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## Application Summary

### Competition Details

<table>
<thead>
<tr>
<th>Competition Title:</th>
<th>2020 Vice President's Clinical and Translational (VPCAT) Research Scholars Program Application</th>
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<td>Award Cycle:</td>
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### Application Information

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<th>Brett Einerson</th>
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<td>Application ID:</td>
<td>1932</td>
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<td>Value-Based Outcomes in Obstetrics</td>
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<tr>
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### Personal Details

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<tbody>
<tr>
<td>Applicant First Name:</td>
<td>Brett</td>
</tr>
<tr>
<td>Applicant Middle Initial:</td>
<td>D</td>
</tr>
<tr>
<td>Applicant Last Name:</td>
<td>Einerson</td>
</tr>
<tr>
<td>Applicant Alias (i.e., Name Applicant Prefers to Go By):</td>
<td></td>
</tr>
<tr>
<td>Applicant Degree(s):</td>
<td>MD, MPH</td>
</tr>
<tr>
<td>Academic Rank (i.e., Primary Appointment Title):</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>If selected &quot;Other Title,&quot; please designate your Primary Appointment Title:</td>
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</tr>
<tr>
<td>Secondary Appointment Title (i.e., clinic director, chair, chief, etc.):</td>
<td>Medical Director, Placenta Accreta Program</td>
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<tr>
<td>Academic Track:</td>
<td>Tenure Line</td>
</tr>
<tr>
<td>College or School:</td>
<td>School of Medicine</td>
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<tr>
<td>Department:</td>
<td>Obstetrics &amp; Gynecology</td>
</tr>
<tr>
<td>Division:</td>
<td>Maternal-Fetal Medicine</td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:brett.einerson@hsc.utah.edu">brett.einerson@hsc.utah.edu</a></td>
</tr>
<tr>
<td>Work Phone Number:</td>
<td></td>
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<tr>
<td>Cell Phone Number:</td>
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<td>Month of Birth:</td>
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<td>Day of Birth:</td>
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<td>Year of Birth:</td>
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<td>eRA Commons UserID:</td>
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<td>ORCID Identifier #</td>
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<tr>
<td>Gender Identification:</td>
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<td>Ethnicity:</td>
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<td>Race:</td>
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<td>Do you have a disability? (NIH defines individuals with disabilities as those with a physical or mental impairment that substantially limits one or more major life activities.)</td>
<td>labor induction; postpartum hemorrhage; placenta accreta; cost-effectiveness; quality improvement</td>
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<td>Are you from a disadvantaged background? (see NIH NOT-OD-15-053 for definition):</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>labor induction; postpartum hemorrhage; placenta accreta; cost-effectiveness; quality improvement</td>
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<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>AHRQ; NICHD; PCORI</td>
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<td>Are you a Scholar in one of the following programs?:</td>
<td>None of the Above</td>
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<td>Administrative Assistant First Name:</td>
<td>Ashley</td>
</tr>
<tr>
<td>Administrative Assistant Last Name:</td>
<td>Nelson</td>
</tr>
<tr>
<td>Administrative Assistant Email:</td>
<td><a href="mailto:ashley.nelson@hsc.utah.edu">ashley.nelson@hsc.utah.edu</a></td>
</tr>
<tr>
<td>Administrative Assistant Phone #:</td>
<td>8058141400</td>
</tr>
</tbody>
</table>
Pre-Award Support Staff  Liz Woolsey
First Name: Liz
Last Name: Woolsey
Email: liz.woolsey@hsc.utah.edu

Post-Award Support Staff  Jason Atuaia
First Name: Jason
Last Name: Atuaia
Email: jason.atuaia@hsc.utah.edu

Application Details

Proposal Title
Value-Based Outcomes in Obstetrics

Scientific Mentor Unid (U of U ID number/000000. If none, list "Not Applicable")

Scientific Mentor First Name
Richard

Scientific Mentor Middle Initial
E

Scientific Mentor Last Name
Nelson

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

Scientific Mentor Degree(s)
PhD

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

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

Scientific Mentor Secondary Appointment Title (i.e., clinic director, chair, chief, etc.)
Health Economist, IDEAS Center VA Salt Lake City Health Care System
Scientific Mentor College or School
University of Utah School of Medicine

Scientific Mentor Department
Department of Internal Medicine

Scientific Mentor Division
Division of Epidemiology

Scientific Mentor Email Address
Richard.Nelson@utah.edu

Scientific Mentor Work Phone Number

Scientific Mentor eRA Commons UserID
RICHARDENELSON

Scientific Mentor ORCID Identifier # (if mentor does not have an ORCID, please register for a unique ID via www.orcid.org)
0000-0002-4441-7460

Comments to Competition Coordinators

Acknowledgment

Applicant Acknowledgement Statement
[Acknowledged] As an applicant to the Vice President's Clinical and Translational (VPCAT) Research Scholars 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. I understand that upon submission, I will not be allowed to make any further changes to my application.
Dear Dr. Rubin,

Thank you for considering my application for the 2020 VPCAT Research Scholars Program.

As the costs of perinatal care continue to spiral upward it has become critically important that the obstetric discipline develop a cadre of experts skilled in the evaluation of value-driven outcomes. I hope to lead such efforts and have committed my professional career to becoming an independently-funded health systems researcher and national value leader in obstetrics, producing and disseminating influential research to help deliver high-value, cost-conscious care.

Past training and mentoring have positioned me to excel. During medical school, I took a year away from clinical rotations to pursue Master’s level training in public health, epidemiology, and health policy in the Health Care Leadership Program at the University of North Carolina. That year inspired my enduring interest in health care cost and value. Value-based outcomes—often poorly measured or ignored in obstetrics—are at the heart of health systems research and are the foundation on which I intend to build a research career.

In OB-GYN residency at Northwestern University, I developed analytic skills in cost-effectiveness methodology under the guidance of an experienced mentor, William A. Grobman, MD, MBA. I further enriched my understanding of economic analysis during Maternal-Fetal Medicine fellowship at the University of Utah with coursework and projects in collaboration with economists and informaticists. That work introduced me to Richard E. Nelson, PhD. who has become an essential collaborator and mentor in economics and health systems research, and who is the primary scientific mentor for this application. I am also fortunate to be mentored within my division by a key senior faculty member, Michael Varner, MD.

Past research accomplishments testify to my commitment to becoming an independently-funded clinician-scientist. My primary research interest is the evaluation of cost and value in obstetrics. In my time as a resident and fellow, I published three cost-effectiveness analyses in major U.S. OB-GYN journals. These featured timely and important evaluations of the cost-effectiveness of universal cervical length screening to prevent preterm birth and of universal blood type and screen in preparation for obstetric hemorrhage.

For 2018 – 2020, I am the recipient of a Clinical Research Investigator Supplement award to study The Cost of Elective Labor Induction, by the Eunice Kennedy Shriver National Institute of Child Health and Human Development’s (NICHD) Maternal-Fetal Medicine Units (MFMU) Network as a competitive supplement (UG1 HD034208 23S1). I presented our findings as an oral presentation at the largest U.S. OB-GYN meeting in May, 2019 and have the manuscript ready for submission to a high-impact journal, pending the acceptance of another paper from the MFMU network.
As a further testament to my research potential, I receive funding through the National Institutes of Health (NIH) Loan Repayment Program (LRP) for the period of 2018 – 2020. This is awarded to early career health scientists through a competitive application process closely resembling K-level funding. I will apply for competitive renewal in 2020.

I am supported by a Department committed to my research achievement and career development. I am now an Assistant Professor with the Division of Maternal-Fetal Medicine (MFM) in the Department of Obstetrics & Gynecology at the University of Utah Health with 75% protected time for research activities. My professional responsibilities and estimated levels of effort are:

<table>
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<tr>
<th>Effort</th>
<th>Responsibility</th>
<th>Description</th>
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<tr>
<td>75%</td>
<td>Research</td>
<td>Protected research time.</td>
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<tr>
<td>20%</td>
<td>Clinical</td>
<td>2 half-day clinical sessions per week, including 1 day per month outreach clinic in Elko, Nevada. 14 assigned inpatient obstetric calls per year. 2 - 3 weeks inpatient obstetric service per year, in place of outpatient clinical sessions on those weeks</td>
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<tr>
<td>5%</td>
<td>Teaching/Admin.</td>
<td>Medical Director, Placenta Accreta Program. MFM Fellowship Executive Committee Member. Maternal Safety and Quality Review Committee Member. Internal and external invited speakerships and lectures.</td>
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My mentorship team includes involved, capable mentors who enthusiastically support my research career development and direction. Those include senior clinical research mentors from the division of MFM, methodologic and scientific mentors from the field of economics and health systems research, and administrative support mentors from the University’s Value Engineering department and Value Driven Outcomes Committee.

