November 2, 2015

TO: Ilene Harris, Chair
    Senate Committee on Educational Policy

FROM: Dana Wright, Director of Academic Program Development

I am submitting for the review and action of the Senate Committee on Educational Policy the attached Proposal to Establish the Master of Science in Comparative Effectiveness Research.

The proposal was approved by the Department of Pharmacy Systems, Outcomes and Policy on August 10, 2015; the College of Pharmacy Executive Committee on August 25, 2015; and the college faculty on October 9, 2015. In addition, the proposal was approved by the Graduate College Executive Committee on October 23, 2015.

ATTACHMENT
Notice of Intent, New Degree

Campus: Chicago

Degree Title: Masters of Science in Comparative Effectiveness Research

Level of Proposed Program: Masters

Region*: 10-Chicago

Zip Code of Proposed Location: 60612

Requested CIP Code**: 51.2099 Pharmacy, Pharmaceutical Sciences, and other

Proposed Date for Enrollment of First Class: Fall 2017

Description of Program Objectives: The aim of the program is to provide skills and knowledge relevant to conducting comparative effectiveness research (CER) for application in the pharmaceutical and health care industries. Comparative Effectiveness Research (CER) is the "conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in real world settings."¹ The purpose of CER is to improve health outcomes by developing and disseminating evidence-based information to patients, clinicians, and other decision-makers, and responding to their expressed needs about which interventions are most effective for which patients under specific circumstances. CER seeks to make the selection of therapeutic options (by patients, their caregivers, clinicians, and policy makers) more informed – resulting in better decisions and ultimately improved health outcomes.

Upon completion of this program, students will have the knowledge and skills to do the following:
1. Develop policy and patient-care relevant comparative effectiveness and patient-centered outcomes research questions that, when answered, will address important gaps in knowledge or lead to improved individual and population-level health care decision-making.
2. Recognize, design, conduct, and analyze comparative effectiveness research studies that incorporate state-of-the-art methods, including both primary and secondary studies.
3. Explain the importance of stakeholder input in the conceptualization, design, and dissemination of comparative effectiveness research.
4. Apply CER studies to broader issues in health care such as health technology assessment and medical decision making.

Description of Target Demographics: The program is designed primarily for individuals already working in a pharmaceutical or medical product company, government agency, or in a health care provider organization (e.g., working professionals), who would like to become competent in this new area of research.

Description of Delivery Modes: This is a 100% online program.

Projected Enrollments: Conservatively we estimate 5 students in the first year of the program, increasing to 10 by year 5. However, the program could have enrollment that is significantly in excess of this.

Contact Information:
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Email: schumock@uic.edu
1. Degree Program Title and Overview

What is the specific title of the proposed degree program as it would be listed in the IBHE Program Inventory? The name should be what typically is used for similar programs nationally. Provide a short description of the program, including highlights of the program objectives, and the careers, occupations, or further educational opportunities for which the program will prepare graduates.

Title: Master of Science (MS) in Comparative Effectiveness Research (CER).

Short Description: Comparative Effectiveness Research (CER) is the “conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in real world settings.”¹ The purpose of CER is to improve health outcomes by developing and disseminating evidence-based information to patients, clinicians, and other decision-makers, and responding to their expressed needs about which interventions are most effective for which patients under specific circumstances. CER seeks to make the selection of therapeutic options (by patients, their caregivers, clinicians, and policy makers) more informed – resulting in better decisions and ultimately improved health outcomes. The aim of the program is to provide skills and knowledge relevant to conducting comparative effectiveness research for application in the pharmaceutical and health care industries. It is designed primarily for individuals already working in a pharmaceutical or medical product company, government agency, or in a health care provider organization, who would like to become competent in this new area of research. The program will be 100% online, making it convenient and accessible for working professionals. This will be the first online MS degree in CER in the United States, and one of only a handful of related degree or certificate programs in the country.

2. Classification of Instructional Program (CIP) Code

Recommend the University’s preferred six-digit CIP code for this program.

| 51.2099 Pharmacy, Pharmaceutical Sciences, and other |

3. Enrollment and Degree Projections for the First and Fifth Years of the Program

In the Excel table below, summarize enrollment and degrees conferred projections for the program for the first and the fifth years of operation. If possible, indicate the number of full-time and part-time students to be enrolled each fall term in the notes section. If it is not possible to provide fall enrollments or fall enrollments are not applicable to this program, please indicate so and give a short explanation. The degree projections should encompass the fiscal year as reported to the IBHE.

Table 1

<table>
<thead>
<tr>
<th>STUDENT ENROLLMENT AND DEGREE PROJECTIONS FOR THE PROPOSED PROGRAM</th>
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<tr>
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<tr>
<td>Number of Program Majors (Fall Headcount)</td>
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<tr>
<td>Annual Full-time-Equivalent Majors (Fiscal Year)</td>
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<tr>
<td>Annual Number of Degrees Awarded</td>
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</table>

The enrollment numbers are estimated based on information from other similar programs and experience with our recently implemented Campus Certificate in Pharmacoepidemiology. Because the program is designed for working professionals, we anticipate that most students will take a part-time class load and complete the program over 2 years.

4. Background

Briefly describe the historical and institutional context of the program’s development. Include a short summary of any existing program(s) upon which this program will be built and of any existing administrative unit(s) and program(s) that will share resources with this program. (Note: Student and occupational demand for the program is addressed in #6, below.)

Spending on health care in the United States (US) exceeds that of all other countries both in terms of total dollars and as a percent of gross domestic product (GDP).¹ Prescription drugs account for approximately 11% of overall health care expenditures in the US.² Although the US spends more on health care and prescription drugs than other countries, data are mixed as to the value obtained for the money spent. For example, the US ranks twenty-second in life expectancy among the 30 countries that are part of the Organization for Economic Cooperation and Development (OECD).³ The discrepancy between health care spending and health outcomes is also apparent in regional variations

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in medical practice within the US itself. Differences in medical treatments across the various regions of the US suggest not only a lack of consensus regarding the effectiveness of treatment interventions, but also represents opportunities to reduce cost while improving (or at least maintaining) quality in areas where decision-making is not informed by evidence on outcomes.

Patients, caregivers, clinicians, and policy-makers must decide on the best course of treatment among the ever-increasing number of therapeutic options, but the lack of objective, scientifically derived data directly comparing the relative merits of the options makes decisions more complicated and less certain. While the traditional randomized controlled trial (RCT) has long been the gold standard for determining the efficacy of a medical intervention, such studies often fail to provide the evidence needed to compare one therapeutic option to another when used in actual practice.

Comparative effectiveness research (CER) offers a potential solution. CER is the “conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in real world settings.”\(^5\) The purpose of CER is to improve health outcomes by developing and disseminating evidence-based information to patients, clinicians, and other decision-makers, and responding to their expressed needs about which interventions are most effective for which patients under specific circumstances. Thus comparative effectiveness research seeks to make the selection among therapeutic options (by patients, their caregivers, clinicians, and policy makers) more informed — resulting in better decisions and ultimately improved health outcomes.

Since the mid-2000s significant effort has been exerted to define and develop the analytic methods used in CER, particularly by the Agency for Healthcare Research and Quality (AHRQ).\(^6,7\) With the advent of “patient-centered outcomes research” (PCOR) and the Patient-Centered Outcomes Research Institute (PCORI) in 2010, such efforts have expanded.\(^8\) The emphasis on improving the methodologies employed in CER is due in part to the inherent potential for bias in such research, particularly in retrospective analyses of large datasets which have been a conventional source of data for CER.\(^9\) Because CER and PCOR are ultimately designed to inform decisions, a large emphasis is placed on stakeholder engagement in the research process, as well as on dissemination and implementation of CER findings.\(^10,11\)

These advances in methods of comparative effectiveness research together with the relative newness of the field have resulted in a dearth of researchers with expertise to conduct CER. While both the National Institutes of Health (NIH) and AHRQ have invested in mentored training awards for CER researchers these are focused on individual trainees, are few in number, and are not designed to


\(^8\) Selby JV, Beal AC, Frank L. The Patient-Centered Outcomes Research Institute (PCORI) national priorities for research and initial research agenda. JAMA. 2012;307(15):1583-1584.

\(^9\) Smith S. Preface. Medical Care. 2007;45(Supp2):s1-s2


Approved November 19, 2010
expand the availability of degree-granting programs in CER. Further, while there are a variety of programs that grant degrees in related fields (including epidemiology, health economics, health services research, biostatistics and other fields), these programs do not cover the entire spectrum of methods and applications unique to CER. As a result, there is critical need for new programs to educate and train new CER researchers.

The Pharmaceutical Research and Manufacturers of American (PhRMA) Foundation attempted to address this need by funding academic institutions to develop training and education programs in CER. PhRMA called their funding program “Centers of Excellence in CER Education”, which began in 2001. Each year the PhRMA foundation has awarded funding to 1 or 2 academic institutions for this purpose. These have included Harvard University, Johns Hopkins University, University of Maryland at Baltimore, University of Utah, and University of Washington. Each of these developed post-doctoral training or certificate programs in CER. In 2015 the PhRMA Foundation requested applications for funding and specified that the proposal should include development of a degree-granting program in CER. The University of Illinois at Chicago (UIC) received the award, making it the sixth academic institution funded under this program.

UIC has been at the forefront of the development of CER for the past decade. As the coordinating site for an AHRQ-funded Developing Evidence to Inform Decisions about Effectiveness (DEcIDE) Center from 2005-2010 and again from 2010-2013, UIC was one of a small group of universities that were pioneers in CER. The DEcIDE centers led the methodological development of CER as a discipline. UIC faculty members have also been successfully funded via many CER-related programs since, including those by AHRQ, NIH, and PCORI. UIC also has previous experience in designing CER training programs and providing CER education, and in 2000-2013 was funded by National Cancer Institute (NCI) for a CER-focused Institutional Training Program (KMI grant).

The proposed online MS in CER will reside in the Department of Pharmacy Systems, Outcomes and Policy (PSOP) in the College of Pharmacy. The Department currently offers a MS and PhD in Pharmacy, which more broadly focuses on pharmacy and pharmaceutical systems, outcomes and policy. The new degree will have some overlap in coursework, will be taught by the current PSOP faculty members, and otherwise will use all of the same resources as the other graduate degrees in the Department.

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12 Gagnon, Center of Excellence for Comparative Effectiveness Research Program 2014; Washington DC
5. Mission

Illinois Administrative Code: 1050.30(a)(1): A) The objectives of the unit of instruction, research or public service are consistent with the mission of the college or university; B) The objectives of the unit of instruction, research or public service are consistent with what the unit title implies.

Briefly describe how this program will support the University’s mission, focus, and/or current priorities. Demonstrate the program’s consistency with and centrality to that mission.

The proposed program is consistent with several aspects of the mission of UIC. As one of the first programs of its type in the US and the world, the program will offer students an educational opportunity that is not available elsewhere and that can only be provided by a leading research university. In fact, very few leading research universities other than UIC could support this program. Providing students such opportunities is a major emphasis of the UIC mission. The program, which will focus on the knowledge needed to make the best decisions in health care, is also consistent with UIC’s emphasis on the health sciences professions. To the extent that graduates of the program practice in Illinois, the program will benefit the citizens of the state, including underserved communities.

6. Need for the Program and Future Employment and Additional Educational Opportunities for Graduates

Illinois Administrative Code: 1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically justified based on the educational priorities and needs of the citizens of Illinois.

Explain how the program will meet the needs of regional and state employers, including any state agencies, industries, research centers, or other educational institutions that expressly encouraged the program’s development. (If letters of support are available, include them in the appendix as an Adobe Acrobat (pdf) document.)

Discuss projected future employment and or additional educational opportunities for graduates of this program. Compare estimated demand with the estimated supply of graduates from this program and existing similar programs in the state. Where appropriate, provide documentation by citing data from such sources as employer surveys, current labor market analyses, and future workforce projections. (Whenever possible, use state and national labor data, such as that from the Illinois Department of Employment Security at http://lmi.ides.state.il.us/ and/or the U.S. Bureau for Labor Statistics at http://www.bls.gov/).

The PhRMA foundation is supporting UIC to create this new program. PhRMA represents the major pharmaceutical companies in the US. The organizations that comprise PhRMA clearly see a need for their current and future employees to be knowledgeable in CER, and the Foundation has invested over $1.5 million in CER education and training.

The NIH, AHRQ, and PCORI have also identified the need for more investigators to be proficient in CER and have funded CER training programs across the US. The Institute of Medicine (IOM) published a report on infrastructure required for CER and identified the growth in the field and
workforce training and education needs as critical. The NIH, via the National Center for Advancing Translational Sciences (NCATS) also conducted a survey and reported the need for significant number of new workers in CER-related jobs in the foreseeable future. In addition, a recent report from the IOM forecasted that because of growth in CER, the current number of trained personnel will be inadequate to meet demand. The IOM’s recommendations called for investments to develop a research workforce with the requisite skills for CER and career development support at every level from graduate school to mid-career.

