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Application Summary

Competition Details

Competition Title: 2021 Vice President's Clinical and Translational (VPCAT) Research Scholars Program Application

Application Information

Submitted By: SKYLER JOHNSON
Application ID: 2663
Application Title: The Complementary and Alternative Medicine Exposure and use in Oncology patients (CAMEO) study
Date Submitted: 9/25/2020 2:57 PM

Personal Details

uNID (U of U ID number/u00000000): u0912838
Applicant First Name: Skyler
Applicant Middle Initial: B
Applicant Last Name: Johnson
Applicant Alias (i.e., Name Applicant Prefers to Go By):
Applicant Degree(s): MD
Academic Rank (i.e., Primary Appointment Title): Assistant Professor
If selected "Other Title," please designate your Primary Appointment Title:
Secondary Appointment Title (i.e., clinic director, chair, chief, etc.): 
Academic Track: Tenure Line
College or School: University of Utah School of Medicine
Department: Radiation Oncology
Division:
Work Address: 1950 Circle of Hope Dr
Email Address: skyler.johnson@hci.utah.edu
Work Phone Number: 
Cell Phone Number: 
Month of Birth: 
Day of Birth: 
Year of Birth: 

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<td>Do you have a disability?</td>
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<td>Are you from a disadvantaged background?</td>
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<tr>
<td>Separating each with a semicolon, list up to 5 key SCIENTIFIC TERMS aligned to your research interests that we could use to search for funding opportunities via online systems (i.e., Grants.gov, NIH, Pivot, etc.).:</td>
<td>cancer; complementary; alternative; risk communication; decision making</td>
</tr>
<tr>
<td>Separating each with a semicolon, list up to 5 FUNDING AGENCIES you are interested in submitting an application for funding considerations. NOTE: if you are interested in the National Institute of Health (NIH), provide the name of the specific institute.:</td>
<td>NIH NCI; NIH NCCIH; SWOG; ACR; ASCO</td>
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<td>Are you a Scholar in one of the following programs?:</td>
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**Administrative Assistant**

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<tbody>
<tr>
<td>First Name</td>
<td>Mary</td>
</tr>
<tr>
<td>Last Name</td>
<td>Williamson</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Mary.Williamson@hci.utah.edu">Mary.Williamson@hci.utah.edu</a></td>
</tr>
<tr>
<td>Phone #</td>
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</table>
Application Details

Proposal Title
The Complementary and Alternative Medicine Exposure and use in Oncology patients (CAMEO) study

Scientific Mentor Unid (U of U ID number/u0000000. If none, list "Not Applicable")
Not Applicable

Scientific Mentor First Name
Angie

Scientific Mentor Last Name
Fagerlin

Scientific Mentor Alias (i.e., Name Mentor Prefers to Go By)

Scientific Mentor Degree(s)
PhD

Scientific Mentor Academic Rank (i.e., Primary Appointment Title)
Professor

If selected "Other Title," please designate Mentor's Primary Appointment Title
Professor and Chair

Scientific Mentor Secondary Appointment Title (i.e., clinic director, chair, chief, etc.)
Research Scientist, Salt Lake City VA Center for Informatics Decision Enhancement and Surveillance (IDEAS)
Scientific Mentor College or School

Scientific Mentor Department
Department of Population Health Sciences

Scientific Mentor Division

Scientific Mentor Email Address
angie.fagerlin@hsc.utah.edu

Scientific Mentor Work Phone Number

Scientific Mentor eRA Commons UserID

Scientific Mentor ORCID Identifier # (if mentor does not have an ORCID, please register for a unique ID via www.orcid.org)
0000-0002-9192-2777

Comments to Competition Coordinators
I appreciate the time and effort that you have put into the coordination of the applications. Thank you for the time and consideration of my application.

Skyler Johnson, MD

Acknowledgment

Applicant Acknowledgement Statement
[Acknowledged] As an applicant to the Vice President's Clinical and Translational (VPCAT) Research Scholar Program, I acknowledge that everything I have written and included within my application is a true and accurate representation of the work that I have done and aim to do if chosen to be a part of the program. I acknowledge that my application will be reviewed by VPCAT senior mentors and members of the VPCAT Alumni Advisory Committee. I understand that upon submission, I will not be allowed to make any further changes to my application.
Michael A. Rubin, MD, PhD, MS
Director, VPCAT Program
University of Utah Health Office of Academic Affairs and Faculty Development
HSEB 5515

Dear Dr. Rubin:

I am writing you today to express my interest in the Vice President's Clinical and Translational (VPCAT) Research Scholars Program. My name is Skyler Johnson, MD and I joined the Department of Radiation Oncology faculty as an Assistant Professor on the Clinician Scholar Tenure Track last year following the completion of my residency at Yale.

My professional vision is to become a national leader in oncology by growing a strong clinical research program and serving as a dedicated educator and clinician. My research interests include comparative effectiveness, patient communication and education, and clinical outcomes and quality of life research, which began during medical school, where I conducted dedicated research at the University of Michigan during a yearlong research fellowship. While there, I worked with Dr. Angela Fagerlin, who at the time was Associate Professor of Internal Medicine and Co-director of U of M’s Center for Bioethics and Social Sciences. At Yale, I continued to conduct similar research and further explored health services research, cost-effectiveness and decision analyses and clinical trial design. I received additional training as a Health Sciences Research Fellow as part of the National Clinical Scholars Program (Formerly the Robert Wood Johnson Clinical Scholar Program) and I am a current member of the Yale Cancer Outcomes, Public Policy and Effectiveness Research Center (COPPER) group. My most recent comparative effectiveness research on the use of alternative medicine and complementary medicine for cancer showed that the use of non-traditional therapies were associated with a decrement in survival. This research had immediate impact with the two papers gaining national and international attention from the lay press, resulting in over 350 stories for television, radio, and print with NBC, CNN, NPR, BBC, TIME Magazine, Reader’s Digest, among others, and it was prominently featured in the New York Times. More importantly, the research addressed an unmet need in the oncology medical literature, having been cited over 240 times and has been used in health policy documents including the WHO’s report on cancer.

As I weighed my job opportunities, I readily accepted the position here at University of Utah in large part due to the following reasons:

1) The remarkable mentorship that I would receive with Dr. Fagerlin, the now Chair of the University of Utah School of Medicine’s Department of Population Health Sciences, who played an integral role in my recruitment here.
2) The tremendous support from the Chair of the Department of Radiation Oncology, Dr. Dennis Shrieve. I have been strongly encouraged to continue my research and grow a health-services research program with a competitive financial start up package for years and an initial commitment 30% protected research effort (See Table below for complete division of effort for professional responsibilities). Although this protected time may seem minimal compared to most researchers, Dr. Shrieve has provided a written commitment to transition to 75% protected research effort upon extramural grant funding.

3) The University of Utah and Huntsman Cancer Institute’s national reputation for early career development and early career funding success, largely as supported by the VPCAT program, which has been strongly recommended to me by my mentor, Dr. Fagerlin, my department chair, Dr. Shrieve, and the Executive Director of the cancer center at HCI, Dr. Ulrich. Furthermore, the Huntsman Cancer Institute has also dedicated financial support research over the next three years.