I am an excellent candidate for the VPCAT program because I am tirelessly committed—and increasingly qualified—to becoming an independently-funded investigator, addressing research questions that are essential to the future sustainability of health care delivery in the United States.

My mentors and I would like to thank you for your consideration.

Sincerely,

Brett D. Einerson, MD, MPH
Assistant Professor, Division of Maternal-Fetal Medicine
Department of Obstetrics and Gynecology
University of Utah Health
brett.einerson@hsc.utah.edu
Brett D. Einerson, MD MPH FACOG
Assistant Professor
Medical Director, Placenta Accreta Program
Department of Obstetrics & Gynecology
Division of Maternal-Fetal Medicine

PERSONAL INFORMATION:

EDUCATION:

08/2002 – 05/2006 Bethel University
St. Paul, Minnesota
Bachelor of Science in Biology – magna cum laude, Honors Program

07/2006 – 05/2011 Wake Forest University School of Medicine
Winston-Salem, North Carolina
Doctor of Medicine

07/2009 – 08/2010 University of North Carolina, Gillings School of Global Public Health
Chapel Hill, North Carolina
Master of Public Health – Health Care Leadership Program

06/2011 – 06/2015 Northwestern University Feinberg School of Medicine
Chicago, Illinois
Obstetrics and Gynecology Residency, Chief Administrative Resident

07/2015 – 06/2018 University of Utah
Salt Lake City, Utah
Maternal-Fetal Medicine Fellowship

APPOINTMENTS

07/2015 – 06/2018 Visiting Instructor
Department of Obstetrics and Gynecology
Division of Maternal-Fetal Medicine
University of Utah Health
Salt Lake City, Utah

07/2018 - Present Assistant Professor
Medical Director, Placenta Accreta Program
Department of Obstetrics and Gynecology
Division of Maternal-Fetal Medicine
University of Utah School of Medicine
Salt Lake City, Utah

HONORS & AWARDS

04/2006 National Honor Award, by the Sigma Zeta National Science and Mathematics Honor Society.

05/2009 Norm D. and Dot G. Potter Student Achievement Award in Geriatrics, by the Department of Geriatrics, Wake Forest University School of Medicine

04/2010 ACOG John Gibbons Medical Student Award
04/2011 Obstetrics and Gynecology Merit Award, by the Department of Obstetrics and Gynecology at Wake Forest University School of Medicine

06/2013 Golden Apple Teaching Award, by the medical students of Northwestern University Feinberg School of Medicine

02/2014 Administrative Chief Resident, by the Department of Obstetrics and Gynecology at Northwestern University and Stroger Cook County Hospital

2012, 2013, 2014, 2015 Outstanding Teacher Award, Northwestern University Feinberg School of Medicine

06/2015 Ralph Reis Research Award, Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine. Einerson BD, Miller ES, Grobman WA. Does a postpartum hemorrhage (PPH) patient safety program result in sustained changes in management and outcomes? Am J Obstet Gynecol. 2015;212(2):140-144. PMID 25019484

06/2017 The American College of Obstetricians and Gynecologists (ACOG) and Council on Resident Education in Obstetrics and Gynecology (CREOG) National Faculty Award for promoting high standards of residency education in the field of obstetrics and gynecology

05/2018 Obstetrics and Gynecology Clerkship Star Teacher Award, University of Utah School of Medicine

06/2018 The American College of Obstetricians and Gynecologists (ACOG) and Council on Resident Education in Obstetrics and Gynecology (CREOG) National Faculty Award for promoting high standards of residency education in the field of obstetrics and gynecology

08/2018 Top 50 Reviewer for BJOG: An International Journal of Obstetrics and Gynaecology

02/2019 Top Reviewer for the American Journal of Obstetrics & Gynecology (AJOG).

POSTERS AND PRESENTATIONS:


6. Einerson BD, Gerbie MV, Tan TQ. Ob-Gyn residency training in immunization: changing culture through systems improvements and an innovative curriculum. 2016 October. Oral presentation at National Meeting – Central Association of Obstetricians & Gynecologists (CAOG), Las Vegas, NV.


**PUBLICATIONS:**


10. Einerson BD. A report from #BlueJC: Would you recommend cranberry capsules to prevent postoperative bacteriuria? BJOG 2018 125:98. PMID 29034564


12. Einerson BD. Coverage and capacity: addressing the ‘night & weekend effect’ in obstetrics. BJOG 2018;125:892. PMID 29160032

13. Einerson BD. How would you help a colleague dealing with the stress of an adverse outcome? A report from #BlueJC. BJOG. 2018;125:1044. PMID 29468797


*2018 Am. Board of OBGYN (ABOG) Maintenance of Certification Article

16. Einerson BD. Getting it right: core outcome sets in quality improvement research. BJOG 2018;125:1619. PMID 29905006

17. Einerson BD. Investigation before implementation. BJOG 2018;125:1600. PMID 29989319


22. Einerson BD. Should negative pressure wound therapy be used at the time of caesarean in obese women? BJOG 2019 [ePub ahead of print]


25. Einerson BD. QALYs in obstetrics: not the whole story. BJOG 2019 [ePub ahead of print] PMID 31228878


BOOK CHAPTERS


2. Benson AE and Einerson BD. Induction of labor for post-term pregnancies. 50 Studies every OB/GYN should know. Oxford Publishing. [in press]

RESEARCH AND CAREER DEVELOPMENT SUPPORT

2013 – 2015
Tina Q. Tan (PI). ACOG Research Fellowship
An educational intervention for OB-GYN residents to increase knowledge of vaccine preventable diseases and increase utilization of vaccines in resident clinics.
$20,000
Northwestern University School of Medicine, Chicago, Illinois.

2017 – Present (through 2020)
Michael W. Varner (PI). NICHD Clinical Research Investigator Supplement (CRIS) for the Maternal-Fetal Medicine Units (MFMU) Network (PA-16-377).
The cost of labor induction.
$50,000
University of Utah Health and Intermountain Health Care, Salt Lake City, Utah.

7/1/2018 – 6/30/2020
Michael W. Varner (PI). NICHD Clinical Research. National Institutes of Health (NIH), Division of Loan Repayment. Loan Repayment Program (LRP).
The cost of elective labor induction.
$70,000
University of Utah Health, Salt Lake City, Utah
*Due for competitive renewal in July, 2020

TEACHING, LEADERSHIP, AND PROFESSIONAL DEVELOPMENT:

04/2014, 04/2015
Lecturer: Feinberg School of Medicine: Apps for the Wards: Smartphone apps that can enhance productivity, scholarship, and patient care.

04/2014
Participant: CREOG Workshop: Preparing to be Teachers & Leaders – Chicago, IL

2015-2017
Lecturer: University of Utah Medical Student (MS1) hands-on educational session – Reproductive Health Practicum: Preeclampsia and Hypertension in Pregnancy

08/2016
Participant: NICHD Young Investigator Conference on Maternal-Fetal-Neonatal-Reproductive Medicine – Chicago, IL
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<td>11/2016</td>
<td><strong>Lecturer:</strong> Obstetric Hemorrhage: Tips and Tricks for AirMed Transport – Salt Lake City, UT</td>
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<td>01/2017</td>
<td><strong>Lecturer:</strong> Identifying Sepsis in Obstetric Patients – Salt Lake City, UT</td>
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<tr>
<td>02/2017</td>
<td><strong>Lecturer:</strong> Preventing Cesarean Wound Complications – Park City, UT</td>
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<td>05/2017</td>
<td><strong>Grand Rounds Speaker:</strong> At what cost? A primer on cost-effectiveness analysis in Gynecology &amp; Obstetrics – University of Utah Department of OB-GYN Grand Rounds, Salt Lake City, UT</td>
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<td>09/2017</td>
<td><strong>Lecturer:</strong> Diagnosing and Treating Gestational Diabetes – Adult Diabetes Symposium, Vernal, UT</td>
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<td>10/2017</td>
<td><strong>Guest Instructor:</strong> The Maternal-Fetal Conflict – University of Utah Honors Praxis: The Beginning of Life, Salt Lake City, UT</td>
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<td>06/2018</td>
<td><strong>Lecturer:</strong> Value Improvement in Health Care – University of Utah WH&amp;R Summer Institute, Salt Lake City, UT</td>
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<td>06/2018</td>
<td><strong>Certified:</strong> Lean Six Sigma Green Belt – University of Utah Health, Salt Lake City, UT</td>
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<tr>
<td>2018 – Present</td>
<td><strong>Member:</strong> Maternal-Fetal Medicine Fellowship Executive Committee – University of Utah Health, Salt Lake City, UT</td>
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<tr>
<td>05/2019</td>
<td><strong>Lecturer:</strong> Implications of ARRIVE. Labor induction in 2019 – Utah Doula Association Spring Conference, Salt Lake City, UT</td>
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<tr>
<td>09/2019</td>
<td><strong>Lecturer:</strong> Obstetric Hemorrhage Management – AirMed, Salt Lake City, UT</td>
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**PROFESSIONAL MEMBERSHIPS, OTHER EXPERIENCE:**