In 2012 the Drug Information Association (DIA) conducted a national survey to explore workforce and training needs in “real-world research” (RWR). RWR is a term closely related to CER. Participants were mostly from pharmaceutical industry (46%) or consulting companies (25%). The majority of respondents indicated that their organizations will perform or use RWR in the next 3 years, and 40% anticipated growth of RWR by 21-100% over the next 3-5 years (24% didn’t know). Most respondents also said that they planned to hire or would like to hire individuals with expertise in RWR in the next 12 months. When asked about barriers to conducting RWR 46% reported inability to hire individuals with sufficient expertise, lack of familiarity with the field (52%), and lack of trained researchers (39%). Over half of respondents reported the need for training/education for current staff.

The discipline of CER is too new for there to be data from either the Bureau for Labor Statistics or the Illinois Department of Employment Security. However, we have conducted a survey to gauge interest in the proposed program. The questionnaire asked about both the need for and interest in CER training, and the need within the respondent’s company. A request to participate and a link to the online questionnaire was posted on several LinkedIn groups, including professional pharmacy associations and pharmaceutical industry-related groups. The request was also tweeted and re-tweeted by the National Pharmaceutical Council which encouraged participation. Finally, an invitation to participate was sent by email to members of the Chicago-Regional Chapter of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR). The organization represents individuals working in the CER-related field of pharmaceutical outcomes research at pharmaceutical companies, consulting organizations, and academic institutions across the greater Chicago region – including Indiana and Wisconsin.

A total of 22 individuals participated in the survey. Respondents described the organization where they worked as pharmaceutical company (32%), consulting firm (32%), hospital or health-system (9%), college or university (18%), or other (13%). Most respondents (86%) felt that they would benefit “some” or “a lot” from formal training in CER. When asked about the number of employees in their organization that would benefit from CER training 41% reported 1-5, 18% reported 6-10, 23% reported 11-20, and 18% reported >20.

### 7. Comparable Programs in Illinois

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We have conducted a thorough analysis of other CER programs in Illinois and the US. There is no comparable program in Illinois, and only one such program in the country. The only other academic organization in Illinois with expertise in CER is the University of Chicago (UC). UC currently offers a “concentration” in CER for individuals in a MS or PhD program in Health Studies. The program is offered through the UC Institute for Translational Medicine. It is unlikely that our proposed program would impact UC because a concentration requires that students must already be enrolled in a MS or PhD program. The MS and PhD programs at UC are not specifically in CER so would not be direct competitors in terms of potential students. Moreover, the MS degree in Health Studies at UC is restricted to clinicians (mainly physicians). Because the proposed program at UIC encourages those with any health care background to apply, it will be available to a much broader audience.

Across the US we found only one degree-granting program in CER. That program is offered at the University of Alabama – Birmingham. It is titled “Masters of Science in Pharmacoepidemiology and Comparative Effectiveness Research” and is a 43 credit hour program. It is a traditional program [not online] and appears to have been started only recently. It has 10 students enrolled currently. We do not feel that such a program will negatively impact enrollment in our proposed online program because of our greater potential reach and the convenience of the online format.

Nationally we found 2 institutions that offer concentrations in CER (in addition to UC) – these are New York University and University of Maryland. We found 6 institutions that offer a certificate in CER. These are New York University, University of Washington, Columbia University, University of Pittsburgh, University of Utah and University of California – Irvine. None of these concentrations or certificate programs is available online. Certificate programs are likely to draw from a similar student base as our proposed program – which is working professionals. The advantage of our program will be that it offers a degree (a certificate is not a degree) and that it will be available online. The disadvantage of our program is that it will require a greater number of credit hours (certificate programs are generally around 12 credit hours) and therefore will be a greater commitment in time and tuition for the student.

8. The Illinois Public Agenda for College and Career Success

Demonstrate how the proposed program will support one or more goals of The Illinois Public Agenda, the Illinois Board of Higher Education’s Strategic Initiative. Each program does not have to contribute to every goal, but it must contribute to at least one.
The proposed program meets Goals 3 and 4. The program is being proposed to meet the expressed demand on the part of pharmaceutical companies and other organizations for professionals with expertise in CER (goal 3). Having such employees will potentially allow those organizations to be more successful and competitive, and ultimately may benefit the economy. The program will be targeted to working professionals, and the online structure will make it accessible not just to students in Illinois, but throughout the US and abroad. The program clearly meets goal 4 – integrating education and research. In fact, it is the research expertise of the UIC faculty that makes this educational program possible. The program is also innovative – being the first online degree in CER to be offered in the US. It also leverages the existing research expertise together with the educational and technological assets for UIC.

9. Program Description and Requirements

Illinois Administrative Code: 1050.30(b)(1) [applicable only to new units of instruction]: A) The caliber and content to the curriculum assure that the objectives of the unit of instruction will be achieved; B) The breadth and depth of the curriculum are consistent with what the title of the unit of instruction implies; C) The admission and graduation requirements for the unit of instruction are consistent with the stated objectives of the unit of instruction.

1050.30(b)(3): Appropriate steps shall be taken to assure that professional accreditation needed for licensure or entry into a profession as specified in the objectives of the unit of instruction is maintained or will be granted in a reasonable period of time.

1050.50 (a)(2)(C) Requirement for Programs in which State Licensure is Required for Employment in the Field: In the case of a program in which State licensure is required for employment in the field, a program can be found to be in good standing if the institution is able to provide evidence that program graduates are eligible to take the appropriate licensure examination and pass rates are maintained as specified in the objectives of the unit of instruction. If there is no such evidence, the institution shall report the program as flagged for review.

a. Admission Requirements

Provide a brief narrative description of the minimum admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.
The proposed minimum requirements for admission to the program are:

- Applicants must have an earned Bachelor’s or health professional degree with a minimum grade point average of 2.75 (on a scale of 4.0).
- Applicants must submit transcripts from the institution where the most recent degree was earned.
- Applicants must submit a personal statement explaining why they are interested in the program.
- Applicants must submit a resume or CV.
- Recommended background: experience in healthcare industry and college-level algebra.
- Additional requirements for international applicants: UIC requires the submission of valid English proficiency test scores for all non-native English speakers. International applicants must present evidence of English competency as demonstrated by Test of English as a Foreign Language (TOEFL), Pearson’s PTE Academic, or International English Language Testing System (IELTS) tests scores. The required scores are –
  - TOEFL: Reading 19, Speaking 20, Listening 17, Writing 21, and Total 80;
  - IELTS: a minimum total score of 6.5 and minimum subscores of 6.0 for each of the four subsections;
  - PTE Academic: a minimum total score of 54 and minimum subscores of Reading 51, Speaking 53, Listening 47, Writing 56
- Proficiency test requirements may be waived under specific circumstances. Official scores must be reported directly from the testing service and must have been taken within the last two years. Information on test score submission, test score minimums, and test exceptions can be found on the UIC Office of Admission website at http://www.grad.illinois.edu/admissions/instructions/04c.

### b. Program Description

Provide a description of the proposed program and its curriculum, including a list of the required core courses and short (“catalog”) descriptions of each one. (This list should identify all courses newly developed for the program. The learning objectives on which the curriculum is based are discussed in Section 10)

This section also should discuss:

- The unique qualities of this program
- Its delivery method (face-to-face, online, hybrid, etc.)
- Its curriculum’s alignment with national standards (if applicable)

The aim of the degree is to provide skills and knowledge relevant to conducting comparative effectiveness research for application in the pharmaceutical and health care industries. It is designed primarily for individuals already working in a pharmaceutical or medical product company, government agency, or in a health care provider organization, who would like to become competent in this new area of research. The program will be 100% online, making it convenient and accessible for working professionals. This will be the first online MS degree in CER in the United States, and one of only a handful of related degree or certificate programs in the country.

The 32-hour program is designed to meet national competencies for comparative effectiveness research training. The proposed curriculum is provided in the Table below. Catalog descriptions

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of each course are provided in Appendix 1. All of the courses will be available online. The program offers ample electives in order to increase flexibility in terms of content and availability of courses. In addition to the approved electives listed below, students may be granted permission by the Department to substitute other electives on a case-by-case basis if deemed relevant to comparative effectiveness research.

Proposed Curriculum:

<table>
<thead>
<tr>
<th>Title</th>
<th>Rubric</th>
<th>Cr</th>
<th>New Course</th>
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<tbody>
<tr>
<td><strong>Required Courses (20 Cr)</strong></td>
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<td></td>
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<tr>
<td>Comparative Effectiveness Research</td>
<td>PSOP 516</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Biostatistics I or Clinical Research Methods I&lt;sup&gt;a&lt;/sup&gt;</td>
<td>BSTT 400 or HPA 472</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Introduction to Epidemiology: Principles and Methods&lt;sup&gt;a&lt;/sup&gt;</td>
<td>EPID 403</td>
<td>3</td>
<td></td>
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<tr>
<td>Pharmacoepidemiology</td>
<td>PSOP 426&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3</td>
<td></td>
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<tr>
<td>Ethics and Privacy Issues in Comparative Effectiveness Research</td>
<td>PSOP 400</td>
<td>1</td>
<td>X</td>
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<tr>
<td>Comparative Effectiveness Research Project</td>
<td>PSOP 592</td>
<td>6</td>
<td>X</td>
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<tr>
<td><strong>Elective Courses (Need 12 Cr, choose among following courses, or as approved by Department. Must take at least 6 credits of 500-level electives not including Independent Study and Department Seminar)</strong></td>
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<tr>
<td>Principles of Economic Evaluations of Health Care Interventions</td>
<td>PSOP 573</td>
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<tr>
<td>Pharmaceutical Policy</td>
<td>PSOP 535</td>
<td>3</td>
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<tr>
<td>Concepts in Drug Development: From Bench to Bedside&lt;sup&gt;b&lt;/sup&gt;</td>
<td>BPS 508</td>
<td>3</td>
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<tr>
<td>Advanced Decision Analysis Techniques I</td>
<td>PSOP 580</td>
<td>2</td>
<td>e</td>
</tr>
<tr>
<td>Biostatistics II or Clinical Research Methods II&lt;sup&gt;a&lt;/sup&gt;</td>
<td>BSTT 401 or HPA 473</td>
<td>4</td>
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<tr>
<td>Systematic Reviews and Meta-Analysis</td>
<td>PSOP 484</td>
<td>3</td>
<td>e</td>
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<tr>
<td>Independent Study</td>
<td>PSOP 596</td>
<td>1-4</td>
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<tr>
<td>Department Seminar&lt;sup&gt;c&lt;/sup&gt;</td>
<td>PSOP 595</td>
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<tr>
<td><strong>SUBTOTAL</strong></td>
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<tr>
<td><strong>Total Credit Hours (Required + Elective)</strong></td>
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<td>32</td>
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<sup>a</sup> Inclusion approved by the Division of Epidemiology and Biostatistics, and Division of Health Policy Administration, School of Public Health (see Appendix 2).

<sup>b</sup> Inclusion approved by the Department of Biopharmaceutics, College of Pharmacy (see Appendix 2).

<sup>c</sup> May take up to 4 times.

<sup>d</sup> Currently 400-level but planning to change to 500-level to more appropriately reflect content, pending SPH approval because it is cross-listed.

<sup>e</sup> Existing course but revised for online delivery.

c. **Graduation Requirements**

Provide a brief narrative description of all graduation requirements, including, but not limited to, credit hour requirements, and, where relevant, requirements for internship, practicum, or clinical. For a graduate program, summarize information about the requirements for completion of the thesis or dissertation, including the thesis committees, and the final defense of the thesis or dissertation. If a thesis or dissertation is not required in a graduate program, explain how the functional equivalent is achieved.
In order to graduate, students must have attained a B average or higher across all the required and elective courses in the program. Students must also pass a 6 credit hour CER Project Course (PSOP 592), for which they must conduct a CER-related project or research, write a report, and present finding in a public forum. Faculty of the Department will serve as Project advisors.

d. Specialized Program Accreditation

Describe the institution’s plan for seeking specialized accreditation for this program. Indicate if there is no specialized accreditation for this program or if it is not applicable.

There is no specialized accreditation.

e. Licensure or Certification for Graduates of the Program

If this program prepares graduates for entry into a career or profession that is regulated by the State of Illinois, describe how it is aligned with or meets licensure, certification, and/or entitlement requirements.

Not applicable.

10. Plan to Assess and Improve Student Learning

Illinois Administrative Code: 1050.30(b)(1)(D) Provision is made for guidance and counseling of students, evaluations of student performance, continuous monitoring of progress of students toward their degree objectives and appropriate academic record keeping.

a. List the program’s student learning objectives.

Each objective should identify what students are expected to know and/or be able to do upon completing this program.