It is my hope to be strongly considered for the VPCAT program so that I can build on my prior training and learn the skills and knowledge necessary to become an independent investigator. I have a strong background through my training in health services research, biostatistics and qualitative research but need the structured mentorship and grant-writing resources/support that are offered through the program. I am dedicated to my career goals of not only obtaining federal funding but also improving cancer outcomes for patients who may be interested in non-traditional cancer treatments and strongly believe that the VPCAT is essential to achieving these goals.

Attached you will find my Curriculum Vitae and Application Narrative for your reference, which outline prior research and highlight my future potential as an independent investigator.

Thank you for your time and consideration of my application,

Skyler Johnson, MD
Assistant Professor
Department of Radiation Oncology

<table>
<thead>
<tr>
<th>Division of Professional Responsibilities</th>
<th>Percent Effort</th>
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<tr>
<td>Investigation</td>
<td>30%</td>
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<tr>
<td>Clinical work</td>
<td>68%</td>
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<tr>
<td>Education</td>
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<tr>
<td>Administration/Service</td>
<td>1%</td>
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Curriculum Vitae

PERSONAL DATA
Name: Skyler B. Johnson, M.D.

EDUCATION
Years               Degree                  Institution (Area of Study)
April 2019 – April 2019 Certification 19
                        Yale School of Medicine (Clinical Educator, Teaching and Learning Center)
                        New Haven, CT
2018 - 2019            Chief Resident
                        Yale School of Medicine (Radiation Oncology)
                        New Haven, CT
2017 - 2018            Research Fellow
                        Yale School of Medicine (National Clinician Scholars Program)
                        New Haven, CT
2015 - 2018            Resident
                        Yale School of Medicine (Radiation Oncology)
                        New Haven, CT
2014 - 2015            Intern
                        Beaumont Health, Oakwood Hospital (Internal Medicine)
                        Dearborn, MI
2009 - 2014            M.D.
                        Michigan State University College of Human Medicine (Medicine)
                        East Lansing, MI
2003 - 2009            B.S.
                        Weber State University (Major: Zoology; Minor: Chemistry)
                        Ogden, UT

CURRENT LICENSES/CERTIFICATIONS
2019 - Present          Controlled Substance (UT) - Physician (MD)
2019 - Present          State License (UT) - Physician (MD)

UNIVERSITY OF UTAH ACADEMIC HISTORY
Radiation Oncology, 07/01/2019 - Present
07/01/2019               Assistant Professor

PROFESSIONAL EXPERIENCE
Editorial Experience
2013 - 2014            Senior Editor for Medical Student Research Journal, Michigan State University College of Human Medicine

Reviewer Experience
Chair of the Irish Cancer Society review committee for the Alternative Therapy Scoping Award
Genitourinary Reviewer for Advances in Radiation Oncology
Cancer Reviewer for *PLOS One*
Genitourinary Reviewer for *International Journal of Radiation Oncology, Biology, Physics*
Genitourinary Reviewer for *Journal of the National Comprehensive Cancer Network*
Genitourinary Reviewer for *Practical Radiation Oncology*
Reviewer for *JAMA Oncology*
Reviewer for *Medical Student Research Journal, Michigan State University*
College of Human Medicine

**SCHOLASTIC HONORS**

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<th>Year</th>
<th>Award Description</th>
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<tr>
<td>2018</td>
<td>Travel Grant Award Recipient, American Radium Society Annual Meeting, Orlando, FL</td>
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<tr>
<td>2017</td>
<td>Cancer Prevention and Control Research Prize, Yale Cancer Center, New Haven, CT</td>
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<tr>
<td>2013</td>
<td>Lifetime Member, Alpha Omega Alpha Honor Medical Society</td>
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<tr>
<td>2012</td>
<td>Joseph J. and Betty Gadeleto Scholarship Winner</td>
</tr>
<tr>
<td>2011</td>
<td>Joseph J. and Betty Gadeleto Scholarship Winner</td>
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<tr>
<td>2009</td>
<td>Crystal Crest Personality of the Year Award, Weber State University, Ogden, UT</td>
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<tr>
<td>2009</td>
<td>Cum Laude, B.S., Weber State University, Ogden, UT</td>
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<tr>
<td>2008</td>
<td>National Honor and Merit Society</td>
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**ADMINISTRATIVE EXPERIENCE**

**Administrative Duties**

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<th>Year</th>
<th>Description</th>
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<tr>
<td>2020 - Present</td>
<td>Research Applications Advisory Committee Evaluating requests for new software applications for research with data from the EDW and Epic as well as support for clinical trials</td>
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**Professional Organization & Scientific Activities**

<table>
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<th>Year</th>
<th>Activity Description</th>
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<tr>
<td>2020 - Present</td>
<td>Appointed Committee Member, NRG Oncology, New Investigators Committee</td>
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<tr>
<td>2019 - Present</td>
<td>Appointed Committee Member, American Society of Radiation Oncology/Radiological Society of North America, ASTRO Communications Committee</td>
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<td>2011 - 2012</td>
<td>Chair, American Medical Student Association, Medical Education</td>
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<td>2009 - 2011</td>
<td>Member, Michigan State Medical Society, Student House of Delegates</td>
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**Grant Review Committee/Study Section**

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<tr>
<td>2019</td>
<td>Chair of the Irish Cancer Society grant review committee for the Alternative Therapy Scoping Award</td>
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**PROFESSIONAL COMMUNITY ACTIVITIES**

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<th>Activity Description</th>
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<td>Interviewee, ABC News, Channel 8 WTNH, Good Morning Connecticut, <em>The importance of traditional cancer therapy</em></td>
</tr>
</tbody>
</table>
Interviewee, The New York Times, Alternative Cancer Treatments May Be Bad for Your Health

Interviewee, British Broadcasting Corporation, BBC News, Complementary cancer therapies linked to reduced survival

Interviewee, NBC News, Alternative medicine can be fatal in cancer

Interviewee, Connecticut Public Radio, WNPR: Healthline - Yale Cancer Answers, Alternative medicine versus conventional therapy

Interviewee, Oncology Times, 3 Questions on…The Risk of Choosing Alternative Over Conventional Therapies with Skyler Johnson, MD, of Yale School of Medicine

Interviewee, CNN International, Health News Television Interview, ¿Es la medicina alternativa una vía para curar el cáncer?