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<tr>
<td>2011 – 2017</td>
<td><strong>Junior Fellow:</strong></td>
<td>American College of Obstetricians &amp; Gynecologists (ACOG)</td>
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<td>2013 – Present</td>
<td><strong>Member:</strong></td>
<td>The Society for Maternal-Fetal Medicine (SMFM)</td>
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<tr>
<td>2016 – Present</td>
<td><strong>Reviewer:</strong></td>
<td>American Journal of Obstetrics &amp; Gynecology (AJOG)</td>
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<td>2016 – 2018</td>
<td><strong>Fellow Member:</strong></td>
<td>Patient Safety and Quality Committee, Society for Maternal-Fetal Medicine</td>
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<td>2017 – Present</td>
<td><strong>Reviewer:</strong></td>
<td>BJOG: An International Journal of Obstetrics and Gynecology</td>
</tr>
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<td>2017 – Present</td>
<td><strong>Fellow:</strong></td>
<td>American Board of Obstetrics &amp; Gynecology (ABOG)</td>
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<tr>
<td>2017 – Present</td>
<td><strong>Fellow:</strong></td>
<td>American College of Obstetricians &amp; Gynecologists (ACOG)</td>
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<td>2018 – Present</td>
<td><strong>General reviewer:</strong></td>
<td>Society for Maternal-Fetal Medicine (SMFM) Annual Meeting,s Scientific Program</td>
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<tr>
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<td><strong>Regular Member:</strong></td>
<td>Patient Safety and Quality Committee, Society for Maternal-Fetal Medicine</td>
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<tr>
<td>2018 – Present</td>
<td><strong>Reviewer:</strong></td>
<td>Ultrasound in Obstetrics &amp; Gynecology</td>
</tr>
<tr>
<td>2018 – Present</td>
<td><strong>Reviewer:</strong></td>
<td>Obstetrics &amp; Gynecology (Green Journal)</td>
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**HOBBIES AND PERSONAL INTERESTS:**

- Good Coffee
- Camping
- Baseball
- The New Yorker Cartoons
Career Plan

Career Statement
Through research, advocacy, and leadership, I will help health systems deliver high-value, cost-conscious, patient-centered care to pregnant women. I have committed my professional career to becoming an independently-funded health systems researcher and national value leader in obstetrics. My prior training and demonstrated passion for cost-effectiveness research, combined with a supportive and fertile training environment at the University of Utah have enabled me to launch an academic research career with the potential to reach these goals.

Vision and Framework
The framework for my career – to this point and going forward – in conducting value-based outcomes research in obstetrics is based on the following three steps, each one building on the last:

1. Model A Change → Publish and Disseminate the Modeling Findings
2. Implement A Change → Publish and Improve on the Implementation Methods
3. Measure A Change → Publish and Disseminate the Safety & Value Outcomes

First, an economic evaluation such as a cost-effectiveness analysis can be performed to show the potential impact of a proposed policy change. Because policy changes under consideration may only be hypothetical, a simulation model using input parameters from internal data or the published literature can be used to conduct such an analysis. The goal of these economic modeling studies is to identify strategies that might lead to improvements in the value of care. Results of the modeling exercises can be published, but are often not implemented broadly due to concerns about generalizability or validity.

Second, using principles from implementation science and continuous quality improvement, and informed by prior data from modeling, an evidence-based intervention can be designed and implemented locally. Similarly, an experimental clinical intervention can be tested locally through a pilot RCT. The intervention design and roll-out can then be formalized, systematically implemented, and described in a methods paper, thus enhancing generalizability and encouraging dissemination.

Third, after implementation of a trial or program, key outcomes of quality/safety, patient experience/service, and cost can be published for highest impact.

The experience implementing and measuring the impact of new policies inevitably leads to new research ideas which can then be initially explored through modeling, thus starting this same 3-step process.

Goals & Objectives
Although my past accomplishments and mentored experience to date serve as a solid foundation for a career as a clinician-investigator, further career development is needed for me to become an independent investigator. The VPCAT program is a key next step in my career development.

While in the VPCAT program, I aim to:

Goal 1 (G1). Gain advanced skills in economic evaluation and value-based care in health care, with a focus on budget impact analysis, cost-effectiveness, implementation, and microcosting.

Goal 2 (G2). Gain a foundational understanding of scientific methods related to patient and provider decision-making and implementation science.

Goal 3 (G3). Apply knowledge gained from Goal 1 and Goal 2 to clinically important problems in obstetrics.

Goal 4 (G4). Obtain extramural funding through the Agency for Healthcare Research and Quality (AHRQ) Mentored Clinician Scientist Research Career Development Award (K08), or similar funding agency.
Hereafter, components of the narrative related to career goals will be referenced according to their shorthand, e.g. "(G1)" for components related to gaining skills in economic evaluation and value-based care.

Career Development Plan

To achieve these goals, my mentors and I have developed a plan for mentored research and seminars/coursework to be completed during the VPCAT Research Scholars Program.

- Attend the Value Based Health Delivery Seminar, Harvard Business School (G1). This intensive week-long course is designed for clinicians, leaders, and policy makers and aims to give participants a thorough understanding of value-based health care principles, an introduction to cost outcomes measurement, and a better understanding of time-driven activity-based costing. The course is taught by thought leaders in the field of health economics and occurs yearly in January.
- Complete advanced cost-effectiveness online coursework through The Cost-Effectiveness Analysis Course of the Health Economics Resource Center (HERC) at the VA in Palo Alto, California (G1).
- Attend the AcademyHealth Annual Conference on the Science of Dissemination and Implementation in Health (G2). There I will attend symposia focused on achieving K-level funding (G4) and meet in person with program officers from AHRQ (G4).
- Attend monthly “Implementation Science Friday” journal club meetings at the VA IDEAS center (Informatics, Decision-Enhancement and Analytic Science Center) (G2).
- Attend K-club and Population Health Science (PHS) seminars to review the research plans and strategies of other K applicants to gain crucial insight into the process (G2).
- I will attend two annual meetings with relevance to my clinical (topical) interests: the Annual Pregnancy Meeting of the Society of Maternal-Fetal Medicine (SMFM) and the Annual Clinical Meeting of the American College of Obstetricians and Gynecologists (ACOG). There I will participate in seminars, committees, and trainings within my topical interest areas (G3).
- I will attend The Research Education Grant Writing Academy (GWA) in preparation for a grant submission in late 2020 (G4).

Scientific Mentoring Plan

Scientific Mentors

I will work with Richard E. Nelson, PhD and Michael Varner, MD as my primary scientific mentor and co-mentor, respectively, during the VPCAT Research Scholar Program. Both have committed in writing to fulfill this role through the entire course of the 2-year VPCAT Program (see attached letters).

Dr. Nelson is a health economist and Research Associate Professor in the Division of Epidemiology at the University of Utah School of Medicine and Research Heath Scientist at the VA Salt Lake City Health Care System. He has been a supervisor, mentor, and collaborator for me since I started MFM fellowship in 2015. He is co-author on my fellowship thesis and the primary methodologist on our work with the cost of elective labor induction for my CRIS grant (see Prior Research Efforts). His methodologic expertise and mentorship have been critical to my career development thus far, and will continue so going forward. He is the PI of a current investigator-initiated research (IIR) grant, and co-investigator on at least 8 funded VA Health Service Research & Development IIRs and NIH or AHRQ R01 grants. He has also mentored 3 early career investigators from the University of Utah departments of pediatrics, population health sciences, and surgery who now have funded K grants through AHRQ or NCI.