Upon completion of this program, students will have the knowledge and skills to do the following:

- Develop policy and patient-care relevant comparative effectiveness and patient-centered outcomes research questions that, when answered, will –
  - address important gaps in knowledge or
  - lead to improved individual and population-level health care decision-making.
- Recognize, design, conduct, and analyze comparative effectiveness research studies that incorporate state-of-the-art methods, including both primary and secondary studies.
- Explain the importance of stakeholder input in the conceptualization, design, and dissemination of comparative effectiveness research.
- Apply CER studies to broader issues in health care such as health technology assessment and medical decision making.

b. Describe how, when, and where these learning objectives will be assessed.

Your description should demonstrate that the assessment will:

- be systematic (that is, occur at different points throughout the program, including course-by-course and end-of-program);
- include multiple, discipline-appropriate measures of student learning;
- emphasize direct measures (e.g., assessments of learning via capstone courses, internships, portfolios, recitals, exhibits, theses, dissertations; standardized, locally-developed, comprehensive, or professional licensure and certification exams; and so on); and
Assessment of the learning objectives will occur throughout the program (in each course as appropriate), annually in a student progress evaluation, and at the end of the program via the capstone project.

Within each course learning objectives that apply to that particular course will be assessed by faculty using quizzes, online discussions, exams, reflections, homework assignments, oral presentations, and term papers. Some courses will also use peer-evaluations (where students evaluate each other). Finally, some courses will use self-evaluation.

Students enrolled in the program will also undergo an annual progress evaluation. During this evaluation each student will evaluate his/her own achievement of the program learning objectives. Feedback will also be provided to the student by his/her advisor and the Director of Graduate Studies and/or Department Head.

The capstone project serves as an “end-of-program” evaluation. The capstone project will require the student to integrate and apply what they have learned in the other courses and therefore demonstrate the ability to conduct independent CER.

Indirect assessments of students will also be tracked. These include feedback received from other students, alumni, employers, or others about the student; and success in job placement or advancement following the program.

c. Identify faculty expectations for students’ achievement of each of the stated student learning objectives.

What score, rating, or level of expertise will signify that students have met each objective? Provide rating rubrics as necessary.

Letter grades will be used to indicate the degree to which objectives are met. Our educational goal is that students will understand CER-related concepts and apply them to inform medical decision making, leading to better health outcomes, improved delivery of care and efficiency of the health care system. The extent to which the student attains the learning objectives described above, as relevant to each course in the degree program, will be evaluated using a rubric that emphasizes three key criteria for each content area of the program: (1) demonstrates an understanding of the concepts through class participation, exams and assignments; (2) is able to apply the concepts empirically to real world examples and situations; and (3) is able to communicate clearly and effectively. The levels of competency are outlined below in the generic rubric that will be tailored to each course and each assignment within each course. To receive a top grade, students must achieve level 3, level 2 suggests there is room for improvement and helps a student understand what they need to do to achieve a better grade, and level 1 is associated with a failing grade and improvement is needed to pass the course.

<table>
<thead>
<tr>
<th>General rubric:</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates understanding of concepts</td>
<td>Lacks an understanding of concepts related to the course, e.g. CER.</td>
<td>Some misunderstanding of concepts related to the course, e.g. CER.</td>
<td>Shows an understanding of concepts related to the course, e.g. CER.</td>
</tr>
<tr>
<td>Application of</td>
<td>Demonstrates a lack of</td>
<td>Analysis demonstrates a</td>
<td>Analysis of discussion</td>
</tr>
</tbody>
</table>
d. Explain the process that will be implemented to ensure that assessment results are used to improve student learning.

In each course students will be provided with assessment results on completion of the assessment activity or activities. Students will be given every opportunity to both understand their own progress and take steps to improve learning before the end of the course. In addition, faculty will intervene early with students that are not performing adequately in a course and offer assistance to improve learning. Faculty may refer students to the Department Director of Graduate Studies if additional intervention is deemed necessary.

The annual progress evaluation will serve as an additional opportunity to review and provide feedback to the student in order to improve learning. This will involve the Director of Graduate Studies and/or Department Head and require the student to develop goals to address any learning deficiencies identified.

Last, the capstone project will be a direct, one-on-one learning experience where the student will receive regular feedback/assessment by the faculty advisor during the project; and where the student is expected to incorporate such assessment into his/her plan for learning.

11. Plan to Evaluate and Improve the Program

Illinois Administrative Code: 1050.30(a)(2): The design, conduct, and evaluation of the unit of instruction, research or public service are under the direct and continuous control of the sponsoring institution’s established processes for academic planning and quality maintenance.

1050.50 (a)(1) Three years after approval of a new program, the institution shall provide a program progress report to the Board as part of the institution's annual report. The third year progress report shall describe the institution's performance in meeting program objectives and show where any improvements are necessary. The placement of a program in voluntary temporary suspension will not negate the requirement of submitting a third year progress report.

Describe the program’s evaluation plan.*

This plan should identify the methods of program evaluation (e.g., faculty self study, curriculum committee review, external review, feedback from key stakeholders such as current students, alumni, employers, and/or staff at residency/internship/practicum sites) as well as its key elements (e.g., curriculum, teaching, research, public services, diversity, quality, cost effectiveness, employer demand, etc., as is relevant to the program), and the goals that will be set for each one. It also should illustrate the existence of regular review and feedback processes to ensure that results of the evaluation will be used to improve the curriculum, instruction, and the overall quality of the program.

Your discussion may include (but is not limited to) the following items:
• Faculty/student collaboration in research, community service, or other projects;
• Faculty productivity (in research, scholarship, creative activities, instruction, and public service);
• Student engagement in integrative learning activities (internships, practica, service learning, study abroad, etc.);
• External funding such as research grants and contracts;
• Support of one or more of the Goals of The Illinois Public Agenda;
• Results of student learning assessment;
• Employer, alumni, and other satisfaction survey results;
• Percent of students involved in faculty research or other faculty led projects;
• Percent of graduate students in the program presenting or publishing papers;
• Pass rate of graduates on the end-of-program, comprehensive, standardized, and/or certification/licensure examinations;
• Retention, graduation, and time-to-degree completion rates; and
• Job placement, career advancement, and/or graduate school acceptance rates.

*This plan may be based on the institution’s process for the submission of a progress report to the IBHE at the end of the 3rd year of operation and the program’s participation in the IBHE’s 8-year program review process or the program’s specialized accreditation review process.

We plan to evaluate the program continuously and on an annual basis. First, the department faculty already meets monthly (faculty meetings) and the agenda includes discussion of the curriculum, instruction, and the overall quality of the graduate programs. At each meeting the group discusses opportunities for improvement based on direct or indirect observation or feedback from students or others.

Second, this program will receive input on ways to improve from an external advisory committee. Note that the external advisory committee will have a broader scope than just the Master’s program – its purpose being to provide input for the Center of Excellence in CER Education described on page 4. The external advisory committee will include individuals who are knowledgeable about CER and the training needed in the workplace. This includes people from pharmaceutical companies, consulting companies, other academic organizations, health care organizations and government agencies (including the FDA). The committee will provide input on all aspects of the Master’s program, including but not limited to curriculum, teaching, research, public service, diversity, quality, cost, and demand. The committee will help set goals for these key aspects and will assist the department in tracking performance on each of those goals.

Third, input from current students will be solicited each semester. This input will be used not just for instructor and course evaluation/assessment, but also for program-related assessment. The Director of Graduate Studies and/or Department Head will also meet (in-person or via videoconference) with each student annually in order to solicit feedback about the program. At the time of graduation each student will also be asked to provide feedback on the program. Finally, once we have alumni of this program we will also seek feedback from them and their employers. We will also track the graduation rate, career-advancement, and other indicators of program success.
<table>
<thead>
<tr>
<th>12. Budget Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal and Personnel Resources</td>
</tr>
</tbody>
</table>

Illinois Administrative Code: 1050.30(a)(5):  

A) The financial commitments to support the unit of instruction, research or public service are sufficient to ensure that the faculty and staff and support services necessary to offer the unit of instruction, research or public service can be acquired and maintained;  

B) Projections of revenues necessary to support the unit of instruction, research or public service are based on supportable estimates of state appropriations, local tax support, student tuition and fees, private gifts, and/or governmental grants and contracts.

Budget Rationale

Provide financial data that document the university’s capacity to implement and sustain the proposed program and describe the program’s sources of funding.

a. Is the unit’s (Department, College, School) current budget adequate to support the program when fully implemented? If new resources are to be provided to the unit to support the program, what will be the source(s) of these funds? Is the program requesting new state funds? (During recent years, no new funds have been available from the state (IBHE) to support new degree programs).

No new state funding is requested. The development of the program was supported by a grant from PhRMA (described above). Administratively the program will be incorporated into the existing graduate program in the Department of Pharmacy Systems, Outcomes and Policy. Many of the courses already exist, are being taught by existing faculty, and can accommodate the additional students generated by this new program. New courses developed for this program will also be taught by existing faculty and will not require new resources. Tuition generated from the program (we are proposing the general graduate rate for online programs of $793 per credit hour) will cover the costs of the program, including faculty, staff, marketing, and tuition-transfer payments to other colleges (mainly the School of Public Health) to compensate for courses taken by students in the CER program.

b. Will current faculty be adequate to provide instruction for the new program or will additional faculty need to be hired? If additional hires will be made, please elaborate.

No new faculty are anticipated at the level of student enrollment projected in Table 1. However, should student enrollment exceed projections, then additional sections for courses may need to be added to accommodate extra enrollment. If this occurs then the cost of faculty hired to teach these new sections will be covered by the tuition revenue generated by the program (and only if there is sufficient revenue). No new state funds will be required.

c. Will current staff be adequate to implement and maintain the new program or will additional staff be hired? Will current advising staff be adequate to provide student support and advisement, including job placement and or admission to advanced studies? If additional hires will be made, please elaborate.

Administratively the program will be incorporated into the existing graduate program in the Department of Pharmacy Systems, Outcomes and Policy of the College of Pharmacy. No new staff are anticipated at the level of student enrollment projected in Table 1. In addition to the departmental staff for academic coordination and advising, the College of Pharmacy information...
technology staff will support the program as needed. The College also has teaching and curriculum design staff to assist faculty with online content issues. However, should student demand exceed projections, then additional staff time may need to be added to accommodate additional enrollment. If this occurs then the cost of staff time will be covered by the tuition revenue generated by the program. No new state funds will be required.

d. Are the unit’s current facilities adequate to support the program when fully implemented? Will there need to be facility renovation or new construction to house the program? (Refer to Section #13.1).

This is a 100% online program. The current facilities are adequate to support the program when fully implemented. No renovation or construction will be required.

e. Are library resources adequate to support the program when fully implemented? (Refer to Section #13.2).

The current library resources are completely adequate to support the program. This is based on feedback from faculty members currently engaged in CER and related fields who report the library’s collections meet their needs.

f. Are any sources of funding temporary (e.g., grant funding)? If so, how will the program be sustained once these funds are exhausted?

As described above, the development of this program is funded by a 3-year grant (January 2015-December 2017) from the PhRMA Foundation in the amount of $250,000. The grant was for develop of the program proposed here, but also included other CER training related activities. The grant funding was for development only, not for operation of the program. After the program is implemented the program will be funded completely by tuition.

g. If this is a graduate program, please discuss the intended use of graduate tuition waivers. If the program is dependent on the availability of waivers, how will the unit compensate for lost tuition revenue?

Because the program is designed for working professionals it will not use graduate tuition waivers. All of the students enrolled in this program will be expected to pay tuition, or in some cases their employers may pay tuition on their behalf.
h. Complete the budget Table 2 below

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit of Measurement</th>
<th>Year One</th>
<th>5th Year (or when fully implemented)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty FTE</td>
<td>FTE</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Faculty</td>
<td>$</td>
<td>$50,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Other Personnel Costs</td>
<td>$</td>
<td>$15,000</td>
<td>$15,000</td>
</tr>
<tr>
<td>Supplies, Services, Equipment</td>
<td>$</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Facility Costs (e.g., rental, maintenance)</td>
<td>$</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other Costs (itemized):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>$</td>
<td>$7,500</td>
<td>$7,500</td>
</tr>
<tr>
<td>Revenue-sharing with SPH</td>
<td>$</td>
<td>$7,000</td>
<td>$14,000</td>
</tr>
<tr>
<td>Total</td>
<td>$</td>
<td>$84,500</td>
<td>$91,000</td>
</tr>
</tbody>
</table>

Notes: [Explain any unique attribute(s) in this budget table.]

We anticipate that all of the costs of this program will be covered by tuition revenue generated by the program. Based on the conservative enrollment projections in Table 1, total tuition revenue will be approximately $63,500 in year 1 and $127,000 when fully implemented (25% of which is retained by the University and the remainder is allocated to the College). We anticipate that costs will exceed generated revenue in the first year because the first cohort of students is expected to be smaller than in subsequent years.