Interviewee, Reuters, Using unproven methods to tackle cancer could be deadly

Interviewee, CNN, Choosing alternative cancer therapy doubles risk of death, study says

Interviewee, Popular Science, Cancer is way more likely to kill you if you rely on ‘natural’ therapies'

Interviewee, Ars Technica, "Alternative” medicine's toll on cancer patients: Death rate up to 5x higher

Interviewee, New Scientist, Choosing alternative cancer treatment doubles your risk of death

Interviewee, MedpageToday.com, Cancer Survival Takes a Hit with Alternative Medicine

Interviewee, Medscape Medical News, 'Alternative Medicine’ for Cancer Ups Death Risk

Interviewee, United Press International, Alternative medicine only treatment linked to lower cancer survival

SERVICE AT PREVIOUS INSTITUTIONS

2016 - Present Member, Yale New Haven Hospital, Yale School of Medicine, Graduate Medical Education Committee

2014 - 2015 Member, Yale New Haven Hospital, Yale School of Medicine, Graduate Medical Education Committee

2012 - 2014 Director, Michigan State University College of Human Medicine, Medical Student Research Journal, Public Relations

2011 - 2013 Member, Michigan State University College of Human Medicine, Curriculum Advisory Board Committee

2009 - 2014 Student Volunteer, Michigan State University College of Human Medicine, Lansing Friendship Clinic

FUNDING

Active Grants
Utah Grand Challenges Award: Exposure and Use of Complementary and Alternative Medicines by Adult Cancer Patients: A Multi-Institutional Study
Principal Investigator(s): Skyler B. Johnson
Direct Costs: $193,882 Total Costs: $193,882
Role: Co-Principal Investigator

Clinical Studies
2017 - Present
Co-Investigator: Single-arm prospective study of MRI brain active surveillance in patients with small-cell lung cancer. I wrote this protocol in close collaboration with Co-Principal Investigators: Joseph Contessa, MD, PhD and Roy Decker, MD, PhD, Yale School of Medicine

2016 - Present
Co-Principal Investigator: A window study to assess the activity of olaratumab in combination with radiation for locally advanced sarcomas. I wrote this protocol in close collaboration with the primary Principal Investigator, Hari Deshpande, MD, Yale School of Medicine

PEER-REVIEWED JOURNAL ARTICLES


BOOK CHAPTERS


ADDITIONAL PUBLICATIONS
Case Reports

Editorials


PENDING PUBLICATIONS
Journal Articles
1. Joseph Anthony Miccio, MD; Andrew Barsky, MD; Sarah Gao, MD; Vivek Verma, MD; Sonal S. Noticewala, MD, MAS; Vikram Jairam, MD; Skyler B. Johnson, MD; James B. Yu, MD, MHS; James E. Hansen, MD; Sanjay Aneja, MD; Yi An, MD; Roy H. Decker, MD, PhD; S. Bulent Omay, MD; Jing Li, MD, PhD; Goldie A. Kurtz, MD; Michelle Alonso-Basanta, MD, PhD; John Y.K. Lee, MD; Veronica Chiang, MD; Henry S. Park, MD, MPH (In Press). Multi-Institutional Retrospective Review of Stereotactic Radiosurgery for Brain Metastasis in Patients with Small Cell Lung Cancer Without Prior Brain-Directed Radiotherapy. J Neurooncol.
ORAL PRESENTATIONS
Meeting Presentations
International

National
2018 Johnson SB, Stahl JM, Miccio JA, Kann BH, Kelly JR, Decker RH. Stereotactic body radiation and adjuvant chemotherapy versus surgery and adjuvant chemotherapy for T1-T2N0 small cell lung cancer. American Radium Society (ARS) Annual Meeting; Orlando, FL


2016 Johnson SB, Lester-Coll NH, Kelly JR, Kann BH, James BY, Nath SK. Comparing overall survival for androgen suppression and low-dose rate brachytherapy boost versus androgen suppression and external beam radiation boost for men with unfavorable prostate cancer. American Society for Radiation Oncology (ASTRO) Annual Meeting, Boston, MA

2013 Johnson SB, Stenmark MH, Conlon ASC, Daignault S, Marsh R, Ritter T, Litzenberg D, Sandler HM, Sanda MG, Hamstra DA. Dose to the inferior rectum has strongest association with patient reported bowel quality of life (QOL) after external beam radiation therapy (EBRT) for prostate cancer. Poster session presented at American Society for Radiation Oncology (ASTRO) Annual Meeting, Atlanta, GA.

Invited/Visiting Professor Presentations
Local/Regional
2018 Johnson SB. The impact of alternative and complementary medicine on cancer survival. Westerly Hospital Wellness Week, Westerly, RI

OTHER SCHOLARLY ACTIVITIES
Additional Research/Scholarship Contributions
Application Narrative

**Career Statement:** As an Assistant Professor on the Clinician Scholar Tenure Track in the Department of Radiation Oncology at the University of Utah Huntsman Cancer Institute, my career goal is to become a principle investigator of NIH-funded research studying sources, types and exposure to complementary and alternative medicines for cancer and their impact on attitudes and decision making of cancer patients. The long-term goal is to create a national multi-institutional cancer outcomes group based on this research.

**Career Goals and Objectives:** My professional vision is to become a national leader in oncology by growing a strong clinical research program and serving as a dedicated educator and clinician. My career goal is to become an independently funded investigator so that I can help improve physician and patient communication and ensure cancer patients make well-informed decisions. Ultimately, over my career, I would like to create a research program that studies the sociodemographic, clinicopathologic, healthcare system factors, attitudes, beliefs and exposure to complementary and alternative medicine use that may influence the quality and outcomes of oncologic care. This research will help guide meaningful efforts to improve patient and physician communication, clinical management and healthcare policy.

**My primary goal during the VPCAT program will be to submit and receive a Mentored Clinical Scientist Research Career Development Award (K23) through the National Center for Complementary and Integrative Health (NCCIH).**

- The grant will be about developing and implementing a national survey of cancer patients to identify their exposure to complementary and alternative cancer therapies, how they learned about these treatments and the factors that influenced their utilization of these treatments. Furthermore, it will evaluate patient perceptions of the purposes and success rates of non-standard treatments, as well as their attitudes, beliefs and decision-making regarding the use of complementary and alternative therapies.
- This will be a 3-year K award. Dr. Angie Fagerlin will be my mentor.

I will accomplish the following goals during the VPCAT program, which will support the K-award:

1) **Continue to accrue and collect preliminary data of cancer patient exposure, use and attitudes related to complementary and alternative medicines as part of the ongoing Utah Grand Challenges Award.**
   a. Purpose: The Utah Grand Challenges Award, a Huntsman Cancer Institute and Intermountain Utah Cancer Outcomes, Outreach and Policy (Co-Op) Center Funding Opportunity’ of $200,000 was awarded to me starting 2/2020 and is a pilot survey of cancer patients in Utah related to exposure, use and beliefs related to complementary and alternative medicine.
   b. Training: Databases, Survey Design and Implementation, Measurement
   c. Outcome: Presentation at the HCI Utah Grand Challenges Spring Symposium. This preliminary data will serve as the groundwork for the K award.