Dr. Varner has been a clinical research mentor to me since I started fellowship in 2015. He serves as principal investigator (PI) on my CRIS grant and NIH/LRP award. He has overseen my development as a clinician-investigator and helped me attain a faculty appointment with protected research time in the Division of Maternal-Fetal Medicine. He is the senior author on the manuscript that was produced from my CRIS grant, and is co-author with me on at least 4 other peer-reviewed publications and unpublished poster presentations at national meetings. In my fellowship, he ensured that our Division provide me with access to the career mentoring and research educational opportunities needed to thrive in a young research career. Dr. Varner has decades of experience in perinatal research, and has authored / co-authored over 400 peer-reviewed publications. He maintained NIH funding continuously for the past 23 years. He has been the Vice-Chair for
Research in the Department of Obstetrics & Gynecology at the University of Utah from 2006 – 2019. He is also the Program Director for the Utah Women's Reproductive Health Research K12, the PI for the Utah Building Interdisciplinary Careers in Women’s Health K12, and the Associate Director for the Utah Center for Clinical and Translational Science. Dr. Varner also serves as one of the University’s VPCAT Senior Mentors. He has a proven track record of successful mentorship of early career investigators.

**Mentoring Plan**

Dr. Nelson will be my primary methodologic mentor on issues of economic evaluation and cost-effectiveness (G1). He and I will meet at least monthly in a formal setting to monitor research progress, set short-term goals, and discussion opportunities for research projects and funding. He will likely be the primary mentor on my K08 career development application.

Dr. Varner will serve as my clinical research mentor. He and I will meet at least monthly in a formal setting to set goals, find targets for intramural and extramural funding, and monitor research progress.

Dr. Varner and Dr. Nelson will also communicate frequently with each other to ensure that my co-mentoring arrangement functions well.

Interdisciplinary research collaboration is critical to achieving my career goals. Dr. Varner and Dr. Nelson will continue to facilitate relationships and collaborative work with the following:

- **Jessica Ann Ellis, PhD, CNM** (Assistant Professor, College of Nursing, University of Utah Health). Dr. Ellis is a researcher, assistant clinical professor in the college of nursing, and member of the University of Utah midwifery practice. Her research focus is on patient-centered approaches to labor induction (G2). She is a key collaborator for the **outpatient cervical ripening program** (see Research Plan), and has extensive experience in implementing outpatient cervical ripening programs at other institutions.

- **Robert Pendleton, MD** (Associate Professor of Medicine and Chief Medical Quality Officer, University of Utah Health). Since 2017, Dr. Pendleton has been a supporter and mentor of my work, and has enabled me to bridge the gaps between value engineering (a hospital administrative function) and health systems research (to build a research career). He has secured a team of value engineers to work specifically with me to enable current and future value-based research projects in obstetrics (G1).

- **William Grobman, MD, MBA** (Professor of Obstetrics and Gynecology and Preventive Medicine, Northwestern University Feinberg School of Medicine). Dr. Grobman has been my research mentor since 2012, and continues to today. Our work together has involved the evaluation of a postpartum hemorrhage patient safety program and economic evaluation of a randomized trial of elective labor induction (G1, G3). He is the lead author on the landmark randomized controlled trial of elective labor induction that formed the foundation for my CRIS grant project on the economic evaluation of labor induction.

- **Ryan Metcalf, MD** (Medical Director of University Hospital Transfusion Services, University of Utah Health). Dr. Metcalf is a transfusion medicine specialist who collaborates with us on value-driven quality improvement projects. Specifically, he is a critical member of the research team investigating the implementation (G2) of **transfusion preparedness for obstetric hemorrhage** (see Future Research Plan).
Research Plan

Specific Aims

Childbirth—in addition to being a centrally-important event in the life of many patients—is the most common reason for hospital admission in the United States and accounts for the single largest share of hospital-based expenditures.\(^1\) However, strategies to contain runaway spending for this care and to make childbirth more patient-centered have, for decades, been largely ignored. Nearly one in four women now undergoes labor induction in the United States preceding her delivery.\(^2\) For half of women undergoing induction, cervical ripening is needed—a process that can take 12-24 hours or more and is traditionally performed in the hospital.\(^3\)

**Outpatient (OP) cervical ripening** has been proposed as a safe, patient-centered alternative to inpatient (IP) ripening for patients at low risk of obstetric complications.\(^4\)-\(^6\) However, because few hospitals have adopted OP cervical ripening, most women do not have access to this option. Currently, a major obstacle to widespread adoption is provider uncertainty about the feasibility and cost-effectiveness of implementing an OP cervical ripening program.\(^5\) Patients and providers may be hesitant to proceed with a procedure that has typically been reserved for the hospital, but little is known about patient or provider preferences or decision-making as it pertains to OP ripening. Our previous economic modeling study shows that OP cervical ripening programs are likely to reduce costs in a health system.\(^7\) This—combined with other evidence demonstrating safety of OP ripening\(^3\)—supports further investigation and perhaps broader adoption of this practice. With hospital systems in the midst of an escalating cost crisis,\(^1\) and mounting external pressure to maximize value-based care,\(^9\) there is an urgent need to develop, implement, and disseminate programs—like OP ripening—that accomplish the three-part goal of optimizing patient safety and health care quality, maximizing patient experience, and reducing health care costs.\(^10\)

My long-term goal as a clinician-investigator is to bend the cost curve in obstetrics by identifying and prioritizing high-value interventions—incorporating principles from implementation science, cost-effectiveness and economic analysis, and patient and provider preference. My objective for this project is to design, implement, and evaluate a novel OP cervical ripening program at the University of Utah Health, where there is currently a critical need to reduce time spent on the labor ward. My hypothesis is that an OP cervical ripening program will significantly decrease hospital length of stay in women undergoing labor induction and lower direct health care costs while maintaining patient safety and improving patient experience. If our program is demonstrated to be feasible, safe, and cost-saving, our health system—and health systems all over the country inspired by our work to implement similar protocols—may find one important way to bend the cost curve and enhance patient experience in childbirth.

**Aim 1.** **Design and implement an OP cervical ripening program.** A multidisciplinary team of patients, obstetric providers, labor induction specialists, midwives, and implementation scientists will convene to create a program for OP cervical ripening at the University of Utah Health. We hypothesize that this innovative and patient-centered program will be safe and lead to lower costs compared to cervical ripening in an inpatient setting.

**Aim 2.** **Evaluate the feasibility and acceptance of an OP cervical ripening program.** We will assess patient and provider attitudes and acceptance of outpatient ripening and measure the rate of adoption and successful completion of the program within our prenatal care clinics. We expect to find barriers to implementation and adoption that can be addressed by future investigations and find helpful implementation strategies that can be disseminated to other health systems.

**Aim 3.** **Assess the health system costs, patient experience, and safety metrics associated with an OP cervical ripening program.** We will systematically measure the costs and outcomes associated with a policy of OP cervical ripening. Demonstrating in our system reassuring patient safety metrics and favorable patient experiences alongside considerable cost savings will address major concerns that have kept hospital systems from adopting this high-value obstetric intervention.

The studies arising from this project will—for the first time—describe in detail the design, implementation, and evaluation of an OP cervical ripening program. Lessons learned from our experience will serve to guide future work in this arena, encourage the awareness of value-based care in obstetrics, and eventually result in the widespread adoption of an important, high-value, patient-centered intervention into routine obstetric practice.
Prior Research Efforts

Measuring cost and value outcomes in obstetrics has been the methodologic focus of my research career to date. During my residency, I published two cost-effectiveness analyses.\textsuperscript{11,12} I have previous training and education in cost-effectiveness analysis through coursework and mentorship at the University of Utah and Northwestern University. Utilizing this methodologic expertise, I have collaborated\textsuperscript{13} and mentored\textsuperscript{7,14} other investigators on important cost-effectiveness projects, pushing these projects to publication and several other toward future posters, presentations, and publications. My fellowship thesis paper was published in one of the premier journals in my specialty.\textsuperscript{15} I serve as a content expert in cost-effectiveness for three major OBGYN journals, and in the last 2 years was named a Top Reviewer by two, AJOG and BJOG. I authored two invited commentaries on economics topics for BJOG.\textsuperscript{16,17}

The topical focus of my research is in two major areas (to which I apply economic principles): induction of labor and obstetric hemorrhage.