Faculty: Based on the enrollment projections in Table 1 new students can be added to existing sections of courses without hiring additional faculty members. The number of new courses developed for this program is small and will be accommodated by existing faculty. However, we have included faculty salary of $50,000 to ensure adequate support for existing and new courses, and faculty time to work with students enrolled in the capstone. This may be used to offset summer salary for existing faculty who have increased teaching loads as a result of the program. If enrollment exceeds that shown in Table 1 then new sections of courses may be needed. Should this occur than the additional tuition revenue will be used to pay adjunct or other faculty to teach these sections.

Other Personnel: We have budgeted $15,000 for program coordination. This will be used to augment the existing staff that provide academic support for the current PSOP graduate program. If the program grows beyond the projections in Table 1 that additional staff support may be needed above that budget.

Supplies, Services, Equipment: We have budgeted $5,000 for supplies, services, or equipment. Because the program is online there may be technology that is needed that is currently unknown.
For example, we anticipate the need for video capture equipment for videoconferencing or small classroom presentations that is not currently available.

Marketing: We anticipate marketing expenses of $7,500 annually specifically for this program.

Revenue-sharing with SPH: Two required courses (and one elective) in the proposed program are taught in the School of Public Health (SPH). We have agreed to split the college-share of the tuition-revenue with those units for these courses (net of the usual import/export tax).

13. Facilities and Equipment

Illinois Administrative Code: 1050.30(a)(4): A) Facilities, equipment and instructional resources (e.g., laboratory supplies and equipment, instructional materials, computational equipment) necessary to support high quality academic work in the unit of instruction, research or public service are available and maintained; B) Clinical sites necessary to meet the objectives of the unit of instruction, research or public service; C) Library holdings and acquisitions, owned or contracted for by the institution, that are necessary to support high quality instruction and scholarship in the unit of instruction, research and public service, are conveniently available and accessible, and can be maintained.

a. Describe the facilities and equipment that are available, or that will be available, to develop and maintain high quality in this program. Summarize information about buildings, classrooms, office space, laboratories and equipment, and other instructional technologies for the program.

This will be a completely online program. The current facilities are adequate to support the program when fully implemented. The faculty have existing office space and computer resources that are sufficient to support the program. The College of Pharmacy has an existing “Teaching and Learning Center” equipped with a studio for recording lectures and other state of the art equipment to support distance learning. The College of Pharmacy also has existing information technology unit to support the program.

b. Summarize information about library resources for the program, including a list of key textbooks, a list of key text and electronic journals that will support this program, and a short summary of general library resources of the University that will be used by the program’s faculty, students, and staff.

The proposed program is comprised largely of existing courses. For that reason we do not anticipate that any changes will be needed to the current library resources. Program faculty, students, and staff have or will have access to electronic journals, databases, and texts including those listed below:

**Databases**
- Access Medicine
- Access Pharmacy
- Clinical Pharmacology
- Cochrane Library
- EMBASE
- Google Scholar
- International Pharmaceutical Abstracts
- MEDLINE
Journals (selection of applicable journals)
Drug Safety
Journal of Comparative Effectiveness Research
Journal of Pharmaceutical Policy and Practice
Pharmacoeconomics
Pharmacoepidemiology and Drug Safety
Pharmacotherapy

Texts
14. Faculty and Staff

Illinois Administrative Code: 1050.30(a)(3): A) The academic preparation and experience of faculty and staff ensure that the objectives of the unit of instruction, research or public service are met; B) The academic preparation and experience of faculty and staff, as evidenced by level of degrees held, professional experience in the field of study and demonstrated knowledge of the field, ensure that they are able to fulfill their academic responsibilities; C) The involvement of faculty in the unit of instruction, research or public service is sufficient to cover the various fields of knowledge encompassed by the unit, to sustain scholarship appropriate to the unit, and to assure curricular continuity and consistency in student evaluation; D) Support personnel, including but not limited to counselors, administrators, clinical supervisors, and technical staff, which are directly assigned to the unit of instruction, research or public service, have the educational background and experience necessary to carry out their assigned responsibilities.

a. Describe the personnel resources available to develop and maintain a high quality program, including faculty (full- and part-time, current and new), staff (full- and part-time, current and new), and the administrative structure that will be in place to oversee the program. Also include a description of faculty qualifications, the faculty evaluation and reward structure, and student support services that will be provided by faculty and staff.

Personnel resources and administrative structure are described above (12.h). The current faculty and support staff are sufficient at the anticipated enrollment shown in Table 1. The faculty of the Department of Pharmacy Systems, Outcomes and Policy are among the top in their fields in the US and internationally. Current faculty hold national and international leadership positions in professional associations, are editors of major medical and pharmacy journals, serve on boards of pharmacy and health care-related companies, and are frequently consulted for their opinions and expertise. Detailed information on each faculty member who will teach in this program is shown in Appendix 3.

In total the Department has 12 tenure-track faculty and 6 non-tenure track faculty. It also has 18 adjunct/affiliate faculty. The faculty are evaluated annually using a faculty evaluation system common for all faculty in the College of Pharmacy. The evaluation includes the quantity and quality of teaching, and performance is used in determining annual pay raises if a salary program is available. Feedback from student evaluations of teaching are included in the evaluations.

The Department has one full-time staff person who serves as an academic coordinator for the current graduate program. That individual will also do so for the proposed program. The Department also has teaching assistants (graduate students hired for this purpose). Students in this program will receive support from the academic coordinator, teaching assistants, and faculty.

b. Summarize the major accomplishments of each key faculty member, including research/scholarship, publications, grant awards, honors and awards, etc. Include an abbreviated curriculum vitae or a short description.

Faculty who will teach in this program are national and international experts in comparative effectiveness and related fields. Each maintains an active and productive research program, publishes frequently in top medical and pharmacy journals, and has received numerous awards and honors. In Appendix 3 of this document you will find an NIH-format biosketch for each faculty member in the Department of Pharmacy Systems, Outcomes and Policy who will be involved in the new program.
Appendix 1: Catalog Descriptions for Each Course in the Proposed MS in CER Curriculum

Required Courses:
PSOP 400. Ethics and Privacy Issues in Comparative Effectiveness Research. 1 hour. (NEW)
This online course covers ethical and privacy issues in comparative effectiveness research. Course Information: Online course. Prerequisite(s): None.

PSOP 516. Comparative Effectiveness Research. 3 hours. (NEW)
Provides overview of the relevance, methods and applications of comparative effectiveness research for the purpose of informing medical decision about treatment alternatives in health. Course Information: Online course. Prerequisite(s): None.

PSOP 426. Pharmacoepidemiology. 3 hours.
Provides an introduction to pharmacoepidemiology and key concepts and principles that are unique to the study of medications in large populations. Course Information: Same as EPID 526. Previously PSOP/EPID 426. Online course. Prerequisite(s): EPID 400 or EPID 403 or consent of the instructor. Priority in enrollment is given to graduate students in the health sciences.

PSOP 592. Comparative Effectiveness Research Capstone. 6 hours. (NEW)
Supervised literature-based scholarship and/or research in comparative effectiveness research. Selected problems or issues in comparative effectiveness research are investigated under the direction of the faculty advisor. Course Information: Online, videoconferencing, Satisfactory/Unsatisfactory grading only. Prerequisite(s): None.

BSTT 400. Biostatistics I. 4 hours. [or HPA 472]
Descriptive statistics, basic probability concepts, one- and two-sample statistical inference, analysis of variance, and simple linear regression. Introduction to statistical data analysis software. Course Information: Online course. Enrollment restricted to public health students and healthcare administration students; other graduate, professional and advanced undergraduate students admitted by consent as space permits.

HPA 472. Clinical Research Methods I. 4 hours. [or BSTT 400]
Introduces experimental and quasi-experimental study designs and descriptive statistics. Course Information: Online course. Extensive computer use required. Prerequisite(s): Graduate or professional standing; and approval of the department.

EPID 403. Introduction to Epidemiology: Principles and Methods. 3 hours.
Introduction to descriptive and analytic epidemiology, and determinants of health and disease in populations. Measures of occurrence, association and statistical testing will be addressed, along with study designs, bias and confounding. Course Information: Online course. Prerequisite(s): Credit or concurrent registration in BSTT 400 and graduate or professional standing; or consent of the instructor.

Elective Courses:
PSOP 484. Systematic Reviews and Meta-Analysis. 3 hours.
The course will discuss the concepts, process, and statistical methods required to perform a systematic review or meta-analysis of a large body of empirical findings. Course Information: Online course. Prerequisite(s): None.

PSOP 535. Pharmaceutical Policy. 3 hours.
Introduces key features of pharmaceutical policy and provides a framework for analyzing and evaluating current policy issues that affect the development and provision of safe, effective and affordable medications in the U.S. Course Information: Previously listed as PMAD 535. Online course. Prerequisite(s): Consent of the instructor is required for non-departmental students.

PSOP 573. Principles of Economic Evaluations of Health Care Interventions. 3 hours.
Principles, models and practical methods for the economic evaluation of health care services with an emphasis on pharmaceutical care. Same as HPA 573. Course Information: Online course. Prerequisite(s): Consent of the instructor is required for non-departmental students.
PSOP 580. Advanced Decision Analysis Techniques I. 2 hours.
Exposes students to advanced decision analysis and related sensitivity analysis methodologies. Course Information:
Online course. Prerequisite(s): PSOP 573. Consent of the instructor is required for non-departmental students.

PSOP 595. Departmental Seminar in Pharmacy Systems, Outcomes and Policy. 1 hour.
Presentation by students, faculty and visiting experts. Topics to be arranged. Course Information:
Satisfactory/Unsatisfactory grading only. May be repeated. May be taken online or in person. Prerequisite(s):
Consent of the instructor is required for non-departmental students.

PSOP 596. Independent Study. 1-4 hours.
Individual research under direction of a member of the faculty. Course Information: May be repeated. Students may
register in more than one section per term. Prerequisite(s): Consent of the instructor.

BSTT 401. Biostatistics II. 4 hours.
Simple and multiple linear regression, stepwise regression, multifactor analysis of variance and covariance, non-
parametric methods, logistic regression, analysis of categorical data; extensive use of computer software. Course
Information: Prerequisite(s): BSTT 400. May be taken online or in person.

HPA 473. Clinical Research Methods II. 4 hours.
Introduces OLS multivariate regression models, its assumptions, interpretation of outputs and departures, and
surveys more advanced multivariate regression models. Course Information: Online course. Extensive computer use
required. Prerequisite(s): HPA 472; and graduate or professional standing; and approval of the department.

BPS 508. Concepts in Drug Development: From Bench to Bedside. 3 hours.
Designed to give clinicians an overview of the drug development process from bench to bedside. Emphasis will be
placed on the regulatory aspects of drug development including clinical trials, FDA approval and post marketing
surveillance. Course Information: Online course. Prerequisite(s): Consent of the instructor.
Appendix 2: Confirmation of Approval to Include Course Outside of the Department/College

1. Email from William Beck, Head of the Department of Biopharmaceutical Sciences - College of Pharmacy, granting approval to include BPS 508 as an elective in the new program.

Beck, William T <wtbeck@uic.edu>  Tue, Sep 15, 2015 at 1:06 PM
To: "Schumock, Glen Thomas" <schumock@uic.edu>
Cc: "Zillmer, Randi" <randiz@uic.edu>, "Katz, Norman L" <nlkatz@uic.edu>, "Schlemmer, Raymond Francis" <schlemm@uic.edu>, "Beck, William T" <wtbeck@uic.edu>

Dear Glen:

As Head of the Department of Biopharmaceutical Sciences, I approve of the inclusion of the online BPS 508 course in your proposed new online MS degree in Comparative Effectiveness Research. Good luck with your course and best wishes.

Bill

---

William T. Beck, PhD
UIC Distinguished Professor
Head, Department of Biopharmaceutical Sciences

College of Pharmacy
University of Illinois at Chicago
833 S. Wood Street
Chicago, IL 60612-7231
TEL: 312-996-0888
FAX: 312-996-0096
LAB: 312-355-0839
Email: wtbeck@uic.edu
Web: http://www.uic.edu/pharmacy/depts/Biopharmaceutical_Sciences/
2. Email from Ronald Hershow, Director of the Division of Epidemiology and Biostatistics - School of Public Health, granting approval to include BSTT 400 and EPID 403 as required courses, and BSTT 401 as an elective in the new program.

Hershow, Ronald C <rchersho@uic.edu>  Thu, Aug 27, 2015 at 4:42 PM
To: "Schumock, Glen Thomas" <schumock@uic.edu>

Dear Dr. Schumock,

As Director of the Division of Epidemiology and Biostatistics in the School of Public Health, I approve of the inclusion of the online sections of EPID 403 and BSTT 400 (as required courses), and BSTT 401 (as an elective), in your proposed new online MS degree in Comparative Effectiveness Research with the tuition revenue for students who take our courses shared as described in the proposal, and with the student enrollment estimated in the proposal. If student enrollment should exceed projections or other circumstances change then we will work with you to meet those needs.