   2) **Learn qualitative design techniques as part of mixed-methods study design, building on quantitative results of the pilot study.**
      a. Purpose: Analyze data using quantitative design to understand the proportion of patients using alternative vs complementary medicines. Concurrently, I plan to begin writing a career development grant (K23) application expanding on the quantitative aspects of this research to include a national representative sample and adding a qualitative phase to include 1:1 respondent interviews of patients selecting alternative medicine.
      b. Training: Biostatistics, Qualitative Research Methods
      c. Outcome: Development of aim 1 for the K23 award

   3) **Publish key findings from the Utah Grand Challenges Awards Pilot Survey**
      a. Purpose: Disseminate key findings of this hard to study population.
      b. Training: Biostatistics, Survey Measurement
      c. Outcome: The key aims 2 (Determine: 1) cancer patients’ exposure to complementary and alternative cancer therapies, 2) how they learned about these treatments, and 3) the factors that influenced their utilization of these treatments) and 3 (will evaluate patient perceptions of the purposes and success rates of non-standard treatments, as well as their attitudes, beliefs and decision-making regarding the use of complementary and alternative therapies) from the pilot award will be submitted for presentation at ASCO’s annual meeting and the Society for Medical Decision Making’s annual meeting and both will later be submitted for publication to JAMA Oncology and Medical Decision Making, respectively. These pilot data will be used for development of the key aims 2 and 3 for the K award.
To accomplish the above goals and objectives, the VPCAT program would prove vital to my future success by providing structured mentorship, multidisciplinary networking, and career development, particularly in the area of grant writing and application for extramural funding. I am dedicated to attending and eagerly participating in all of the curricular offerings within the VPCAT program.

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<th>Timeline during the VPCAT program</th>
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<td>4/1/2022</td>
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<td>7/1/2022</td>
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**Scientific Mentoring Plan:**

My primary scientific mentor is Angela Fagerlin, PhD, Professor and Chair of the Department of Population Health Sciences. We previously worked together while at University of Michigan on a prospective medical decision making project among cancer patients that resulted in a publication. Dr. Fagerlin is an internationally recognized leader in medical decision making. Prior to becoming the University of Utah’s inaugural Chair of the School of Medicine’s Department of Population Health sciences, she was the Co-Director of the University of Michigan’s Center for Bioethics and Social Sciences and Professor of Medicine. She also served as the President of the Society for Medical Decision Making. She is currently recognized as an international leader in population-based health outcomes as well as an extraordinary educator and researcher focusing on health services, cost, quality, and health-care delivery. She has previously successfully mentored individuals in scientific and career development who have obtained a variety of K-awards and Career Development Awards (e.g., VA CDAs). Her experience and leadership will be critical to my development into an independent investigator. Her primary research interests align with my goals and objectives and include factors that affect risk perception, risk communication, decision aids, and patient-physician communication.

I plan to meet with Dr. Fagerlin on a monthly basis, which we have already been doing to date. She played an essential role in my being awarded the Utah Grand Challenges Award, a $200,000 grant over 18 months to pilot the initial study, which will serve as the basis for future awards. With her mentorship, I will continue to work on completion of this project and on future strategies to create a competitive application for K award grant funding. I will work closely with Dr. Fagerlin to learn the processes, structure, and successful components of research and extramural grant funding.

**Research Plan**

Complementary and alternative medicine are defined as products, practices and systems that are not part of mainstream medicine and is estimated to be a multibillion dollar industry in the United States[1]. Its growth has been attributed to a combination of its availability and marketing by means of the internet as well as patients’ beliefs and philosophies regarding their own health [1-3]. It is estimated that between 48-88% of cancer patients use some form of complementary and alternative medicine [4-8].

Recently, my group compared the survival outcomes of patients using alternative medicine, defined as unproven cancer treatments received without any conventional cancer treatment, compared to standard of care cancer therapies and showed that alternative medicine is associated with lower survival for patients with curable cancers [9]. This research was followed by a companion study that demonstrated that patients who used complementary medicine, defined as unproven cancer treatments used with one or more conventional cancer treatments, had an associated decrement in survival compared to standard of care cancer therapies [10]. These results prompted an ASCO annual survey that suggested that nearly 40% of individuals believed that alternative medicines could cure cancer [11].

Despite the widespread use of complementary and alternative medicines and the belief in their efficacy, very little is known about the details surrounding the contemporary use of these therapies among cancer patients. Specifically, data about the source of information used for the non-traditional cancer treatments, the types of therapies used, and the perceptions, attitudes and beliefs of cancer patients using these types of
therapies has not been evaluated in the previous research. As such, data remains sparse, given difficulties associated with studying this unique population.

To solve this problem, a research pilot survey is underway to quantify the number of individuals who are using unproven therapies, describe the types of therapies used, and define motivating factors behind their use. The results of these data will generate novel, informative data to better understand patient level information related to complementary and alternative medicine use in cancer patients.

**Specific Aims**

**Aim 1** will revise the questionnaires on complementary and alternative cancer treatments. Completion of this aim will allow revision of pilot survey instrument using classical test theory and item response theory so survey design is improved, representative of the patient experience, and the information obtained will fill essential gaps in the medical literature. This will expand the pilot survey into a national representative sample for K23 aims 2 and 3.

**Aim 2** will determine: 1) cancer patients’ exposure to complementary and alternative cancer therapies, 2) how they learned about these treatments, and 3) the factors that influenced their utilization of these treatments. These results will provide researchers and clinical oncologists with essential patient level information regarding non-standard therapies and lead to identification of specific groups where (1) recruitment for the national sample can be optimized as part of K23 aims 2 and 3 and (2) future risk communication and decision aid can be developed and used as interventions for the planned future R01.

**Aim 3** will evaluate patient perceptions of the purposes and success rates of non-standard treatments, as well as their attitudes, beliefs and decision-making regarding the use of complementary and alternative therapies. This aim will lead to key information necessary for development of 1:1 qualitative interviews as part of K23 aim 1. These results will also serve in the development of future risk communication and decision aid tools that will be developed and used as interventions in the planned future R01.

These three specific aims will be completed during my time in the VPCAT program and once completed, will serve as the preliminary data to support the aims within the K23 award.

**Significance & Rigor of Prior Research:**
The use of complementary and alternative medicine is estimated to be multibillion dollar industry in the United States [1]. Its growth has been attributed to its increased availability and marketing as well as congruence with patients’ beliefs, values, and philosophies regarding their health, especially the desire for direct self-autonomy [1-3]. It is estimated that between 48-88% of cancer patients have reported use of complementary and alternative medicine as part of their therapy [4-8]. Despite the widespread use of complementary and alternative medicine, there had been limited research evaluating the impact of these therapies on survival. Approximately two-thirds of cancer patients believe complementary medicine will prolong life and one-third expect it to cure their disease [4]. While it is certainly possible that complementary medicine may improve outcomes by helping patients tolerate conventional medical care and complete recommended therapy, complementary medicine may result in inferior survival as a result of delays to receiving proven conventional cancer treatment and refusal of other recommended conventional cancer treatments [12-14].

Additionally, some patients use only alternative medicine, which does not include any conventional treatment [1, 3, 15] as many patients consider this to be an effective and less toxic alternative to conventional treatment despite limited evidence to support these claims [16, 17]. Delay or refusal of conventional treatment is a well-documented phenomenon, often done in favor of alternative medicine [16, 18]. There is limited research evaluating the use and effectiveness of alternative medicine, partly due to a lack of information or hesitance on behalf of patients to disclose non-medical therapy to their providers [4, 19].