Under mentorship from Dr. Varner and Dr. Nelson, I was awarded the NICHD / MFMU Clinical Research Investigator Supplement (CRIS) for the NICHD Maternal-Fetal Medicine Units (MFMU) Network (PA-16-377). This has provided me with research funding from 2018 to 2020. For my work as a clinician-investigator, I was also admitted to the National Institutes of Health Loan Repayment Program.

The CRIS grant produced an oral presentation on The Cost of Elective Labor Induction at the Annual Clinical Meeting of ACOG in 2019, and will be submitted for publication later this year.\textsuperscript{19}

Our preliminary work modeling the cost effectiveness of OP cervical ripening\textsuperscript{7} (Step 1 from Vision and Framework) has laid the groundwork for the next step: the implementation program described in this application’s research plan.

Future Research Plan

The next chapter in my career is to branch out beyond cost-effectiveness into economic evaluation of the implementation of health system interventions and programs to improve patient safety, clinical outcomes, patient experience, and value in obstetrics. Taking cues learned from past modeling studies, our team can use the tools of implementation science to design policy changes, implement new interventions, and measure the benefit in the real-world “laboratory” of the University of Utah Health (G2). We will leverage the Value-Driven Outcomes tools and the collaborative work of the value engineering team to accomplish value-related projects (G1).

Specifically, I will study the implementation of two policy changes made in our institution: (1) transfusion preparedness for obstetric hemorrhage, and (2) an OP cervical ripening program. Our prior modeling studies in these areas suggest that opportunities exist to reduce cost while improving patient safety (quality of care) and patient experience (our service to patients).

Implementation of a new obstetric transfusion preparedness algorithm already occurred this year, and continued evaluation of the safety and economic outcomes will continue in 2020, the first year of VPCAT. An abstract with preliminary cost and safety data was accepted for oral presentation at the 2020 annual Pregnancy Meeting of the Society for Maternal-Fetal Medicine (SMFM).\textsuperscript{20}

In late-2020, I plan to apply to ARHQ for the Mentored Clinical Scientist Research Career Development Award (K08) that would focus on the implementation of a novel OP cervical ripening program (G4). Central to this project will be the design and implementation of an OP cervical ripening program. Cost, safety, and patient-centered outcomes will be central to this application, and the training portion of the K08 will focus on implementation science and patient and provider decision making (G2).

Following a career development award, I will submit an R01 focused on the implementation and dissemination of evidence-based interventions in obstetrics and plan to continue a career with continuous extramural funding for health systems science and economic research.
References

17) Einerson BD. QALYs in obstetrics: not the whole story. BJOG. 2019 [ePub ahead of print]
September 25, 2019

Michael A. Rubin, M.D. Ph.D.
Professor and Vice-Chair for Faculty Development
Department of Internal Medicine
Director, VPCAT Program
University of Utah Health Sciences Center

re: Brett Einerson, M.D., M.P.H. – VPCAT Scholar Application

Dear Dr. Rubin:

I am delighted to provide this letter of support for Brett Einerson, M.D., M.P.H. in his application to become a 2020-2021 VPCAT Scholar. I am a health economist and teach a course on cost-effectiveness analysis (CEA) in the Masters of Science in Clinical Investigation program at the University of Utah. This is a project-based course in which students conduct their own CEA on a topic of their choosing throughout the semester. Dr. Einerson took this class during Spring 2016 and I can attest to the interest and acumen that Dr. Einerson showed for economic analysis. Many students complete this course but do not go further than the final report, which is the last requirement for the class. Dr. Einerson, on the other hand, has used the work he did for this course as a launching point for making an impact in his field and has continued to meet with me since the semester ended to refine his analysis. An abstract based on this project was presented at the 2017 Meeting of the Society for Maternal-Fetal Medicine (SMFM) and a manuscript was published in the journal Obstetrics and Gynecology in 2017. In addition, a subsequent jointly-authored manuscript, this one describing an economic evaluation of a randomized clinical trial comparing labor induction and expectant management in low-risk nulliparous women, is nearly complete and will be submitted for publication shortly.

Even at this early stage in his career, Dr. Einerson has been successful at receiving competitive research funding. He was awarded the Clinical Research Investigator Supplement award through the National Institute of Child Health and Human Development. In addition, he received funding from the National Institutes of Health Loan Repayment Program. I am very proud of him for these achievements and not surprised at all. I am excited to continue to help Dr. Einerson on his career path as he develops exciting efforts to improve health systems within the obstetric discipline. I have already begun working with him to shape his future K submission and will continue through this stage of his career and beyond.

I am a Research Associate Professor in the Division of Epidemiology at the University of Utah and have a strong record of extramural funding. I was the Principal Investigator (PI) of a recently-completed Career Development Award (CDA) funding by the VA Health Services Research & Development (HSR&D) Service. In addition, I am the PI of a current HSR&D investigator-initiated research (IIR) grant, co-investigator on at least 8 funded HSR&D IIRs or NIH or AHRQ R01 grants. With the experience that I have gained from years of submitting successful grants, I am fully qualified to mentor Dr. Einerson on the research process.
I have also been a secondary mentor for several junior investigators who have been awarded K grants. The table below lists these individuals.

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I have read and understood the responsibilities of mentors outlined in the Scientific Mentor Eligibility Determination Checklist. I can meet these requirements and am committed to doing so for Dr. Einerson. His department has assured me that he will have 30% FTE to devote to his career development over the course of the VPCAT program (in fact, he has 75% protected time for research of which this will be a part). In the event that Dr. Einerson’s clinical, teaching, or administrative duties become so time-consuming that they are hindering his ability to focus on his career development, I will assist him in discussing these matters with the appropriate decision makers in his department and division.

I have benefited greatly in my career from generous academic mentors who have freely given of their time to help me succeed. I enjoy mentoring junior investigators because it gives me a chance to return this favor to others. As a mentor, my goal is to use my experience as an academic researcher to help mentees achieve their professional goals. I can only be helpful in this regard if I understand what those goals are and have regular communication with the mentee to monitor progress and to work through any obstacles. Having known and worked with Dr. Einerson for several years now, I know what his professional goals are and that he and I are both committed to regular and honest communication.

During the course of the VPCAT program, Dr. Einerson will meet face-to-face on a monthly basis for 1 hour to discuss his progress toward submission of a K application. We will discuss the specific aims and other details of his proposed K submission but also his progress on publications and presentations that will provide evidence of productivity for his K submission and for his eventual promotion from Assistant to Associate Professor.

While I will be able to provide excellent advice and guidance to Dr. Einerson on the health economics components of his research, I will not be able to help with the clinical content of his research. However, I will work closely with his clinical mentors (including Dr. Michael Varner) to ensure that he is getting mentorship in all aspects of his career and research. I have worked with Dr. Varner and others in the department of OBGYN on previous studies and do not foresee any difficulties in working with them in this capacity.

During our time working together, I have found Dr. Einerson to be intellectually curious and a hard worker who is able to see a complex project through to completion. In particular, I have been impressed with his ability to design, analyze, and interpret decision tree and cost analyses. He has been able to apply his clinical knowledge in constructing economic simulation models to answer real-world questions regarding the best way to prevent post-partum hemorrhage after pregnancy and the best transfusion preparedness strategies for obstetric hemorrhage.

This is just the start of his promising work. I believe he will make a career’s worth of important contributions to the field of obstetrics and gynecology by examining healthcare costs and using the results of these analyses to improve the efficiency of healthcare delivery. Dr. Einerson has strong
intellectual abilities, a dedication to getting to the bottom of challenging research questions, and a dogged pursuit of completing research projects. These attributes will help him make a difference in healthcare delivery both at the University of Utah and the rest of the country. I am committed to being his collaborator and mentor in this process and specifically committed to supporting his work on this VPCAT proposal and future pertaining to labor induction and obstetric hemorrhage.

Sincerely,

Health Economist
IDEAS Center
VA Salt Lake City Health Care System
Research Assistant Professor
University of Utah School of Medicine
September 26, 2019

Michael A. Rubin, MD, PhD, MS
Director, VPCAT Program
University of Utah Health Office of Academic Affairs
HSEB 5515

Re: Brett Einerson, MD, MPH
2020-2021 VPCAT Research Scholar Program Application

Dear Mike,

I am writing to confirm my enthusiastic commitment to the candidacy of Brett Einerson for the VPCAT Research Scholar Program. I have worked with Dr. Einerson on a regular basis since he started his Maternal-Fetal Medicine fellowship at the University of Utah in July 2015. Besides being an excellent clinician, he is an astute clinical observer who formulates relevant and answerable hypotheses from those observations. He has proven his ability to convert those hypotheses into research projects that he has followed through to completion.