Respectfully,

Ronald C. Hershow, MD
Director, Division of Epidemiology and Biostatistics
UIC School of Public Health
1603 W Taylor St/ Rm 971
Chicago, IL 60612
Office: 312-996-4759
Mobile: 847-567-1349
Fax: 312-996-0064
Email: rchersho@uic.edu
3. Email from Lisa Powell, Director of the Division of Health Policy and Administration - School of Public Health, granting permission to include HPA 472 as a required course and HPA 473 as an elective in the new program.

Dear Dr. Schumock,

As Director of the Health Policy and Administration in the School of Public Health, I approve of the inclusion of the online sections of HPA 472 (as a required course) and HPA 473 (as an elective), in your proposed new online MS degree in Comparative Effectiveness Research in the College of Pharmacy with the tuition revenue for students who take our courses shared as described in the proposal, and with the student enrollment estimated in the proposal. If student enrollment should exceed projections or other circumstances change then we will work with you to meet those needs. I have cc’d our Academic Coordinator, Aimee Wiebel, and our Business Manager, Kim Mayfield.

Best,

Lisa

Lisa M. Powell, PhD
Professor and Director, Health Policy and Administration
Director, Illinois Prevention Research Center

Health Policy and Administration (MC 923), Rm. 777
School of Public Health
University of Illinois at Chicago
1603 W Taylor St.
Chicago IL 60612-4393
Tel: 312 413 3544
Fax: 312 996 5356
Appendix 3: Biographical Information of PSOP Faculty Who Will be Involved in the Program

1. Greg Calip, PharmD, MPH, PhD

<table>
<thead>
<tr>
<th>NAME: Calip, Gregory S.</th>
<th>POSITION TITLE: Assistant Professor, Department of Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>eRA COMMONS: GCALIP</td>
<td></td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING**

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>University of Illinois at Chicago, Chicago, IL</td>
<td>Pharm.D.</td>
<td>05/2008</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>IL New York University, New York, NY</td>
<td>M.P.H.</td>
<td>05/2010</td>
<td>Biostatistics &amp; Epidemiology</td>
</tr>
<tr>
<td>University of Washington, Seattle, WA</td>
<td>Ph.D.</td>
<td>06/2014</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>Fred Hutchinson Cancer Research Center, Seattle, WA</td>
<td>Fellowship</td>
<td>07/2014</td>
<td>Cancer Epidemiology &amp; Genetics</td>
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</tbody>
</table>

**A. Personal Statement**

I personally am happy to serve as both faculty and as a mentor for the proposed program. My areas of research and expertise are in epidemiology, including methodological training and experience in clinical epidemiology, cancer epidemiology, and advanced biostatistical methods in pharmacoepidemiology and drug safety research, all highly relevant to the proposed Masters program in CER. In recent collaborations, I have worked with researchers at the Group Health Research Institute and Fred Hutchinson Cancer Research Center in Seattle, Washington to conduct studies examining risk factors, commonly used medications, and chemotherapy-related factors that influence cancer prognosis. Importantly, I have extensive experience working with large HMO databases, SEER-Medicare data, and large cancer consortia. Separately as lead statistician for the University of Washington Global Medicines Program and Malaria in Pregnancy Consortium, I designed and coordinated analyses across multiple study sites in a large cohort study using prospectively-collected data along with administrative health data, pharmacy records, and medical records to evaluate safety of antimalarial medications in early pregnancy.

**B. Positions and Honors**

2005-2008 Student Pharmacist Extern, University of Illinois Medical Center at Chicago, Chicago, IL
2008-2010 Staff Community Pharmacist I, Duane Reade, Inc., New York, NY
2008-2010 Clinical Staff Pharmacist I in General Medicine, Pediatrics, and Oncology, New York University Langone Medical Center, New York, NY
2008-2010 Research Fellow and Clinical Instructor, New York University Center for the Study of Asian American Health, New York, NY
2009-2010 Research Fellow, New York City Tobacco Control Program, New York University School of Medicine, New York, NY
2010-2014 Postdoctoral Fellow, Cancer Prevention Training Grant in Nutrition, Exercise, and Genetics, Fred Hutchinson Cancer Research Center, Seattle, WA
2013-2014 Biostatistician and Lead Analyst, Malaria in Pregnancy Consortium Statistical Coordinating Center, Global Medicines Program, University of Washington School of Medicine, Seattle, WA

**Other Experience and Professional Memberships**

2008-present Illinois State Board of Pharmacy, Registered Pharmacist (RPh), License #051293452
2008-present New York State Board of Pharmacy, Registered Pharmacist (RPh), License #20052683
2008-present Pharmacy Provider I, NPI #1962734236
2008-present American Pharmacists Association Certified Immunization Provider, Certificate #305837502
2010-present Washington State Board of Pharmacy, Registered Pharmacist (RPh), License #PH60190480
2010-present Member, Washington State Public Health Association
2010-present Member, American Society of Clinical Oncology
2011-present Student Member, International Society for Pharmacoepidemiology
2011-present Ad hoc reviewer, *American Journal of Public Health*
2012-present Ad hoc reviewer, *Journal of General Internal Medicine*
2012-present  Ad hoc reviewer, *Breast Cancer Research and Treatment*
2013-present  Associate Editor, Clinical Case Reports

**Honors**

2010  Excellence in Global Public Health Award, New York University, New York, NY
2010  *Summa cum laude*, Graduate School of Arts and Sciences, New York University, New York, NY

**C. Selected Peer-reviewed Publications**


**D. Research Support**

**Completed Research Support**

<table>
<thead>
<tr>
<th>Grant ID</th>
<th>PI</th>
<th>Start-End Date</th>
<th>Institution</th>
<th>Project Title</th>
</tr>
</thead>
</table>

The goal of this funded research was to test hypotheses that commonly used medications for indications including cardiovascular disease and diabetes influence risk of second breast cancer events, recurrence, second primary cancer, breast cancer mortality, and all-cause mortality.

Role: Affiliate Research Associate

Role: Postdoctoral Fellow
### A. Personal Statement

I am pleased to serve as a faculty member and mentor in the proposed M.S. program in Comparative Effectiveness Research. Since 1997, I have coordinated and taught the departmental graduate course on research methods (PSOP 502), which is required for M.S. and Ph.D. students in the Department of Pharmacy Systems, Outcomes and Research (and open for enrollment upon request for selected graduate students in the UIC School of Public Health). I have served as a mentor and/or committee member for over 30 M.S. theses or Ph.D. dissertations -- mostly departmental, but also dissertation committees for PhD candidates in education, biopharmaceutics, and public health. I coordinate and serve as the main lecturer for the core course for first-year pharmacy students (P1s) entitled Roles, Environments and Communications (PHAR 441). This course introduces doctor of pharmacy (PharmD) students to the evolution of the pharmacy profession, the U.S. healthcare system, diverse practice environments, and effective communications skills for a variety of patients and professional audiences. My primary research interests focus on access and disparities reduction in the medication-use process. My research examine patient-centered considerations and comparative effectiveness research in the context of chronic illness among traditionally disadvantaged and/or vulnerable populations including rural and inner-city, low income, underserved minorities, and the elderly. Related scholarly interests include research and curricular assessments in serving diverse populations.

### B. Positions and Honors

#### Positions and Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Position and Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1988</td>
<td>Staff pharmacist, St. David’s Community Hospital and Holy Cross Hospital in Austin, TX</td>
</tr>
<tr>
<td>1986-1988</td>
<td>Health Services Researcher, Audie L. Murphy Memorial Veterans Hospital, San Antonio, TX</td>
</tr>
<tr>
<td>1988-1992</td>
<td>Director of Scientific Affairs, American Society of Health-System Pharmacists (ASHP), Bethesda, MD</td>
</tr>
<tr>
<td>1992-1998</td>
<td>Assistant Professor of Pharmacy Administration, University of Illinois at Chicago (UIC), College of Pharmacy</td>
</tr>
<tr>
<td>1999-2003</td>
<td>Member (provost-appointed), UIC Council for Excellence in Teaching and Learning</td>
</tr>
<tr>
<td>2000-2011</td>
<td>Director of Graduate Studies (Department of Pharmacy Administration)</td>
</tr>
<tr>
<td>1998-</td>
<td>Associate Professor of Pharmacy Administration (now Department of Pharmacy Systems, Outcomes and Policy), UIC College of Pharmacy</td>
</tr>
<tr>
<td>2006-</td>
<td>Associate Head, Department of Pharmacy Systems, Outcomes and Policy, UIC College of Pharmacy</td>
</tr>
<tr>
<td>2013-</td>
<td>Core Faculty, UIC Center for Pharmacoepidemiology and Pharmacoeconomic Research</td>
</tr>
</tbody>
</table>

#### Other Experiences and Professional Memberships

<table>
<thead>
<tr>
<th>Year</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995 - 2000</td>
<td>Member, United States Pharmacopeia (USP) Committee of Revision</td>
</tr>
<tr>
<td>1995 - 2000</td>
<td>Member, USP Nomenclature Committee</td>
</tr>
</tbody>
</table>
2001- 2002 Member, U.S. Food and Drug Administration (FDA) Drug Safety and Risk Management Subcommittee of the Pharmaceutical Science Advisory Committee

2003- 2006 Charter Member, FDA Drug Safety and Risk Management Advisory Committee

2005 Ad Hoc Member, NCI-NIH Special Emphasis Review Panel for SBIR Topic 214, Systems to Enhance Data Collection and Medication Compliance in Clinical Trials (March 29)

2001- Special Government Employee, FDA

2000- Vice-Chairman, USP Nomenclature, Safety and Labeling Expert Committee (and predecessor committees)

2006- Consultant to FDA Drug Safety and Risk Management Advisory Committee (temporary voting member participation in a dozen FDA advisory committee meetings since appointment as consultant)

2012- Editorial Advisory Board member, Journal of the American Pharmacists Association

2013 Field editor (with Glen T. Schumock), article series on pharmacy practice in small and rural hospitals, American Journal of Health-System Pharmacy

2014 Objective Review Committee Member, Health Resources and Services Administration (HRSA)-14-110: ACA – Mental health Service Expansion – Behavioral Health Integration Grant Program (Jun 10-12)

2014 American Pharmacists Association, 2014 Wiederholt Prize for Best Published Paper Award for Economic, Social and Administrative Sciences (co-recipient, comparative effectiveness study)

Teaching Awards (selected)

- First-year pharmacy student (P1) Teacher of the Semester – Class of 2013, UIC College of Pharmacy
- Urban Health Program Distinguished Faculty Award, UIC College of Pharmacy (2006)
- Honorable Mention (with Swu-Jane Lin, PhD), Innovations in Teaching Competition, American Association of Colleges of Pharmacy (2006)
- P1 Teacher of the Semester – Class of 2008, UIC College of Pharmacy (2005)
- Outstanding P1 Teacher of the Year-Class of 2007, UIC College of Pharmacy
- Outstanding P1 Teacher of the Year - Class of 2004, UIC College of Pharmacy
- UIC Council on Excellence in Teaching and Learning, Teaching Recognition Program Award Recipient

C. Selected peer-reviewed publications (Past 5 years, selected from 50 peer-reviewed publications).


**D. Research Support**

**Ongoing Research Support**

**Crawford SY (PI)** 04/01/2014-03/31/2016
Mobilizing for Patient Adherence to Cancer Therapies (mPACT). McKesson Foundation, Mobilizing for Health® Program. Role: PI

**Pickard AP (PI)** 03/2015 – 09/2015
National assessment of state oversight of drug compounding. Role: Co-I.

**Recently Completed Research Support**

**Nakata C (PI).** 08/01/11-08/30/14
Pharmacare innovation: a research proposal. UIC College of Business Administration, CBA Raising the Research Profile Award. Role: Co-I

**Crawford SY (PI).** 04/01/11-03/31/14
Medication therapy management Phase II Demonstration: The Illinois Collaborative. Pharmacy Quality Alliance, Inc. Role: PI
A. Personal Statement
The University of Illinois at Chicago (UIC) has significant experience in comparative effectiveness research (CER) and Patient-Centered Outcomes Research (PCOR), in professional and graduate education, and in post-graduate training. In particular, the faculty of the Department of Pharmacy Systems, Outcomes and Policy and of the Center for Pharmacoepidemiology and Pharmacoeconomic Research are well equipped to develop and implement the proposed CER program. I am happy to serve as both faculty and mentor for the proposed program. I currently teach pharmacoepidemiology in the graduate program in PSOP and the course is also cross-listed in the school of public health. The course is taken by both masters and PhD students. I have served as a mentor for graduate students in the PSOP graduate program, have mentored K- awardees, have supervised post-doctoral fellows and have served as a mentor for visiting scholars. My areas of research and expertise are in pharmacoepidemiology and pharmacoeconomics and the intersection of the two areas. These two disciplines directly relate to the methods used in patient-centered outcomes research and therefore I am well suited to serve as a mentor to individuals in the program. I am confident that the program proposed by UIC will be highly successful and serve to effectively expand the availability of qualified CER and PCOR researchers.