Therefore, in light of the lack of knowledge regarding the association between complementary and alternative medicines and overall survival in cancer patients, we used a large national database to further investigate this gap in the medical literature.

**We reported that when compared to standard of care therapies, alternative and complementary medicine are associated with lower survival for cancer patients.** I previously led a team that published national outcomes data which showed that 5 years after a cancer diagnosis, 78.3% of subjects who received standard of care treatments were still alive compared to only 54.7% of subjects who used alternative medicine, defined as unproven cancer treatments received without any conventional cancer treatment [9]. Alarmingly, patients with the three most deadly cancer diagnoses (lung, colorectal and breast cancer) who used alternative medicine were two, four and a half, and five times more likely to die, respectively, according to our research. This research was followed by a companion study by our group that showed that patients who used complementary medicine, defined as unproven cancer treatments with one or more conventional cancer treatments, had a 2-fold decline in overall survival when compared to those who received no complementary...
medicines [10]. Yet, a recent ASCO annual survey suggested that approximately 40% of individuals believed that alternative medicines, used solely, can cure cancer [11]. This provides an opportunity to improve cancer care through patient education. Unfortunately, data about the source of information used for the non-traditional cancer treatments, the types of therapies used, and the perceptions, attitudes and beliefs of cancer patients using these types of therapies was not evaluated in the previous research. As such, data remains sparse, given difficulties associated with studying this unique population.

A major challenge in clinical oncology is the dissemination of accurate, effective, and evidence-based information to educate our patients suffering from cancer. This has been recently highlighted in multiple recent high-impact editorials on the issue of health-related misinformation [20-22]. By identifying the source and content of information sought by patients and the types of therapies used, and understanding the perceptions, attitudes and beliefs of cancer patients interested in these therapies, we will be better equipped to design initiatives to improve patient education. This should result in our ultimate goal of improving oncologic outcomes.

The proposed study will generate novel, informative data to better understand patient level information on unproven cancer therapies. It will provide better insight into the source and content of non-standard cancer treatments, what types of non-standard treatments are considered by cancer patients, how patients perceive the purpose of these non-standard treatments, and what kind of impact exposure to complementary and alternative medicines have on patient decision-making for treatment. Such information will be instrumental in designing appropriate interventions to correct cancer patient misinformation that may harm cancer patients.

Prior Research Efforts:

Medical School as a Research Fellow at University of Michigan:
I spent a year between my 3rd and 4th years of medical school evaluating clinical outcomes and comparative effectiveness of treatments for cancer. Though I had many peer-reviewed publications throughout this experience, the most pertinent was a part of a larger study to develop an individually tailored decision aid for men with prostate cancer [23]. I recruited, analyzed and co-first authored a manuscript with my current mentor, Dr. Angie Fagerlin, to determine knowledge and understanding of the natural history of cancer, with and without treatment. This study was funded by the NCI’s Center for Health Communication Research. I gained experience in study design, statistics, writing and publishing as well as the use of patient educational materials and risk communication to improve cancer outcomes.

Residency in Radiation Oncology at Yale:
My research interests, which began during medical school, including comparative effectiveness, clinical outcomes and quality of life research, continued while I was at Yale. In addition to publishing in these areas, I further explored health services research, cost-effectiveness and decision analyses and clinical trial design.

Health Sciences Research Fellow, National Clinical Scholars Program at Yale:
I used a large national database to identify patients who underwent alternative medicine for cancer in lieu of conventional cancer treatments and investigated the factors associated with its use and survival [9]. Following this, I evaluated complementary medicine for cancer in addition to conventional cancer treatment. We investigated factors associated with selection of complementary medicine, the association between use of complementary medicine and delay of initiation of conventional cancer treatments or refusal of further adjuvant conventional cancer treatments, and how these factors seemed to mediate survival outcomes in patients who used complementary medicine compared with those who used no complementary medicine [10]. This research garnered national and international media attention from the lay press and resulted in over 350 news stories. He and members of his research team conducted television, radio, and print interviews with NBC, CNN, NPR, BBC, TIME Magazine, Reader’s Digest, among others, and it was also prominently featured in the New York Times. More importantly, the research addressed an unmet need in the oncology medical literature having been cited more than 240 times and has been used in health policy documents including the WHO’s report on cancer.

Assistant Professor in the Department of Radiation Oncology at University of Utah:
1) I was awarded the Utah Grand Challenges Award, a $200,000 award for my proposal to complete a pilot study on patients within the state of Utah over an 18-month period at both IHC and HCI. Utah patients diagnosed with curable cancers have access to some of the most advanced treatment options in the world. The Huntsman Cancer Institute and Intermountain Cancer Centers provide these cancer services to >85% of cancer patients. Given my prior research that has shown that patients with curable cancers who forgo recommended curative intent treatments – such as surgery, radiotherapy, and modern systemic therapies – and instead pursue alternative approaches are more likely to die that those pursuing conventional
therapies. These non-standard treatment decisions result in a worse survival for cancer patients overall and particularly those cancers which have the highest mortality in the state of Utah including lung, colorectal and breast cancers [9, 10]. Furthermore, cancer patients in the region that includes Utah are more than three times as likely to select alternative treatments than patients in the northeast and southeast, but the reason for this geographic trend is unclear [9, 10]. If we can understand why Utahans may be more inclined to pursue complementary and alternative medicines then we could potentially design an educational program that could reduce death in this population of curable cancer patients by up to 5-fold.

Future Research Plan
The immediate goal of this study is to collect survey data that captures the source of exposure and estimates the use of complementary and alternative medicines and practices to treat malignant conditions from subjects with cancer to better understand the factors that contribute to the use of these therapies. The long-term goal is to expand the study protocol to obtain a national sample to understand how use varies across the nation (regions, urban vs suburban vs rural) and the factors that contribute to the use of complementary and alternative medicines supported with extramural funding.

Building on research completed as part of the pilot study, a multi-institutional questionnaire and a qualitative study as part of a K award will be developed during the VPCAT program. I plan to expand the research questionnaire to multiple institutions across the United States to obtain a representative nationwide sample of cancer patients to better understand the aforementioned aims on a national scale. Additionally, a follow up qualitative study will be developed using 1:1 interviews to gain a more in-depth understanding of the motivations for pursuing alternative methods of cancer treatment, given the increased risk of death associated with this decision.

Upon completion of the K award, it is my goal to continue to expand on this research by applying for an R01 which will 1) determine the rationale and behavioral determinants for choosing alternative medicines using 1:1 qualitative interview for patients seeking alternative medicines, 2) develop a decision support tool and risk communication aid for target groups and 3) test cancer patient-specific interventions for those seeking complementary and alternative medicines.
References:
September 24th, 2020

Re: Plan for Transition to an Independent Investigator

Dear Dr. Rubin and VPCAT Review Committee:

Dr. Skyler Johnson was recruited to the University of Utah’s Department of Radiation Oncology at the Huntsman Cancer Institute, in part, with a goal to develop a robust health-services research program. To ensure his success as he works towards research independence, he was provided 30% protected research time and a competitive start-up package.