I have read the VPCAT scientific mentor requirements/responsibilities, and I will be supporting Dr. Einerson according to these responsibilities. I will formally meet with him at least monthly to discuss her career goals, monitor his research progress, and guide him in the development and submission of an extramural grant proposal. I will continue to maintain an open-door policy for him to voice additional questions or concerns between these formal meetings. With his committed mentoring team, institutional resources, protected time for research, and his dedication to studying cost-effective interventions that can improve perinatal outcomes, I believe that he is an exceptional candidate for the VPCAT Research Scholar Program.

Thank you in advance for your consideration of Dr. Einerson’s application. I am completely confident that, should he be provided with this opportunity, he will produce a many-fold return on your investment.

Sincerely,

[Redacted]

Michael Varner, MD
HA and Edna Benning Endowed Presidential Professor and Vice-Chair for Research
Department of Obstetrics and Gynecology
University of Utah Health
E-mail: michael.varner@hsc.utah.edu
September 25, 2019

Michael A. Rubin, MD, PhD, MS
Director, VPCAT Program
University of Utah Health Office of Academic Affairs
HSEB 5515

Dear Dr. Rubin:

This letter represents my enthusiastic and unequivocal support of the application of Brett Einerson, MD MPH for acceptance into the 2020 VPCAT Research Scholars Program. Dr. Einerson is a once-in-a-decade phenomenon who combines enormous academic potential with a seemingly endless capacity for hard, productive effort, an enthusiastic willingness to learn new techniques, and the good fortune of having a sustained interest in a subject area that has to this point been largely ignored.

The University of Utah Department of Obstetrics and Gynecology had the remarkable good fortune of attracting him to our Maternal-Fetal Medicine (MFM) fellowship program in 2015. My colleagues and I were so impressed with his academic potential that we offered him a faculty position in the department with 75% of his time protected for research.

His application clearly confirms both his sustained interest in economic analysis in obstetrics as well as his impressive academic productivity and career potential. His interest in cost-effectiveness analyses has been sustained from his medical school days through his Obstetrics and Gynecology residency (where he worked with William Grobman MD MBA, a nationally recognized MFM researcher), and now at Utah. Besides working with Drs. Grobman, Varner, Clark, and me, he is working closely at the University of Utah with Dr. Richard Nelson PhD, who is the primary scientific mentor on this application and a member of the Value-Driven Outcomes Program. He has almost 30 peer-reviewed publications, many related to cost-effectiveness and value-based care, and more in the pipeline. He is the recipient of two competitive awards from the NICHD and NIH that required K-like applications.

The Department of Obstetrics and Gynecology at the University of Utah is committed to providing Dr. Einerson with the resources and protected research time necessary to succeed in his endeavor to obtain K funding, become an independent investigator, and achieve his career goals. This includes a commitment to helping Dr. Einerson complete all requirements of the VPCAT program and protect 75% of his FTE for research through the course of the VPCAT program. Specifically, we will release Dr. Einerson’s time to attend all mandatory and supplemental activities of the VPCAT Program.

In short, I am absolutely convinced that Brett Einerson MD MPH will continue onward to a successful academic career and become a value and research leader with immediate and sustained impact on our field. I hope you are as enthusiastic about his application as we are about him.

Sincerely,

Robert Silver MD
Professor and Interim Chair
Department of Obstetrics and Gynecology
University of Utah Health
NAME: Nelson, Richard

eRA COMMONS USER NAME: RICHARDENELSON

POSITION TITLE: Research Associate Professor

EDUCATION/TRAINING

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A. Personal Statement

My training and track record of academic productivity and mentoring make me highly qualified to serve as Dr. Brett Einerson’s mentor for his Vice President’s Clinical & Translational (VPCAT) Scholars Program submission. I have worked closely with Dr. Einerson since he took my Cost-Effectiveness Analysis (CEA) II course in the Master of Science in Clinical Investigation program at the University of Utah in Spring 2016. I am a health economist by training with more than 10 years of post-graduate experience conducting health economics, health services, and epidemiology research. I recently completed a 5-year Career Development Award through VA HSR&D and I currently serve as the Associate Director of the Health Economics Core of the Center for Clinical & Translational Science at the University of Utah. I have conducted a number of cost and cost-effectiveness analyses across a wide range of clinical areas and my collaborative efforts have resulted in grants funded by the VA, CDC, and NIH. I am committed to mentoring Dr. Einerson during his time in the VPCAT program and beyond as he becomes an independently funded investigator. I have worked closely with Dr. Einerson and other junior investigators as a mentor and collaborator through the course of my career and have listed below several papers stemming from these research projects:


B. Positions and Honors

PROFESSIONAL EXPERIENCE

Full-Time Positions

2006 Instructor, University of Virginia, Economics Department, Charlottesville, VA
Einerson, Brett - #1932

2006  Summer Associate, Congressional Budget Office, Microeconomic Studies Division, Washington, DC
2007 - 2009  Post-Doctoral Research Fellow, Pharmacotherapy Outcomes Research Center, University of Utah, Salt Lake City, UT
2007 - 2008  Adjunct Instructor, Westminster College, Gore School of Business, UT
2009 - 2013  Research Health Sciences Specialist, Department of Veterans Affairs, Salt Lake City, UT
2009 - 2010  Visiting Instructor, Division of Epidemiology, University of Utah, Salt Lake City, UT
2010 - 2011  Research Instructor, Division of Epidemiology, University of Utah, Salt Lake City, UT
2011 - 2018  Research Assistant Professor, Div of Epidemiology, University of Utah, Salt Lake City, UT
2012 - Present  Adjunct Assistant Professor, Dept of Pediatrics, University of Utah, Salt Lake City, UT
2013 - Present  Research Health Scientist, Department of Veterans Affairs, Salt Lake City, UT
2015 - Present  Associate Director, Health Economics Core, Center for Clinical and Translational Sciences, University of Utah, Salt Lake City, UT
2018 - Present  Research Associate Professor, Div of Epidemiology, University of Utah, Salt Lake City, UT

HONORS
2010 - 2012  Translational and Comparative Effectiveness Research Scholar, University of Utah, Salt Lake City, UT
2012  Outstanding Author Contribution Award, Emerald Literati Network

C. Contributions to Science

1. Improved estimates of outcomes associated with healthcare-associated infections: Healthcare-associated infections (HAIs) are one of the leading causes of avoidable inpatient death in the United States. In order to be able to successfully weigh the costs and benefits of efforts to reduce transmission of these dangerous pathogens, it is essential to have accurate estimates of the consequences of these infections. Combining unique microbiology, healthcare cost, and mortality data from the Department of Veterans Affairs electronic medical record, I have led several studies that have examined the post-discharge effects of MRSA HAIs. In addition, estimates of the pre-discharge effects of HAIs can be inflated due to time-dependent bias. I have led a study that used a systematic literature review to quantify the magnitude of this bias as well as a study that used unique inpatient cost data from the Department of Veterans Affairs electronic medical record to generate more reliable estimates of the pre-discharge costs of MRSA HAIs.


2. Cost-effectiveness analyses of interventions for infectious diseases: Cost-effectiveness analyses (CEAs) using simulation models are useful tools for evaluating the real-world consequences of healthcare interventions. I have led or helped to lead CEAs examining interventions specific to acute infectious diseases including antimicrobial treatments for patients identified as methicillin-resistant Staphylococcus aureus (MRSA) carriers in an inpatient setting, fecal microbiota transplantation for recurrent Clostridium difficile infection, a newly developed molecular diagnostic test to identify the cause of a respiratory tract infection in children presenting to the emergency room, and an intervention “bundle” designed to prevent transmission of Clostridium difficile in the inpatient setting using a dynamic transmission model.
3. Economic analyses of interventions to improve healthcare for individuals living in rural areas:
Individuals living in rural areas face great barriers that prevent them from accessing necessary healthcare services. A number of interventions have been proposed to lower these barriers with the goal of improving health through greater access to healthcare. My contributions in this field have consisted of conducting economic analyses of several of these interventions. In these studies, my co-authors and I have quantified the costs and benefits of telehealth interventions and an educational program to increase the capacity of rural primary care providers as well as estimated the impact on healthcare resource utilization of an increase in the travel reimbursement rate paid to patients by the Department of Veterans Affairs. In addition, we conducted a study that examined the relationship between rurality and homelessness. Through these studies, we have found that the cost-effectiveness of interventions to increase access to healthcare for individuals living in rural areas depends on the perspective and the time horizon.