B. Positions and Honors

Positions and Employment
2001-2011 Research Scientist, Center for Management of Complex Chronic Care (CMC3), Hines VA Hospital, Hines, IL
2002-2008 Research Assistant Professor, Institute for Healthcare Studies and Division of General Internal Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL
2007-2011 Director, CMC3 HSR&D Post-Doctoral Fellowship, Hines VA Hospital, Hines, IL
2009-present Associate Professor, Department of Pharmacy Systems, Outcomes and Policy, University of Illinois at Chicago, Chicago, IL
2009-2013 Assistant Director, Center for Pharmacoeconomic Research, University of Illinois at Chicago, Chicago, IL
2013-present Co-Director, Center for Pharmacoepidemiology and Pharmacoeconomic Research, University of Illinois at Chicago, Chicago, IL

Other Experience and Professional Membership
2005 VA HSR&D Scientific Merit Review Board (SMRB), Chronic Disease Management and Behavioral Processes Review Group, Ad hoc reviewer
2005 VA HSR&D Scientific Merit Review Board (SMRB), Quality Measurement and Effectiveness Review Group, Ad hoc reviewer
2005 Michael Smith Foundation for Health Research, Career Awards, External reviewer
2005 – 2009 VA HSR&D Scientific Merit Review Board (SMRB), Chronic Diseases and Quality Measurement & Effectiveness, Member
2007 AHRQ, Centers for Education and Research in Therapeutics Special Emphasis Panel (CERTs SEP), Reviewer
2010-present Respiratory Measurement Advisory Panel, National Center for Quality Assurance, Member
2011-2012 NHLBI Ancillary Studies in Clinical Studies Special Emphasis Panel, Reviewer

Honors and Awards
1991 - 1996 Drake University Trustee Scholarship
1997 - 1999  Achievement Rewards for College Scientists (ARCS) Fellowship
1999  Best Contributed Poster Presentation – Student ISPOR 4th Annual International Meeting
1999 - 2001  AFPE – Pre-Doctoral Fellowship
2003  American Foundation for Pharmaceutical Education (AFPE) Scholar and Fellow
2005  Center Director’s Award, Midwest Center for Health Services and Policy Research
2007  ISPOR Bernie J. O’Brien New Investigator Award

C. Selected peer-reviewed publications (From a total of 112 publications)
Publications relevant to current application


D. Research Support

**Ongoing**

HHSF223200910006I  Shneeweiss (PI)  1/14 – 3/15
FDA
Analytic methods to assess the robustness of drug safety monitoring results
The goal of this mini-sentinel activity is to implement a group of standard quantitative bias assessments into existing PROMPT programs to evaluate the robustness of study findings.
Role: Co-Investigator

HHSF223200910006I  Boudreau (PI)  1/14 – 6/15
FDA
NDI plus linkage to the mini-sentinel distributed data network
The objective of this mini-sentinel activity is to provide a framework for linking data from the mini-sentinel distributed data network with National Death Index data to ascertain sudden cardiac deaths and then to evaluate the association between antidepressants and sudden cardiac death.

Role: Co-Investigator

1R18 HL110858-01A1 Gerald (PI) 8/13 – 4/17
NHLBI

The cost effectiveness of school-based supervised asthma therapy
The goal of this study is to estimate the cost-effectiveness of a school-based asthma intervention in children. Role: Co-Investigator

Pickard (PI) 8/13 – 8/14
ARIAD Pharmaceuticals, Inc

BCR-ABL1 mutations conferring treatment resistance
The objective of this study is to estimate the prevalence of treatment resistance in patients with CML Role: Co-Investigator

Completed

IIR 10-136 Pizer (PI) 4/11 - 12/13
VA HSR&D

Comparative effectiveness of anti-diabetic medication alternatives for Veterans
The objective of this study is to compare the effectiveness of treatments for diabetes and prevention of diabetes-related complications among a cohort of Veterans with diabetes.

Role: Co-I

VA HSR&D Jordan (PI) 10/10 – 12/13

Depression care facility-level variation for persons with multimorbidity
The goal of this study is to examine facility and system characteristics associated with provision of evidence-based depression care.

Role: Co-I

FDA Schumock (PI) 10/12 – 8/13
HHSF22301008T-0009

Alternative methods for health outcomes of interest validation
The project focused on identifying alternative data sources that could be used to validate health outcomes of interest to the FDA

Role: Co-Investigator

1RC2HL101618-01 Lee (Co-PI) 9/09 - 8/11
NHLBI

CONCERT-Clinical Effectiveness Research (CONCERT-CER)
The goal of this project is to develop infrastructure for comparative effectiveness studies in patients with chronic obstructive pulmonary disease.

Role: Co-PI
I. Personal Statement
I am happy to serve as both faculty and as mentor for the proposed program. I currently teach Pharmacy Systems Outcomes and Policy Courses 594;596;597;and 599 focusing on Graduate Independent Research with an emphasis on CER and PCOR methods in the MS and PhD programs. I also have served as a research mentor for several graduate students in the MS and PhD programs and also to PharmD students and post-doctoral residents and fellows. My areas of research and expertise are in implementation and evaluation of patient-centered models of care in underserved patients and cardiovascular thrombosis and antithrombotic medication safety. I have a deep familiarity with the organization of health care, methods of patient centered health care delivery and novel methods of CER and PCOR. Current work (K23 HL112908) focuses on identifying factors that influence adoption, feasibility and CER of self-monitoring and implementation of patient-centered behavioral interventions in underserved patients. This experience makes me uniquely positioned to provide my expertise to the proposed program. I bring extensive experience in methods of designing, implementing and evaluating feasibility and outcomes of patient-centered models of care. I am confident that the proposed Masters program in CER will be highly successful and serve to effectively expand the availability of qualified CER and PCOR researchers.

II. Research and/or Professional Experience
A. Employment:
7/94 - 6/95 Resident in Pharmacy Practice, Lutheran General Hospital/Advocate Health Care, Park Ridge, Illinois
7/95 - 6/96 Resident in Primary Care, University of Illinois at Chicago Medical Center, Michael Reese Hospital and Medical Center, Chicago, Illinois
7/95 - 6/96 Clinical Associate, University of Illinois at Chicago, College of Pharmacy, Chicago, Illinois
7/96 - Clinical Pharmacist, University of Illinois at Chicago Medical Center, Center, Chicago, Illinois
7/96 - Clinical Director, Antithrombosis Center, University of Illinois at Chicago Medical Center, Chicago, Illinois
7/96 – 7/04 Clinical Assistant Professor, Department of Pharmacy Practice, University of Illinois at Chicago
7/04 – 7/09 Clinical Associate Professor, Department of Pharmacy Practice, University of Illinois at Chicago
1/05 – 7/09 Affiliate Faculty, Center for Pharmacoeconomic Research, University of Illinois at Chicago
7/09 – Clinical Professor, Department of Pharmacy Practice
8/11 – Clinical Professor, Department of Pharmacy Systems Outcomes and Policy
8/12- Co-Director, Personalized Medicine Service
8/13- Co-Director, Center for Pharmacoepidemiology and Pharmacoeconomic Research

B. Honors:
1992 Rho Chi National Pharmaceutical Honor Society
1993 Van Doren Research Scholar
1994 Roche Pharmacy Communications Award
1998 The Illinois Pharmacy Foundation Literature Award
2002 Bristol Myers Squibb Antithrombosis Management Service Excellence Award.
2006 ASHP Research and Education Foundation Antithrombotic Pharmacotherapy Traineeship Program. Selected as program faculty for one of eight national training sites.
2007 American College of Clinical Pharmacy, Elected Fellow.
2009 American College of Clinical Pharmacy, National Clinical Practice Award.
2010 American Society of Health System Pharmacists, Distinguished Service Award.
2010 American College of Clinical Pharmacy, Focused Investigator Research Program
2010 UIC Center for Clinical and Translational Science, KL2 Scholar
2010 Society for Clinical and Translational Science, award for best poster presentation

C. Professional Societies and Public Advisory Committees:
1993- American Society of Health System Pharmacists
1994- American College of Clinical Pharmacy
1997- American Association of Colleges of Pharmacy
2001- International Society of Thrombosis and Haemostasis
2005- The National Quality Forum and the Joint Commission on the Accreditation of Healthcare Organizations. National Consensus Standards for the Prevention and Care of Deep Vein Thrombosis. Member, Steering Committee. (Appointed as the only pharmacist-clinician member on the committee.)
2007- Anticoagulation Forum; Member Board of Directors;
2010- International Society for Pharmacoeconomics and Outcomes Research
2010- Society of Clinical and Translational Science
2011-2012 American College of Clinical Pharmacy Practice Based Research Network – Appointed Chair of the Community Advisory Panel
2011- National Blood Clot Alliance, Appointed to the Medical and Scientific Advisory Board
2011- American College of Clinical Pharmacy, Elected to the Board of Regents
2013- International Society of Pharmacoeconomics and Outcomes Research

D. Publications: (15 Selected Peer Reviewed - In Chronological Order)


### E. Research Support:

#### 1. Ongoing Research Support

<table>
<thead>
<tr>
<th>Grant ID</th>
<th>PI</th>
<th>Title</th>
<th>Agency</th>
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<tr>
<td>K23 HL112908-01A1</td>
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<td>Natescu (PI)</td>
<td>National Institutes of Health/National Heart Lung and Blood Institute</td>
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<td>2013-02756-00-00</td>
<td>Rash</td>
<td>Rash (PI)</td>
<td>American Pharmacists Association Foundation</td>
</tr>
<tr>
<td>5U18HS016967-03</td>
<td>Meltzer</td>
<td>Meltzer (PI)</td>
<td>AHRQ</td>
</tr>
</tbody>
</table>

**Patient-Centered Anticoagulation Self-Monitoring in Minority Patients.**
The major goal is to identify factors influencing adoption and feasibility of anticoagulation self-monitoring in minority patients and refine a patient-centered educational intervention.

**Contemporary Pharmacy Practice Model for Clinical Thrombosis Management.**
The aims of this study are to assess appropriateness of anticoagulation management to guide the structure and definition of a comprehensive pharmacy practice model for clinical thrombosis and to compare quality of life in patients treated with warfarin and novel anticoagulants. Role: Primary Mentor

#### 2. Selected Completed Research

<table>
<thead>
<tr>
<th>Grant ID</th>
<th>PI</th>
<th>Title</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5U18HS016967-03</td>
<td>Meltzer</td>
<td>Meltzer (PI)</td>
<td>AHRQ</td>
</tr>
</tbody>
</table>

**Hospital Medicine and Economics Center for Evaluation and Research in Therapeutics (CERT)**
This aims to improve hospital medicine through education, research, and dissemination of findings. Project: Randomized effectiveness trial of pharmacogenetic testing for Warfarin, Role: Project Co-I.
Developing evidence to inform decisions about effectiveness (DEcIDE) research network-2.
This is a center grant for the Chicago-Area DEcIDE-2 Center, one of 11 Centers funded under the Developing Evidence to Inform Decisions about Effectiveness (DEcIDE) Network-2, by AHRQ to conduct comparative effectiveness research.
Role: Key Research Personnel

Access barriers to high-quality anticoagulation care: implications for quality of anticoagulation control and self-monitoring in underserved minority patients.
The major goal is to identify barriers to accessing current models of high-quality anticoagulation care in underserved minority patients and implications for quality of anticoagulation control.
5. Simon Pickard, PhD

NAME: Pickard, Alan Simon
POSITION TITLE: Associate Professor
eRA COMMONS: PICKARDA

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>University of Alberta, Edmonton, Alberta, Canada</td>
<td>B.Comm.</td>
<td>1991</td>
<td>Commerce/Business</td>
</tr>
<tr>
<td>University of Alberta, Edmonton, Alberta, Canada</td>
<td>B.Sc. Pharm</td>
<td>1996</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>University of Alberta, Edmonton, Alberta, Canada</td>
<td>Ph.D.</td>
<td>2002</td>
<td>Pharmaceutical Sciences</td>
</tr>
</tbody>
</table>

A. Personal Statement
Our graduate program is ideally poised to develop a MS in CER as our existing program is designed to accommodate new programs and coursework, and already has the appropriate curricular foundations in place. I will oversee the administrative aspects of the newly proposed MS in CER. I have extensive experience supervising graduate students and fellows who have graduated with their MS and PhDs, including dissertations with a CER focus. My areas of research interests focus on measures and methods used to evaluate outcomes of care, and draw extensively from disciplines that include (pharmaco)epidemiology, (pharmaco)economics, biostatistics, and psychometrics. I am delighted that we have the opportunity to further develop a formal training program that is so well-suited to our faculty and program strengths, and invest in training highly marketable graduates who are well-prepared for careers with a CER focus.