Our plan to manage Dr. Johnson’s current workload includes quarterly meetings and evaluations with a focus on career and research development. These meetings will be used to prevent and or address issues of inadequate devoted time and appropriate balance of his current professional responsibilities (68% clinical work (including 8% educational effort during clinical care), 1% education, 30% investigation (including 5% educational effort during investigation) and 1% administrative/service).

In order for Dr. Johnson to become a Principal Investigator on an extramural award, we will plan to predominantly adjust his clinical work from 68% to 23% (including 3% educational effort during clinical care), which would then result in 75% investigation, 1% education and 1% for administrative/service. This plan will be put in place in full at the start of Dr. Johnson’s award period and in total results in nine person months to devote to his funded K award.

As a clinician researcher in the field of Radiation Oncology, Dr. Johnson’s clinical demands can be high. We are aware of this potential obstacle to not only achieving research independence but also maintaining research independence. Once he is awarded his K award, we will plan to continue to meet quarterly to prevent and address issues of inadequate devoted time to his K award and appropriate balance of his new professional responsibilities. We have created a plan for transition that will serve him well as he strives to achieve his long-term goals.

Dennis C. Shrieve, MD, PhD
Professor and Chair
Department of Radiation Oncology
University of Utah School of Medicine
Huntsman Cancer Institute

Skyler Johnson, MD
Assistant Professor
Department of Radiation Oncology
University of Utah School of Medicine
Huntsman Cancer Institute
September 21, 2020

Michael A. Rubin, MD, PhD, MS
Director, VPCAT Program

Re: VPCAT Research Scholars Program; Skyler Johnson, MD

Dear Dr. Rubin and the VPCAT Review Committee:

It is an honor to write a letter of mentor support on behalf of Skyler Johnson, MD, for the Vice President’s Clinical and Translational (VPCAT) Research Program. I have known Dr. Johnson personally for over 6 years since we worked on a medical decision-making research project among cancer patients, while he was a medical student doing research at the University of Michigan. At that time, I was the Co-Director of the University of Michigan’s Center for Bioethics and Social Sciences and a Professor of Medicine, prior to being recruited as the University of Utah’s inaugural Chair of the School of Medicine’s Department of Population Health Sciences.

I was thrilled to hear that Dr. Johnson was considering a position here and prior to his arrival, we discussed how his continued research questions regarding non-traditional cancer treatment decisions and outcomes dovetailed nicely with our past work together in medical decision making and my other personal research areas of expertise including risk communication, risk perception, and patient-physician communication. I played a key role in his recruitment and look forward to offering him professional mentorship as he seeks to become an independent investigator as I have past mentees. For your reference, a table of current and past mentees is included below (please note that these are only mentees I am Primary or Co-Primary mentor. I have been secondary mentor for at least a dozen more junior faculty). These mentees have a record of extramural funding from the NIH and VA. Furthermore, I have read, understand and can meet the required responsibilities outlined in the ‘Scientific Mentor(s) Eligibility Determination Checklist’ and have confirmed that Dr. Johnson is able to devote at least 30% FTE.

As a mentor, I seek to create an interactive learning environment, through face-to-face meetings, where learning will be promoted through inquiry. In the short time since Dr. Johnson’s arrival here, I have continued a primary mentorship role on two of his ongoing projects 1) a multi-institutional project between IHC and HCI evaluating complementary and alternative medicine exposure, beliefs and use among adult cancer patients, which was funded by the Utah Grand Challenges Award and 2) an ongoing study in collaboration with national cancer experts quantifying misinformation and potential for harm contained within cancer articles on social media. I plan to continue to meet with Dr. Johnson monthly for at least one hour to refine his research questions, assist in experimental research design, and provide feedback on grants, abstracts and manuscripts over the 2-year period of the VPCAT Research Program and beyond. During our monthly meetings, we will evaluate the progress of the research and address any potential obstacles at the beginning of each meeting.
Dr. Johnson has the goal of becoming an NIH-funded investigator in order to have the resources to be able to answer important questions that influence cancer patients. I believe that he has the enthusiasm, the work ethic and the departmental support to assist him in achieving this lofty goal and I am more than happy to offer my mentorship to ensure that he is successful in his efforts.

Sincerely,

Angela Fagerlin, PhD
Professor and Chair, Department of Population Health Sciences
Research Scientist, Salt Lake City VA Center for Informatics Decision Enhancement and Surveillance (IDEAS)

<table>
<thead>
<tr>
<th>Fellows</th>
<th>Achievements</th>
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<tbody>
<tr>
<td>Bannon, Brittany</td>
<td>Co-PI Healthwise Foundation Grant ($150,000)</td>
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<tr>
<td>Caverly, Tanner (+ Junior Faculty)</td>
<td>VA Career Development Award</td>
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<tr>
<td>Delaney, Rebecca</td>
<td>T32 Award</td>
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<tr>
<td>Dillard, Amanda</td>
<td>Tenured Professor in R2 Institution</td>
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<td>Fuhrel-Forbis, Andrea</td>
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<td>Henry, Stephen</td>
<td>NIH K-award, NIH R01</td>
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<tr>
<td>Keeton, Kristie</td>
<td>Limited research, Clinical Track</td>
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<tr>
<td>Lacey, Heather</td>
<td>Tenured Professor at Liberal Arts College</td>
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<tr>
<td>Langford, Aisha</td>
<td>NIH Career Development Award (NHLBI)</td>
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<td>Scherer, Laura</td>
<td>AHRQ Contract (&gt;1M), RO1</td>
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<td>Wancata, Lauren</td>
<td>In Fellowship</td>
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<tr>
<td>Witteeman, Holly</td>
<td>Multiple Prestigious Canadian Grants</td>
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<td>Gornick, Michele</td>
<td>Internal K-Award</td>
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<tr>
<td>Scherer, Aaron (+ Junior Faculty)</td>
<td>NIH K-Award (NIA), CDC U01</td>
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<td>Valley, Thomas (+ Junior Faculty)</td>
<td>NIH K-Award</td>
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<th>Junior Faculty</th>
<th>Achievements</th>
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<tr>
<td>Johnson, Skyler (Sept 2019)</td>
<td>Utah Grand Challenge Grant</td>
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<tr>
<td>Name</td>
<td>Award Details</td>
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<tr>
<td>Kullgren, Jeffrey</td>
<td>VA Career Development Award, VA IIR, NIH R01</td>
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<tr>
<td>Lin, Jody</td>
<td>VPCAT Scholar, PCHF Early Career Development Award</td>
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<tr>
<td>Matsen, Cindy</td>
<td>NIH R01 to be submitted in October</td>
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<tr>
<td>Suneja, Gita</td>
<td>NIH K-Award, P30 supplement</td>
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<tr>
<td>Vanneman, Megan</td>
<td>VA Career Development Award</td>
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<tr>
<td>Wright, Julie</td>
<td>NIH K-award, NIH R01</td>
</tr>
<tr>
<td>Zahurenc, Darin</td>
<td>NIH K-award, NIH R01, NIH R21</td>
</tr>
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</table>
Dear VPCAT Review Committee:

The Department of Radiation Oncology is committed to the professional development of Skyler Johnson, MD, into a productive, independent investigator. As department chair I have committed to Skyler protected time to participate in VPCAT in addition to the 30% protected time he has for his research.