4. Evaluating policy changes and patient exposures using data from multiple healthcare systems:
While the Department of Veterans Affairs (VA) Healthcare System is the largest integrated healthcare system in the United States, many Veterans receive care both in the VA and in other healthcare systems. I have led several studies that have examined the impact of policy changes or exposures on outcomes both in the VA and outside the VA using Medicare claims data. One such study quantified the change in VA and non-VA healthcare utilization after a policy change that increased the VA travel reimbursement rate. Another study estimated the VA and non-VA costs associated with homelessness among Veterans. And the third estimated the proportion of post-discharge healthcare costs associated with MRSA HAIs that occur within and outside the VA. These studies help to paint a broader picture of cost and utilization across different settings. Finally, I led a study that prospectively collected data on healthcare utilization and missed work for parents of children with traumatic brain injury in multiple sites.


5. Using big data to develop tools to improve osteoporosis screening and treatment: Osteoporosis is underdetected and undertreated in the United States, especially in males. We used electronic medical record data from the Department of Veterans Affairs to identify patients who would benefit from screening and treatment due to high risk for fracture. In addition, we used this data to examine treatment patterns in veterans as well as to identify risk factors for fracture that providers might be missing in their decisions to screen and treat for osteoporosis. Finally, we conducted a cost-effectiveness analysis of an educational program to improve rural primary providers’ ability to recognize and treat osteoporosis. I have contributed to these studies by conducting or overseeing the analyses.


Complete list of published works in My Bibliography:

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

Ongoing Research

IIR 17-029 Nelson (PI) 02/01/2019-01/31/2023
VA HSR&D
Measuring the Impact of the Supportive Services for Veteran Families Program on Veteran Outcomes
The loss of stable housing has a devastating effect on Veterans’ health and well-being. Through the Supportive Services for Veteran Families (SSVF) program, Veterans and their families who are experiencing homelessness or who are at risk of becoming homeless can receive of financial support and other services from private non-profit organizations and consumer cooperative grantees with the goal of stabilizing their housing. The impact on Veteran housing, healthcare cost, and health outcomes as well as Veteran satisfaction with the SSVF program is not known. Through this project, we will generate important information about the SSVF program. We will use nationwide data to describe the geographic variation in SSVF services and expenditures throughout the country. We will measure the impact of SSVF on Veteran housing status, healthcare cost and utilization, and mortality. And finally, we will interview SSVF participants to better understand barriers and facilitators to SSVF use and Veteran satisfaction with the program.
Role: Principal Investigator

1R01CA206522 Mooney (PI) 04/01/2016-03/31/2021
NIH/NCI
SymptomCare@Home (SCH): Deconstructing an effective, technology-assisted, symptom management intervention
The goal of this project is to determine, through a 5 group RCT, the effect of each component of the Symptom Care at Home (SCH) intervention as compared to the complete SCH intervention in patients receiving a first or new course of chemotherapy on the primary end points: individual worst symptom based on severity, total
symptom severity, and overall health functioning (physical, mental and social). The other major goal of this project is to perform an economic evaluation of the SCH intervention components combined and separately and when compared with historical usual care controls using the healthcare system and societal perspectives.

Role: Co-Investigator

1 R01 HS024714-01A1 Martin (PI) 03/01/2017-02/28/2021
NIH NHGRI

Influence of expanding bundled payment models on patient-reported outcomes, episode-of-care costs, procedure volume, and safety

The overall goal of this project is to understand the effects of the Comprehensive Care for Joint Replacement (CJR) Program on national spending and patient-reported outcomes. Specifically, we seek to: 1) determine whether CJR reduces episode-of-care costs, improves patient safety, and increases procedure volume; 2) compare patient-reported pain and functional outcomes (pre- versus post-surgery change) based on hospital participation in a bundled payment program; and 3) identify the implementation strategies (i.e. improved clinical pathways, post-operative care coordination, implant standardization, patient risk management) that most effectively improve value under bundled payment programs.

Role: Co-Investigator

IIR 15-116 Conlin (PI) 03/01/2018-12/31/2019
VA HSR&D

Hemoglobin A1c Variability and Adverse Health Outcomes

We propose an observational study to (a) construct statistical measures and determine predictors of A1c variability, (b) develop and validate more intuitive clinical measures of A1c variability (i.e. % time-in-range), and (c) assess the relationship between these measures of A1c variability and adverse health outcomes in patients with diabetes. Specific Objectives include: Objective 1. Construct statistical measures and determine the predictors of A1c variability. Objective 2. Develop and validate a more intuitive clinical measure of A1c variability defined as A1c time-in-range. We will calculate the percentage of days an individual has an A1c level in the appropriate range, based on clinical parameters and the VA-DoD clinical practice guidelines. Objective 3. Estimate the relationship between A1c variability, % time-in-range, and adverse health outcomes-including micro- and macrovascular complications and mortality.

Role: Consultant

Completed Research

1K2HX000860 Nelson (PI) 03/01/2013 - 02/28/2018
Veterans Affairs Health Services Research & Development

Using Economics and Epidemiology to Evaluate MRSA Decolonization in the VA

The purpose of this application is to 1) quantify the positive externalities associated with decolonization of MRSA positive veterans; 2) estimate the cost and healthcare use associated with hospital-acquired MRSA infections in the VA; and 3) perform economic analyses of a MRSA prevention strategy consisting of active surveillance plus decolonization compared to the current VA strategy of active surveillance alone.

Role: Principal Investigator

IIR 12-378 Voils (PI) 03/01/2018-4/30/2019
VA HSR&D

Impact of family history and decision support on high-risk cancer screening

The goal of this study, to evaluate the feasibility and effectiveness of the GMM for identifying patients at increased risk for CRC, will be achieved with the following aims: Aim 1: Determine whether FHH collection via MeTree improves identification of patients at higher familial risk for CRC by comparing rates of high-risk identification in the medical record prior to study enrollment to rates of high-risk identification following MeTree completion. Aim 2: Evaluate whether providing decision support to patients and PCPs improves risk-appropriate PCP referrals for, and patient uptake of, CRC screening/surveillance. Aim 3: Assess experience with decision support and effects on workflow from PCPs, and obtain information to inform eventual implementation in the VA healthcare system from administrative leaders, via qualitative interviews. Aim 4: Conduct economic evaluations of implementing FHH collection and GMM decision support in VA.

Role: Consultant
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: Varner, Michael W.

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

POSITION TITLE: Professor, Maternal-Fetal Medicine Division Department of Obstetrics and Gynecology University of Utah 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.)

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A. Personal Statement

The continued upward trajectory of healthcare costs is a national emergency. Given that hospitalization represents a substantial proportion of those costs and that childbirth is the single most common indication for hospitalization in this country, it is surprising that little attention has been paid to the contribution of obstetric care expenses to this problem. The discipline has also paid relatively little attention to value and participant satisfaction, as a ‘one size fits all’ mentality is still widespread in many aspects of perinatal care.

Brett Einerson MD MPH hopes to address these important issues by becoming a fundable health systems researcher and national value leader in obstetrics who can generate evidence-based research to guide high-value, cost-conscious, personalized perinatal care. His qualifications are amply documented elsewhere in this application and I will not reiterate them here.

I have worked extensively with Dr. Einerson in the context of his NICHD Maternal-Fetal Medicine Units Network Clinical Research Investigator Supplement award (2018-2020). In this project he was able to successfully negotiate the combination of actual cost data between the University of Utah and Intermountain Healthcare for the 1231 healthy primigravid Utah participants randomized to either induction of labor at 39 weeks versus continued expectant management (he has demonstrated that total costs are equivalent between the two groups – and also between the two healthcare systems).

The past 25 years have brought me considerable success in NIH-funded research. I have been involved – and I dare say, successfully so – in many multi-disciplinary and multi-institutional research collaborations. The past 15 years have also found me serving as the primary research mentor for an increasing number of trainees at multiple levels – including graduate students, residents, fellows, and junior faculty – in my home department, across our institution and beyond. I currently serve as the Principal Investigator of our Department’s BIRCWH (K12 HD085852), the Program Director for our WRHR (K12 HD085016), the Co-Director of our CTSA’s TL1 (ULTR002538) and have recently been named as a VPCAT Senior Mentor. In short, I very much enjoy research career development mentoring and believe that I have been successful at it.