B. Positions and Honors

Positions
1997–2001 Staff Pharmacist, Broadmoor Pharmacy, Sherwood Park, Alberta
2001–2008 Assistant Professor, Pharmacy Practice, Univ. of Illinois at Chicago (UIC), Chicago, IL.
2004–present Research Associate, Center for Management of Complex Chronic Care, VA Hines, Hines, IL.
2008-present Associate Professor, Pharmacy Practice and Pharmacy Administration, UIC, Chicago, IL.

Other Experience and Professional Memberships
2005-present Assistant Director, Center for Pharmacoeconomics Research, UIC, Chicago, IL.
2005-present Deputy Chair, Executive Committee (elected), EuroQol group, Rotterdam, the Netherlands.
2008-09 President, Chicago Regional Chapter-International Society for Pharmacoeconomics and Outcomes Research, Chicago, IL
2010-13 Deputy-PI, Chicago Area DEcIDE Center
2013-present Associate Editor, Quality of Life Research
2013-present Editorial Board, Medical Decision Making

Honors and Awards
1999 Parke Davis Doctoral Fellowship in Pharmacy Practice Research
2000 Alberta Heritage Foundation for Medical Research, Full-time Studentship, Health Research
2000 Health Research Foundation/Canadian Institutes of Health Research Graduate Research Scholarship in Pharmacy
2003 New Investigator Award/Best Overall Oral Presentation, Int’l Society for Quality of Life Research
2007 Outstanding reviewer for 2007, Quality of Life Research (Springer media)

C. Selected Peer-reviewed Publications (from over 90) - Most relevant to the current application


Additional recent publications of importance to the field (in chronological order)

D. Research Support

Ongoing Research Support

<table>
<thead>
<tr>
<th>Project</th>
<th>PI</th>
<th>Role/effort</th>
<th>Start/End</th>
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<tbody>
<tr>
<td>EuroQol Group</td>
<td>Pickard (PI)</td>
<td>01/14 – 06/15</td>
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<tr>
<td>Role/effort: PI (1.0 calendar)</td>
<td>$28,220</td>
<td></td>
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</table>

Understanding the relationship between health behaviors, attitudes and perceptions of HRQL using the EQ-5D This project examines the whether perceptions of quality of life systematically differ by aspects of personality that relate to health attitudes and behaviors through different life stages.

<table>
<thead>
<tr>
<th>Project</th>
<th>PI</th>
<th>Role/effort</th>
<th>Start/End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takeda-UIC 2-year fellowship in health economics and outcomes research</td>
<td>Pickard (PI)</td>
<td>07/13 – 06/15</td>
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<tr>
<td>Role/effort: PI (0.5 calendar)</td>
<td>$28,220</td>
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</table>

This is a 2-year fellowship funded by Takeda that provides training in health economics and outcomes research that includes onsite training at Takeda Pharmaceuticals International and coursework/research experience with faculty based in the Center for Pharmacoeconomics Research at the College of Pharmacy at UIC.

<table>
<thead>
<tr>
<th>Project</th>
<th>PI</th>
<th>Role/effort</th>
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<tbody>
<tr>
<td>EuroQol Group</td>
<td>Pickard (PI)</td>
<td>01/14 – 06/15</td>
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</tr>
<tr>
<td>Role/effort: PI (--)</td>
<td>$28,220</td>
<td></td>
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</tbody>
</table>

Development of a HRQL Data Archive
This contract provides funding to support the development and maintenance of an EQ-5D data archive on behalf of the EuroQol group.

PCORI Krishnan (PI) 08/13 – 07/16
Role/effort: Co-I (0.5 calendar)

**PATient Navigator to rEduce Readmissions (PARTNER)**
This UI Health led study will evaluate the effectiveness of Patient Navigators to reduce hospital readmissions. This research project focuses on developing and testing a program that combines proactive lay patient advocates from the community in which the patient lives (community health worker, CHW) together with a peer-led telephone information line to improve patient experience and reduce hospital readmissions.

Takeda Pickard (PI) 07/13 – 06/15
Role/effort: PI (0.5 calendar)

**Takeda-UIC 2-year fellowship in health economics and outcomes research**
This is a 2-year fellowship funded by Takeda that provides training in health economics and outcomes research that includes onsite training at Takeda Pharmaceuticals International and coursework/research experience with faculty based in the Center for Pharmacoeconomics Research at the College of Pharmacy at UIC.

**Completed Research Support**

Ariad Pharmaceuticals Pickard (PI) 08/13 – 08/14
Role/effort: PI (1.0 calendar)

**BCR-ABL-1 mutations conferring treatment resistance to tyrosine kinase inhibitors among patients with chronic myeloid leukemia**
The aim of this project is to use a meta-analytical approach to estimate the rate of (BCR-ABL-1-related) treatment resistance associated with TKIs in CML.

FDA/Harvard (UIC subcontract) Schumock (PI) 09/12 – 09/13
Role: Co-investigator (1.8 calendar)

**Alternative Methods for Health Outcomes of Interest Validation**
The purpose of this Mini-Sentinel activity is to 1) identify HOIs for which there is an alternative reference standard (such as registry data) that can be potentially linked to the MSDD, and 2) determine the feasibility of using that alternative reference standard to validate an algorithm for the HOI in the MSDD.

1RC2HL101618 (NHLBI) Krishnan, Lee et al (multi-PI) 10/09 – 09/12
Role: Co-I (1.8 calendar)

**CONCERT-Clinical Effectiveness Research (CONCERT-CER)**
The aim of this multi-institutional consortium of interdisciplinary investigators, funded through the grand opportunity (GO grant) mechanism, is to develop a research infrastructure that will accelerate the development and conduct of multi-center studies that are responsive to COPD CER priorities identified by stakeholders.

Novartis Pickard (PI) 10/09 – 11/10
Role/Effort: PI (2.0 calendar)

**Robustness of medication exposure definitions for comparative effectiveness research.**
The purpose of this research is to evaluate how selected time windows of exposure and patterns of medication use impact estimates of medication risk and benefit in comparative effectiveness research. Both simulations and empirical data will be employed to investigate this issue.
6. Dima Qato

<table>
<thead>
<tr>
<th>NAME</th>
<th>Dima Mazen Qato</th>
</tr>
</thead>
<tbody>
<tr>
<td>eRA COMMONS USER NAME</td>
<td>dimaqato</td>
</tr>
<tr>
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</table>

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>BS</td>
<td>1995-1997</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>University of Illinois, College of Pharmacy</td>
<td>PharmD</td>
<td>2001</td>
<td>Clinical Pharmacy</td>
</tr>
<tr>
<td>Johns Hopkins Bloomberg School of Public Health</td>
<td>MPH</td>
<td>2004</td>
<td>International Health</td>
</tr>
<tr>
<td>University of Illinois School of Public Health</td>
<td>PhD</td>
<td>2010</td>
<td>Public Health</td>
</tr>
</tbody>
</table>

**A. Personal Statement**

I am happy to serve as a faculty member and mentor in the proposed program. The University of Illinois at Chicago (UIC) has significant experience in comparative effectiveness research (CER) and Patient-Centered Outcomes Research (PCOR), in professional and graduate education, and in post-graduate training. In particular, the faculty of the Department of Pharmacy Systems, Outcomes and Policy; and of the Center for Pharmacoepidemiology and Pharmacoeconomic Research; are well equipped to develop and implement the CER programming necessary to meet the objectives of the RFP. I am happy to serve as both faculty and as a mentor for the proposed program. I currently teach several courses that focus on pharmaceutical policy as it relates to medication-related health outcomes in the MS and PhD program. I also have served as a mentor for many graduate students, PharmD students, pharmacists and practitioners. My areas of research and expertise are primarily centered on the use of population-based methods to inform patient-centered care and improve patient-centered outcomes. I have worked with Dr. Schumock previously on research projects and teaching assignments. I am confident that the program proposed by UIC will be highly successful and serve to effectively expand the availability of qualified CER and PCOR researchers, as envisioned by the PhARMA foundation.

**B. Positions and Honors**

**Positions and Employment**

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Position Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>U.S. Fulbright Clinical Pharmacy Faculty member, University of Jordan, College, Department of Clinical Pharmacy/Jordan University Hospital</td>
</tr>
<tr>
<td>2003-2004</td>
<td>Pharmacist, Johns Hopkins Hospital Pharmacy, Baltimore, MD</td>
</tr>
<tr>
<td>2005-2008</td>
<td>Pharmacist, Walgreen’s Co., Chicago, IL</td>
</tr>
<tr>
<td>2006-2007</td>
<td>Consultant, NORC and the University of Chicago, Chicago, IL</td>
</tr>
<tr>
<td>2006-2011</td>
<td>Research Associate, University of Chicago, Department of OB/GYN, Chicago Core on Biomarkers in Population-based Aging Research</td>
</tr>
<tr>
<td>2008-2011</td>
<td>Consultant, IMS Health, Chicago, IL</td>
</tr>
<tr>
<td>2012-present</td>
<td>Assistant Professor, Department of Pharmacy Systems, Outcomes and Policy, University of Illinois School of Pharmacy, Chicago, Illinois</td>
</tr>
<tr>
<td>2012-present</td>
<td>Faculty Affiliate, Division of Epidemiology and Biostatistics, University of Illinois School of Public Health, Chicago, Illinois</td>
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**Honors**

<table>
<thead>
<tr>
<th>Year(s)</th>
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<tr>
<td>1995-2001</td>
<td>George M. Pullman Educational Scholar</td>
</tr>
<tr>
<td>1995-1997</td>
<td>Deans List, University of Illinois at Urbana/Champaign</td>
</tr>
<tr>
<td>2002-2003</td>
<td>U.S. Fulbright Scholar</td>
</tr>
<tr>
<td>2011</td>
<td>Robert Wood Johnson Health and Society Scholar Finalist (cohort 11)</td>
</tr>
<tr>
<td>2012</td>
<td>Institute of Medicine Pharmacy Fellow Nominee</td>
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</table>
C. Selected Publications


D. Research Support

Ongoing

IR21AG049283-01 Qato (PI) 1/15 – 1/17

NIA

Pharmacy Accessibility and Disparities in Adherence to Cardiovascular Medications in Elderly

This project will use existing proprietary and public data sources and geospatial methods to determine how the geographic accessibility of pharmacies impacts place-based disparities in adherence to cardiovascular medications among older adults in the U.S. This issue is at the forefront of older adult minority health and health policy, considering the health and survival benefits of cardiovascular medications and recent expansion of older adult prescription drug coverage has failed to reduce disparities in adherence to prescription medications.
7. Glen Schumock, PharmD, MBA, PhD

NAME: Schumock, Glen
POSITION TITLE: Professor and Director
eRA COMMONS: schumockg

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Washington State University</td>
<td>B.S.</td>
<td>1987</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>University of Washington</td>
<td>Pharm.D.</td>
<td>1989</td>
<td>Clinical Pharmacy Health</td>
</tr>
<tr>
<td>University of Illinois at Chicago</td>
<td>M.B.A.</td>
<td>1992</td>
<td>Services</td>
</tr>
<tr>
<td>University of Illinois at Chicago</td>
<td>Fellowship</td>
<td>1992</td>
<td>Pharmacoeconomics</td>
</tr>
<tr>
<td>University of Illinois at Chicago</td>
<td>Ph.D.</td>
<td>2012</td>
<td>Pharmacoepidemiology</td>
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</table>

A. Personal Statement
The proposed program takes advantage of the many strength of faculty in our Department. As Department Head I will oversee, with help of Director of Graduate Studies, this and other graduate programs in the Department. I have significant administrative/management experience leading large programs like that proposed. I was PI of the Chicago-Area DEcIDE Center (2005-2013) which I not only led/managed, but also was involved first-hand in numerous comparative effectiveness research studies and assisted AHRQ in the development of guidelines for the conduct/methods of CER under that program. I also have experience mentoring students and trainees in the field, having been the Co-PI of the University of Illinois at Chicago/University of Chicago Institutional Training Program (KM1) in comparative effectiveness research funded by NIH (2010-2013).

B. Positions and Honors

Positions and Employment
1989-1995  Clinical Assistant Professor, Department of Pharmacy Practice, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.
1992-1995  Assistant Director of Pharmacy, The University of Illinois Hospital, University of Illinois at Chicago, Chicago, IL.
1995-2000  Director of Pharmacy and Respiratory Care, Community Health Care-Wausau Hospital, Wausau, WI. Affiliated with the University of Wisconsin, Madison, WI.
2000-2009  Associate Professor, Department of Pharmacy Practice, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.
2002-present  Director, Center for Pharmacoepidemiology and Pharmacoeconomic Research, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.
2009-present  Professor, Department of Pharmacy Practice, and Department of Pharmacy Systems, Outcomes and Policy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.
2013-present  Head, Department of Pharmacy Systems, Outcomes and Policy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.