Skyler joined us from the highly reputed Yale Radiation Oncology Residency Program and has distinguished himself with an impressive CV and several high-profile publications on the subject of the use of complementary therapies by cancer patients. His work is both important and timely as little is known about the use and effects of such alternative approaches to cancer therapy. I strongly believe, that with the excellent mentorship available through VPCAT, that Skyler will be successful in obtaining extramural funding of his research.

I fully support his enrollment in the 2-year Vice President’s Clinical and Translational (VPCAT) Research Program and encourage the application for K award funding. Dr. Johnson will be released from clinical duties to attend the following:

- The 1½ day VPCAT Program Colloquium on Monday, December 7th to December 8th, 2020
- The twice-monthly, ½ day curricular sessions held the 2nd and 4th Wednesday from 12:30-4:30 pm
- The 3-day Leadership Seminar Series I and Series II
- The initial, 1-hour VPCAT Mentoring Team meeting with his scientific mentor
- At least three VPCAT mentor meetings over the 2-year program.
- Grant writing workshops, Leadership Seminars, K-club, or other applicable courses

To demonstrate our strong commitment to Dr. Johnson’s success and development, he has been provided a furnished office in the department of Radiation Oncology at the Huntsman Cancer Hospital. The office has been equipped with a computer at the Department’s expense with computer support by the HCI Computing and Technology Group. We will also provide the HCI financial and grants management support staff.

He has been provided with 30% protected research effort to work and develop a robust health-services research program with the Huntsman Cancer Institute and Population Health Science collaborators. A detailed description of his professional responsibilities are as follows: 68% clinical work (including 8% educational effort during clinical care), 1% education, 30% investigation (including 5% educational effort during investigation) and 1% administrative/service. To prevent and/or address issues of inadequate devoted time to Dr. Johnson’s career and research development due to encroaching clinical, administrative and/or
teaching effort, a quarterly evaluation will be completed. Further financial support for his clinical research activities has been committed for the first three years of his appointment by our department and HCI. Our clinical faulty are supportive of Skyler’s research program and committed to providing the necessary clinical coverage for his patients.

I am fully committed to Dr. Johnson’s development as an independent investigator and future professional success. I support his application to the VPCAT Research Program with the greatest enthusiasm and appreciate the committee’s time and consideration.

Sincerely,

Dennis C. Shrieve, MD, PhD
Professor and Chair
Department of Radiation Oncology
University of Utah
NAME: Fagerlin, Angela

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

POSITION TITLE: Chair, Department of Population Health Sciences

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.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>Completion Date MM/YYYY</th>
<th>FIELD OF STUDY</th>
</tr>
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<tr>
<td>Hope College, Holland, MI</td>
<td>BA</td>
<td>05/1995</td>
<td>Psychology</td>
</tr>
<tr>
<td>Kent State University, Kent, OH</td>
<td>MA</td>
<td>08/1997</td>
<td>Experimental Psychology</td>
</tr>
<tr>
<td>Kent State University, Kent, OH</td>
<td>PhD</td>
<td>08/2000</td>
<td>Experimental Psychology</td>
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A. Personal Statement

My expertise is in patient risk communication and the development, testing, and implementation of patient decision support interventions. My research has focused on how to best present complex statistical information to patients in order to improve their involvement in their medical decision. My other line of research has focused on the development and evaluation of a dozen decisions over a variety of conditions including fetal congenital heart disease, labor and delivery (e.g., VBAC vs. repeat C-section), heart disease, diabetes and kidney related diseases (chronic kidney disease, dialysis), prostate, breast, colon, lung cancer screening/prevention/treatment, genetic testing, stroke treatment, bariatric surgery, and preventive behaviors.

In most of these studies I have implemented user-centered design methodologies to help create effective, engaging, and easy to understand decision aids. In this work I have conducted a number of qualitative studies, focus groups, and conducted individual interviews, as well as testing decision aids in randomized controlled trials with patients and caregivers.

I also have expertise in the development of psychometrically sound measures. With colleagues, I developed the Subject Numeracy Scale which measures individuals self-rated perceptions of their numerical ability and preference for numerical information. This scale has been cited over 700 times. Additionally, I mentored one of my trainees during her development of the Maximizer-Minimizer Scale (I should note I am senior author on this paper).

I have a long history of mentoring PhD scientists and physicians, including several Loan Repayment Program Award recipients, and 7 K-awardees and VA career development award recipients. Specifically, of my junior faculty mentees who are at the stage at which to apply for career development awards, 7/7 have received a career development award either from the VA or from NIH. Furthermore, of my three K awardees who are 3 or more years into their K-awards, all have received R01s or IIRs. I am also the PI of the University of Utah’s TL1 training program. I will serve as Dr. Johnson’s primary mentor on his research and training aims. My expertise will ensure the successful completion of his aims and that at the conclusion of the VPCAT program, and submission of a K-award on his way to being an independent investigator. The following articles were led by career development awardees.


B. Positions and Honors

Positions and Employment

1995–2000  Research Fellow, Kent State University, Kent, OH
1998–1999  Teaching Fellow, Kent State University, Kent, OH
2000–2006  Research Investigator, Internal Medicine, University of Michigan, Ann Arbor, MI
2000–2016  Research Health Science Specialist, Ann Arbor Veterans Affairs Health Services Research and Development, Ann Arbor, MI
2006–2008  Research Assistant Professor, Internal Medicine, University of Michigan, Ann Arbor, MI
2008–2015  Associate Professor, Internal Medicine, University of Michigan, Ann Arbor, MI
2010–2015  Adjunct Associate Professor, Psychology, University of Michigan, Ann Arbor, MI
2010–2015  Co-Director, Center for Bioethics and Social Science and Medicine, Ann Arbor, MI
2015  Professor, Internal Medicine, University of Michigan, Ann Arbor, MI
2016–  Professor and Chair, Department of Population Health Sciences, University of Utah, Salt Lake City, UT

2016–  Research Health Science Specialist, Salt Lake City VA

Other Experience and Professional Memberships

1994–  Association for Psychological Science
1996–  American Psychological Association
1998–  Society for Judgment and Decision Making
2001–  Society for Medical Decision Making
2007–2010  Trustee and Chair of Publications Committee, Society for Medical Decision Making
2013–2015  Vice President Elect/Vice President, Society for Medical Decision Making
2015–2018  President Elect/President/Past President, Society for Medical Decision Making

Honors

1995  Phi Beta Kappa, Hope College
1999  Outstanding Manuscript, Kent State University, Applied Psychology Center
2005  Best Paper by a Young Investigator, Society for Medical Decision Making
2006  Science Leadership Conference Invitation, APA (25 “best and brightest of the newest generation of psychological scientists”)
2009  Outstanding contributions to health psychology (Junior Award), APA (Division 38)
2014  “Champion of Shared Decision Making,” Informed Medical Decisions Foundation (25 individuals who provided inspiration and guidance in the shared decision making field)
2014  Top 1% Cited Scholars in the World (Social Science), Thomson Reuters