In the spirit of full disclosure, I am actively scaling back my Principal Investigator involvement in research, having passed the PI roles of several NIH-funded clinical trials to my younger colleagues. I am also stepping...
aside as our Department’s Vice-Chair for Research. Both of these actions reflect my belief in orderly succession planning. They also reflect my ongoing commitment to mentoring which, if done properly, requires substantial time and effort. As such, I want to assure reviewers of this application that I still have the passion, administrative skills, and time + energy to do everything I can to ensure the successful evolution of Brett Einerson MD MPH to long-term extramural research funding that will allow him to address this critically important clinical problem.

B. Positions and Honors

Positions and Employment

1981-1985 Assistant Professor, Department of Obstetrics & Gynecology, University of Iowa, Iowa City, IA
1985-1987 Associate Professor, Director, Obstetric Service, Director, Division of Maternal-Fetal Medicine, Department of Obstetrics & Gynecology, University of Iowa, Iowa City, IA
1987-1991 Associate Professor, Obstetrics & Gynecology, University of Utah Health Sciences Center, Salt Lake City, UT
1991-2000 Director, Maternal-Fetal Medicine Division, Department of Obstetrics and Gynecology, University of Utah Health Sciences Center, Salt Lake City, UT
1991-present Professor, Obstetrics & Gynecology, University of Utah Health Sciences Center, Salt Lake City, UT
2006-2019 Vice Chair for Research, Obstetrics and Gynecology, University of Utah Health Sciences Center, Salt Lake City, UT
2008-2015 Women and Newborns Clinical Program Representative, Research Guidance Council, Intermountain Healthcare, Salt Lake City, UT
2010-2019 Co-Director, Institute for Women’s and Children’s Health Research, University of Utah, Salt Lake City, UT
2010-present Associate Director, Center for Clinical and Translational Studies, University of Utah Health Sciences Center, Salt Lake City, Utah
2011-2014 Interim Director, Program in Personalized Health Care, University of Utah Health Sciences Center, Salt Lake City, Utah
2011-present HA and Edna Benning Endowed Presidential Professor of Obstetrics and Gynecology, University of Utah Health Sciences Center, Salt Lake City, Utah (Benning Society Chair, 2014 – present)
2012-2016 Co-Director, Clinical Genetics Institute, Intermountain Healthcare, Salt Lake City, UT
2015-2018 Internal Research Advisory Committee, Intermountain Healthcare, Salt Lake City, UT

Other Experience and Professional Memberships

2003-2015 NIH DSMBs (NIDCR - OPT and MOTOR Trials; NICHD - PASS and OPRU Networks)
2006-2012 NIH Obstetrics and Maternal-Fetal Biology Study Section (Chair, 2009 - 2012)
2011-2015 March of Dimes Pregnancy Research Initiative Study Section
2013-2017 NIH Infectious Disease, Reproductive Health, and Asthma/Pulmonary Conditions Study Section (IRAP) – permanent member.

Honors

2006 Martha Hughes Cannon Award, Utah Department of Health, Distinguished Achievement in Maternal and Child Health.
2012 The Rosenblatt Prize, University of Utah, Faculty Career Excellence in Teaching, Research and Administrative Efforts – Shared with Kathleen Digre MD.

C. Contributions to Science

1. My early research addressed problems that I encountered in clinical practice. Most were retrospective or prospective cohorts but a number have been frequently cited and have changed practice patterns:

2. For the past 25 years I have actively collaborated in multicenter prospective clinical trials and have actively participated in protocol design, patient recruitment, and analysis of results. These skills would be particularly relevant to the current proposal:


3. I have had a long-term interest in the intergenerational predisposition to obstetric complications. These papers confirm that such predispositions exist and that I (and usually with one or more mentees) have successfully utilized the UPDB.


4. The UPDB also provides a unique opportunity to evaluate the long-term impact of pregnancy complications on maternal health. We are currently also using the UPDB to investigate associations of pregnancy complications with subsequent age-related macular degeneration and Alzheimer’s disease.


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

Ongoing Research Support

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NIH/Eunice Kennedy Shriver NICHD
NICHDMaternal Fetal Medicine Units Network

The major goal of these projects is to investigate problems in clinical obstetrics: particularly those related to prevention of low birth weight, prematurity, and medical problems in pregnancy.


National Center for Advancing Translational Sciences

The University of Utah's Center for Clinical and Translational Science (CCTS) provides support for all aspects of clinical and translational research, from basic science investigation to studies on how to implement research findings in current clinical practice. The CCTS builds upon the university's historic strengths in genetics and bioinformatics and developing new approaches to the process of clinical trials and translational investigation. The CCTS aims to increase the quality, quantity, safety, efficiency and impact of translational research for all conditions, provide resources and services to support and speed clinical and translational research of all kinds, train, mentor and support the next generation of translational investigators to become principal investigators by offering courses leading to the degree of Master of Science in Clinical Investigation and supporting junior faculty through TL1 and KL2 programs, and engage in a process of continuous evaluation, improvement and innovation in all of these areas.

Role: Associate Director

University of Alabama-Birmingham

NIH/NHLBI

Chronic Hypertension and Pregnancy (CHAP) - Clinical Coordinating Center

Major Goal: The CHAP Project is a large pragmatic multi-center randomized trial designed to evaluate the benefits and harms of antihypertensive therapy for mild chronic hypertension in pregnancy to a goal <140/90 mmHg (as recommended for the general population in the US) compared with ACOG’s current policy to withhold treatment unless hypertension is severe.

Role: Site PI (Oct 2014 – May 2019; Alternate PI (June 2019 – present)

NIH/NICHD

Utah Women's Reproductive Health Research Career Development Program

The Utah WRHR Program will prepare obstetrician-gynecologists to be leaders in women’s reproductive health research programs that can improve women’s health throughout the life cycle.

Role: Research Director

Utah Building Interdisciplinary Research Careers in Women's Health Career Development Program
The Utah BIRCWH Program prepares basic, translational, and clinical research Scholars to lead research programs that can focus on outcomes in females (sex and/or gender) and that can improve women’s health throughout the life course.

Role: Principal Investigator

1P01HD080629- Nygaard (PI) 07/27/15-06/30/20
NIH/NICHD
Bridging physical and cultural determinants of postpartum pelvic floor support and symptoms following vaginal delivery – Clinical Coordination Core
The Clinical Coordination Core supports the objectives of the Program Project, “Bridging physical and cultural determinants of postpartum pelvic floor support and symptoms following vaginal delivery”. The Core provides support to the investigators for Projects 1-3 in carrying out their project goals by managing participant recruitment, retention, tracking, scheduling and coordination, conducting training and certification of personnel, conducting regular data queries, and overseeing adherence to human subjects compliance guidelines.

Role: Core Director

R01 HL098354– Thom (PI) 09/06/16-07/31/20
National Institutes of Health.
Pulmonary Complications in a Birth Cohort after a Randomized Trial of Exposure to Antenatal Corticosteroids: the ALPS Follow-Up Study.

Role: Site PI, 10% Effort.

RO1 –HD-088646) Katheria (PI) 04/01/17–03/31/22
NIH – NICHD
Premature Infants Receiving Cord Milking or Delayed Cord Clamping.

Completed Research Support (within past 3 years):

5 CCEWH111018-03-00 Digre (PI) 09/01/10 – 08/31/16
DHHS/Office on Women’s Health Coalition for a Healthier Community for Utah Women and Girls
The OWH programs supported multidisciplinary programs for women in academic communities, community clinics, and rural frontier clinics with the intent of bringing comprehensive health care and wellness to women across the lifespan by emphasizing education, research, outreach, and leadership development.

Role: Consultant

HHSN275201500001C Johnstone (PI) 07/15-01/19
NIH/NICHD
Impact of Diet, Exercise and Lifestyle on Fertility: The IDEAL Fertility Study
The goal of the study was to evaluate the impacts of modifiable lifestyle factors on fertility in the context of a couple-based approach across a spectrum of fertility and treatment. Female partners of FAZST participants provide a unique and valuable resource, bringing about an opportunity to follow a large, prospective cohort of women undergoing fertility treatment, while leveraging precious resources to create a rich data source for future studies. This project followed 1200 of the female FAZST participants to 12 months post randomization of the male partner and completed additional detailed assessments and biospecimens collection.

Role: Key Personnel