls to a FIT mailing program. *Journal of Community Health*. Apr 2014; 39(2):239–47. PMID: 24499966. PMCID: PMC4267004.
3. Schlichting JA, Mengeling MA, Halfdanarson TR, Makki N, Malhotra A, Klutts JS, Levy BT, Kaboli PJ, **Charlton ME**. Feasibility of Veterans' Continued Participation in an Annual Fecal Immunochemical Test Mailing Program for Colorectal Cancer Screening. *Journal of American Board of Family Medicine*. Jul-Aug 2015; 28(4):494-7. PMID: 26152441.
4. Malhotra A, Sarrazin MV, **Charlton ME**, Rosenthal G. Comparison of Colorectal Cancer Screening in Veterans Based on the Location of Primary Care Clinics. *Journal of Primary Care and Community Health* Jan 2014: 5(1):24-29. PMID: 24327586.

4. QUALITY AND COMPLETENESS OF DATA CAPTURED BY SEER CANCER REGISTRIES
Since 2010 I have become increasingly involved with the Iowa SEER Cancer Registry and have worked on a number of projects with the National Cancer Institute and with local Iowa cancer researchers and registry staff including analyses of KRAS testing among Stage IV colorectal cancer patients, completeness of new site specific factors being collected for colorectal and bladder cancers, and impact of reporting sources on the incidence of cutaneous melanoma in Iowa. These studies have helped me to take on a leadership role within the Iowa SEER Cancer Registry, and have provided valuable resources to researchers around the nation and the world who analyze SEER data.

1. Altekruse S, **Charlton ME**, Chen VW, Hsieh MC, Jessup J, Ries L, Ruiz BA. Analysis of Stage and Clinical/Prognostic Factors for Colon and Rectal Cancer from SEER Registries: Collaborative Stage Data Collection System, Version 1 & Version 2. *Cancer*. Dec 2014; 120(Suppl 23): 3793-806. PMID: 25412391; PMCID: PMC4239669.
2. **Charlton ME**, Kohler B, Adamo P. Bladder cancer collaborative stage variables and their data quality, usage and clinical implications: A review of SEER data, 2004-2010.*Cancer*. Dec 2014; 120(Suppl 23): 3815-25. PMID: 25412393; PMCID: PMC4267579.
3. **Charlton ME**, Sapkota K, Eide MJ, Olson DB, McKeen K, Platz CE, Schlichting JA, Lynch CF. What increased Registry outreach may mean for cutaneous melanoma surveillance: Impact of changes in Iowa. *Journal of Registry Management*. Winter 2014, 41(4): 201-208. PMID: 25803634.
4. **Charlton ME**, Kahl A, Greenbaum A, Karlitz JJ, Lin C, Chen VW, Lynch CF. KRAS Testing, Tumor Location and Survival in Stage IV Colorectal Cancer Patients: SEER, 2010-2013. Journal of the National Comprehensive Cancer Network. *Journal of the National Comprehensive Cancer Network*. Dec 2017. 15(12): 1484-1493. PMID: 29223986.

## D. Research Support

List both selected ongoing and completed research projects for the past three years (Federal or non-Federally-supported). *Begin with the projects that are most relevant to the research proposed in the application.* Briefly indicate the overall goals of the projects and responsibilities of the key person identified on the Biographical Sketch. Do not include number of person months or direct costs.

**Ongoing Research Support**

3P30CA086862-18S5 9/1/18-8/31/19
National Cancer Institute
Developing a Rural Cancer Control Plan for Critical Access Hospitals in Iowa
This project focuses on enhancing the Holden Comprehensive Cancer Center's capacity to generate data, research priorities and infrastructure to further strengthen cancer control research in Iowa's rural, underserved populations.

HHSN261201800012I/HHSN26100001 Lynch (PI) 5/1/18-4/30/19
US DHHS, NIH National Cancer Institute (NCI)
Surveillance, Epidemiology and End Results (SEER) Program
Statewide Iowa cancer surveillance program that has been part of the NCI SEER Program since 1973.
Role: Co-Investigator and Associate Director
Goals of the Iowa SEER Program are to: 1) describe the extent of cancer in Iowa in terms of incidence, mortality, and survival; 2) provide data to the NCI SEER Program to enable their goals to be accomplished; 3)

provide a resource for epidemiologic research into the cause of cancer, particularly related to the environment; and 4) be of service to local areas for planning of health care services and investigation of cancer clusters.

1K07 CA197067-01 Charlton (PI) 9/1/15-8/31/20
National Cancer Institute
Adding patient and provider viewpoints to rectal cancer practice variation data
This career development application is focused on developing qualitative and survey development/assessment expertise in order to incorporate patient and provider perspectives into analysis of existing registry data, particularly related to how rural patients with rectal cancer decide where to receive treatment.

**Completed Research Support**

KUMCRI/PCORI Waitman (PI), Chrischilles (Co-PI) 9/13/17-6/12/18
Molecular Testing Rapid Cycle Research Project
Role: Co-Investigator
Evaluate the use of molecular testing and targeted molecular therapies for solid tumors across PCORnet sites, determine concordance of test results with treatments, and evaluate the completeness of electronic health record-derived data to determine network capacity for pragmatic outcomes research in cancer.

TORFP 2016-07 Chrischilles (PI) 9/1/16-12/31/17
Surveillance, Epidemiology and End Results Rapid Response Surveillance Study
National Cancer Institute
Patient Generated Health Care Data to Enhance SEER Data Collection
Role: Co-Investigator
Determine the feasibility of collecting patient generated health data on adherence to cancer treatment to complement SEER registry data.

TORFP 2016-05 West (PI) 9/1/16-8/31/17
Surveillance, Epidemiology and End Results Rapid Response Surveillance Study
National Cancer Institute
Population-Based Evaluation of Comorbidity and Hospital Characteristics on Survival
Role: Co-Investigator
Conduct linkage between Iowa SEER Registry data and Iowa inpatient and outpatient hospital discharge data to assess the impact of co-morbidities and hospital characteristics on survival from rare cancers.

TORFP 2014-2 Charlton (PI) 9/1/14-8/31/15
Surveillance, Epidemiology and End Results Rapid Response Surveillance Study
National Cancer Institute
Quality Control of Electronic Pathology Results (E-PATH) Results
Examine the accuracy of the KRAS site specific factor among colorectal cancer cases and the potential role of E-Path in capturing molecular test results.

No Number Charlton (PI) 5/1/14–4/30/15
Holden Comprehensive Cancer Center Population Research Core Pilot Award
Effect of surgical approach and comorbidity on survival for patients with early stage rectal cancer
Compare the effect of radical resection vs. local excision and the influence of co-morbidity on survival among people over age 65 with Stage I rectal adenocarcinoma using SEER-Medicare data.

VA Health Services Research & Development Turvey (PI) 10/1/14–9/30/16
Dual health system users: Strategies for implementing optimal care coordination
Conduct mixed-methods assessment of care coordination opportunities within VA.
Role: Co-Investigator

IIR 11-105 Trivedi (PI) 4/1/13–3/30/15
VA Health Services Research & Development
Health Policy Implication of Dual Enrollment in VA and Medicare Advantage
Assess utilization, quality & costs of health services among VA enrollees also enrolled in Medicare Advantage.
Role: Co-Investigator