C. Contributions to Science

1. The International Patient Decision Aids Standards collaboration (and others) have laid out broad guidelines for ensuring unbiased communication of the risks and benefits of medical interventions. However, the vagueness of the recommendations has required testing different methods for achieving the goals of the
guidelines. Along with my colleagues, I have tested dozens of different methods for communicating risk. For instance, we have tested the best methods for graphically communicating risk. Our findings have shown that pictographs (icon arrays) are the best communicators of risk and have led to increased use of pictographs in patient decision aids and in the popular media.


b. Witteman HO, Zikmund-Fisher BJ, Waters EA, Gavaruzzi T, Fagerlin A (2011). Risk estimates from an online risk calculator are more believable and recalled better when expressed as integers. J Med Internet Res, 13(3), e54.. PMCID: PMC3222170


2. Much of my work has focused on the role of numeracy (the ability to understand and derive meaning from quantitative health information) and literacy in medical decision making. My work in this area has included 1) the development of the Subjective Numeracy Scale which measures people’s perceived numeracy skills (and has been translated into Spanish, French, Dutch, Portuguese, Norwegian, and Japanese), 2) testing risk communication methods designed to help individuals with lower numeracy better understand the risks and benefits of interventions, 3) determine how patients’ numeracy affects their ability understand the risks and benefits of interventions, and 4) the development of low literacy patient decision aids.


3. With the increased emphasis on patient autonomy and shared decision making (i.e., increased collaboration between patients and physicians in medical decision making) and the decreasing time physicians are able to counsel patients on serious health conditions, patient decision aids have been proposed as a method for improving: 1) patients knowledge about their diagnosis and the risks and benefits of their treatment options, 2) the concordance between patients’ values and goals and the treatment they receive, and 3) patient involvement in shared decision making. My work in this area has focused on understanding the components of decision aids that make them more or less successful. In this aim, I have tested the impact of different risk messages within decision aids on patient knowledge, risk perceptions, and actual treatment decisions. I have also investigated the role of the literacy level of the decision aid on these same outcomes. In addition, I have worked with numerous clinicians on the development and testing of patient decision aids. Finally, I have been part of the IPDAS collaboration which regularly reviews the literature on the topics related to the IPDAS standards for the development of decision aids (particularly on the topics of literacy and values clarification methods). I have authored or co-authored dozens of papers on the topics related to shared decision making and the development and testing of decision aids.


4. In the early 1990s, living wills were advocated as a method to ensure patient autonomy. My graduate work tested whether living wills improved surrogate decision makers’ ability to make the same treatment decisions as a patient would. In this work, we found that living wills did not improve the accuracy of surrogate decision makers, primarily because surrogates projected their own treatment preferences onto the patient. I was the key part of the team that designed a longitudinal study that examined these issues and I was the lead author on a Hastings Center review which detailed the failure of the living will and called into question the appropriateness of having hospital policies that require that every patient admitted must be offered the opportunity to complete a living will. This paper has been cited over 550 times and republished in textbooks.


**Complete List of Published Work:**

**D. Additional Information: Research Support and/or Scholastic Performance**

### Ongoing Research Support

**QUE 15-286** (MPI: Lowery/Fagerlin/Rosland) 10/1/2015–9/30/2020
Veterans Affairs Quality Enhancement Research Initiative

**PROVE: PeRsonalizing Options through Veteran Engagement**
Role: MPI Queri and Project Leader

**17SFRN33660465** (PI: Fagerlin) 7/1/2017–6/30/2021
American Heart Association (AHA)

**Improving Patient and Family Health Using Family-Centered Outcomes and Shared Decision-Making**
This grant is part of a larger center grant aimed at pediatric congenital heart disease. The proposed research will develop and test a decision aid to be used by families and providers of fetuses/infants diagnosed with congenital heart disease.
Role: PI of Population Health Project

**1 R01 DK115844-01** (PI: Wright) 9/1/2017–8/31/2022
NIH/NIDDK

**Improving Outcomes in Kidney Disease Using Systems-Driven Education and Coaching**
The goal of this project at the University of Utah is to advise on the design, testing, implementation, and analysis of the proposal research intervention, and advise on the design and implementation of measuring post-intervention qualitative outcomes.
Role: Co-Investigator/Site Leader

**TL1 TR001066-04** (MPI: Fagerlin/Camp) 5/1/2018–4/30/2023
NIH/NCATS

University of Utah Center for Clinical and Translational Science (CCTS)
Through the University of Utah Center for Clinical and Translational Science (CCTS), the Training Core goal is to produce a next generation of scientists with strategic translational emphases who are successful communicators across disciplines and whose breadth of knowledge across the STARS (Spheres of Translation Across the Research Spectrum) can increase transdisciplinary cross-fertilization and accelerated healthcare advances.

Role: MPI (Contact PI)

18SFRN34110489 (PI: Fagerlin) 7/1/2018–6/30/2022
AHA
Studying Effectiveness in Patient Centered Care
The Studying Effectiveness in Patient-centered care (STEP UP-AF) Center takes as its mission to determine which type of decision aid (DA) most effectively promotes shared decision making (SDM) to improve the quality and patient-centeredness of care for patients diagnosed with atrial fibrillation (AF).
Role: Center PI

1 R01 MD012243-01A1 (PI: Makarov/Ravenell) 8/22/2018–3/31/2023
NIH/NIMHD
Randomized trial of community health worker-led decision coaching to promote shared decision making for prostate cancer screening among Black male patients and their providers.
Role: Co-Investigator

C19 - 20 – 205 (PI: Fagerlin/Scherer) 7/1/2020-3/30/2021
VA
Veterans Experiences During the COVID-19 Pandemic
This rapid COVID-19 grant surveys Veterans at three time periods to understand their response to the pandemic.
Role: Contact PI

**Completed Research Support**

15-PAF03878 (PI: Fagerlin/Scherer) 9/1/2017-3/31/2019
NSF
A Revised Mental Models Approach to Infectious Disease Control a Case Study with Zika
Role: PI

R21 NR016332 (PI: Zahuranec) 9/19/2017-07/31/2019
NIH/NIA
Development of a Tailored Life Sustaining Treatment Decision Support Intervention for Stroke Surrogate Decision Makers
Role: Co-Investigator

R21 AG052849-01A1 (PI: Taksler) 9/1/2017-7/31/2019
NIH/NIA
Individualizing Disease Prevention for Middle-Aged Adults
Role: Co-Investigator

R01 CA181357 (PI: Schonberg) 3/1/2016 – 5/31/2018
NIH/NCI
Individualizing Disease Prevention for Middle-Aged Adults

CRE 12-288 (PI Odonne) 3/01/2014-9/30/2017
VA
Will Veterans Engage in Prevention after HRA-guided Shared Decision Making?
Role: Co-Investigator