Other Experience and Professional Memberships
1993-present  Specialty Board Certification in Pharmacotherapy (BCPS 293320), administered by the Boards of Pharmaceutical Specialties.
1995-2000  Editorial Board Member and Column Editor, Pharmacy Management Practice Quarterly.
1996-present  Editorial Board Member, Pharmacotherapy.
2001-2002  Chair, Outcomes and Economics Practice Resource Network, American College of Clinical Pharmacy, Kansas City, MO.
2001-present  Editorial Board Member, PharmacoEconomics.
2003-2006  Treasurer and Member, Board of Regents, American College of Clinical Pharmacy, Kansas City, MO.
2004-2007  Editorial Board Member, Research in Social and Administrative Pharmacy.
2008-2013  Board Member, Pharmacotherapy Inc.
2011-present   Associate Editor, *Journal of Comparative Effectiveness Research*.

**Honors**  
2003    Fellow, American College of Clinical Pharmacy, Kansas City, MO.

### C. Selected Peer-reviewed Publications

(Selected from over 120 peer-reviewed publications)

D. Research Support

Ongoing Research Support

1R01 HS018366-01A1 Raucher G (PI) 09/01/10 – 08/31/15
Agency for Healthcare Research and Quality
Comparative effectiveness of breast imaging modalities: a natural experiment.
The goal of this study is to fill specific knowledge gaps related to the comparative effectiveness of screening and
diagnostic breast imaging modalities and breast biopsies in accurately diagnosing breast cancer.
Role: Co-I.

Completed Research Support (last 3 years)

1KM1CA156717-01 Meltzer D, Schumock G (co-PIs) 09/30/10 – 09/29/13
National Cancer Institute
UC/UIC Comparative effectiveness research institutional career development award.
The goal of this institutional KM1 training program is to support the development of a collaborative inter-
institutional, interdisciplinary faculty development program in comparative effectiveness research at the University
of Chicago and the University of Illinois at Chicago
Role: Co-PI.

HHSA290201000011I Schumock (PI) 09/16/10 – 09/15/13
Agency for Healthcare Research and Quality
DEcIDE-2 administration support.
The goal of this award is to provide infrastructure support for the Developing Evidence to Inform Decisions about
Effectiveness (DEcIDE) Network-2.
Role: PI

HHSA290201000001I Schumock G (PI) 09/16/10 – 09/15/13
Agency for Healthcare Research and Quality
Developing evidence to inform decisions about effectiveness (DEcIDE) research network-2.
This is a center grant for the Chicago-Area DEcIDE-2 Center, one of 11 Centers funded under the Developing Evidence
to Inform Decisions about Effectiveness (DEcIDE) Network-2, by AHRQ to conduct comparative effectiveness research.
Role: PI.

1RC2HL101618-01 Multiple PIs 09/30/09 – 08/31/12
NIH National Heart Lung and Blood Institute (GO Grant)
CONCERT-Clinical Effectiveness Research (CONCERT-CER).
The COPD Outcomes-based Network for Clinical Effectiveness and Research Translation (CONCERT) will
convene research development conferences to: a) Develop and prioritize a research agenda for effectiveness and T2
translational COPD research; and b). Accelerate the development of well designed multi-center T2
translational studies to improve the care and outcomes of COPD communities.
Role: Co-I (Multicenter PIs: D. Au, S. Carson, J Krishnan, T. Lee, P Lindenauer, M McBurnie, R Mularski)

1U18HS016967 Meltzer (PI) 09/15/07 – 9/14/11
Agency for Healthcare Research and Quality
Project 2 (Validating Performance Measures for Patients Hospitalized with COPD Exacerbations) and Project 4
CERT (Using Social Network Analysis to Guide Quality Improvement Team Formation).
Projects are part of Medical Economics Center for Education and Research on Therapeutics/UC (CERT)
designed to improve hospital medicine through education, research, and dissemination of findings. Role: Co-I

1U18HS016973 Lambert (PI) 09/15/07 – 9/14/11
Agency for Healthcare Research and Quality
Design, Implementation, and Dissemination of Medication Prescribing Guidelines in a National Consortium of
Health-Systems: Translation of Evidence into Practice.
Project is part of Tools for Optimizing Medication Prescribing, Monitoring, and Education (TOP-MED) Center for
Education and Research on Therapeutics /UIC (CERT).
Role: Project PI
8. Lisa Sharp, PhD

NAME: Sharp, Lisa K.     POSITION TITLE: Associate Professor

cRA COMMONS: sharpl

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Tulsa, Tulsa, OK</td>
<td>BS</td>
<td>1985</td>
<td>Nursing</td>
</tr>
<tr>
<td>Southern Methodist University, Dallas, TX</td>
<td>MA</td>
<td>1988</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>Northwestern University, Evanston, IL</td>
<td>Internship</td>
<td>1997</td>
<td>Clinical Psychology</td>
</tr>
<tr>
<td>University of Chicago, Chicago, IL</td>
<td>Post-Doc</td>
<td>1996-1997</td>
<td>Behavioral Medicine</td>
</tr>
<tr>
<td>Michigan State University, East Lansing, MI</td>
<td>PhD</td>
<td>1997-1998</td>
<td>Health Psychology</td>
</tr>
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</table>

A. Personal Statement.
As an Associate Professor within the Department of Pharmacy Systems, Outcomes and Policy at UIC, I will serve as both faculty and as a mentor for the proposed program providing expertise in psychosocial and behavioral outcomes including medication adherence. I am a clinical health psychologist with over 10 years of consistent funding from the National Institutes of Health assessing health outcomes in various chronic disease states including diabetes, asthma, hypertension, obesity and cancer. I have extensive experience in chronic disease self-management, medication adherence barriers, and contextual factors that contribute to health inequalities. I have also mentored numerous graduate students, medical students, and junior faculty. I developed and teach a core course in the Health Disparities Certificate Program within the UIC School of Public Health. The course, Sociocultural Dimensions of Health Disparities Research, is designed for post-graduates and physicians. Finally, I bring over twenty years experience working with low-income minority populations in research and clinical care.

B. Positions and Honors

Positions and Employment
1985- 1986 Staff Nurse, New York State Psychiatric Institute, New York, NY
1988- 1991 Research Nurse Coordinator, Department of Psychiatry, University of Texas Southwestern Medical Center, Dallas, TX
1998- 2000 Instructor, Department of Family Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL
2000- 2005 Assistant Professor, Department of Family Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL
1998- 2005 Member, Robert H. Lurie Cancer Center, Northwestern University, Chicago, IL
2005-2012 Assistant Professor, Department of Medicine, Section of Health Promotion Research, University of Illinois at Chicago, Chicago, IL
2012 - 2014 Associate Professor, Department of Medicine, Section of Health Promotion Research, University of Illinois at Chicago, Chicago, IL
2014 - present Associate Professor, College of Pharmacy, Department of Pharmacy Systems, Outcomes & Policy. University of Illinois at Chicago, Chicago, IL

Other Experience and Professional Memberships
2001-2008 European Association for Communication in Healthcare
1996-present Society of Behavioral Medicine, Member

Honors
1988 Award for Most Outstanding Research by a Graduate Psychology Student, Southern Methodist University, Dallas, TX
1992- 1995 Academic Scholar, Northwestern University, Chicago, IL
2004 Listed is Who’s Who in Medical Science Education
2009 Respiratory Health Association, Award for Making a Difference in Asthma
C. Selected peer-reviewed publications (Selected from over 75 peer-reviewed publications)


D. Research Support

Ongoing Research Support

PCORI Contract #IH-12-11-5420 Hynes (PI) 10/-1/13 - 09/30/15
Bringing Care to Patients: Patient-centered Medical Home for Kidney Disease
The major goal of this study is to evaluate a novel medical home model for providing healthcare to low income patients on hemodialysis with kidney failure.
Role: Co-investigator

CCTSO713-08 Sharp (PI) 08/01/13 - 07/30/15
UIC CCTS
Text Messaging to Support Medication Adherence
The major goal is to evaluate low income and ethnic minority patients' preferences for text messaging content that supports their adherence to anti-hypertensive medications.
Role: Principle Investigator
Fault-tolerant Control Systems for Artificial Pancreas
The major goal is to develop and evaluate artificial pancreas systems that detect problems in the components of a closed-loop system for releasing insulin in humans with type 1 diabetes.
Role: Co-investigator

Control Systems for Artificial Pancreas Use During and After Exercise
The major goal is to conduct lab testing of artificial pancreas systems to evaluate their accuracy to control insulin in humans with type 1 diabetes during and after a bought of exercise.
Role: Co-investigator

Moving Forward: A Weight Loss Program for African-American Breast Cancer Survivors
This study will examine the effects of Moving Forward (a community-based weight loss intervention) on BMI and behavioral, biological, and psychosocial outcomes in 240 obese African-American women diagnosed with Stage I, II, or III breast cancer.
Role: Co-Investigator

Health Promoters and Pharmacists in Diabetes Team Management
The major goal is to evaluate the impact of community health workers and clinical pharmacists in improving diabetes control in a minority population with access to a healthcare system.
Role: Co-Principal Investigator

Undergraduate Minority Supplement to Health Promoters and Pharmacists in Diabetes Team Management
The major goal is to provide research mentoring to Enrique Rojas who will conduct a small qualitative study within the project that will evaluate the community health worker arm of the larger project.
Role: Co-Principal Investigator

Pilot Study of Video to Encourage Active Patient Participation
The study develops and pilot tests a video to encourage active patient communication behaviors in patients with chronic illnesses.
Role: Co-investigator

Childhood Cancer Survivor Program to Empower Action in Care
The major goal is to develop and test an intervention to increase adult childhood cancer survivors’ knowledge of healthcare needs and develop their skills for communicating with their primary care physician.
Role: Principal Investigator

Supplement to Childhood Cancer Survivor Project Empowering Action in Care.
R01 CA116750 Stolley (PI) 06/01/06-05/31/12
NIH/NCI
Health Promotion in Minority Childhood Cancer Survivors
The major goal is to compare the health behaviors of a sample of minority adult survivors of childhood cancer with those of healthy controls.
Role: Co-Investigator

R01 CA105051-01A1 (PI: Fitzgibbon) 07/01/04-06/30/10
Obesity Reduction Black Intervention Trial (ORBIT)
The primary goal of this project is to assess the efficacy of a weight loss intervention specifically designed for Black women. Two hundred obese Black women between the ages of 30-65 will be randomized to a 24 week active intervention or control intervention, which will be followed by a one year maintenance intervention.
Role: Co-Investigator
A. Personal Statement
I personally am happy to serve as both faculty and as a mentor for the proposed program. In my previous position I taught courses in clinical research, study design, and infectious disease. My future teaching responsibilities include secondary analysis of existing databases in the MS and PhD program. I also have served as a research mentor for fellows, residents, and PharmD students in the area of health outcomes and pharmacoepidemiology. These projects have results in publications and poster presentations. My areas of research and expertise are pharmacoepidemiology and health outcomes with a focus on anti-infectives. My current research includes evaluating antibiotic use dispensed from community pharmacies nationally and in select populations within the Veterans Health Administration. In addition, I am assessing medication use in Veterans dually eligible for Medicare. I am confident that the program proposed by UIC will be highly successful and serve to effectively expand the availability of qualified CER and PCOR researchers.

B. Positions and Honors.

Positions and Employment
2002 – 2005 Coordinator, Medication Use Policy and Information, Baptist Memorial Health Care
2005 – 2008 Assistant Professor, University of Tennessee Health Science Center, College of Pharmacy
2006 – 2010 Director, University of Tennessee Health Science Center Drug Information Center
2008 – 2013 Associate Professor, University of Tennessee Health Science Center, College of Pharmacy
2013 – present Associate Professor, University of Tennessee Health Science Center, College of Medicine
2013 – present Research Health Scientist, Department of Veterans Affairs, Center of Innovation of Complex Chronic Care
2014 – present Research Associate Professor, University of Illinois at Chicago, School of Pharmacy

Other Experience and Professional Memberships
1997 - present American Society of Health-System Pharmacists
1999 - present American College of Clinical Pharmacy
2000 - present Society of Infectious Disease Pharmacists
2000 - present American Society of Microbiology
2002 - 2008 Infection Control and Hospital Epidemiology referee
2002 - present Annals of Pharmacotherapy referee
2004 - 2006 Mid-South College of Clinical Pharmacy, Secretary/Treasurer
2004 - present American Journal of Health-System Pharmacy referee
2005 – 2008 American Association of Colleges of Pharmacy, Faculty delegate
2006 – 2010 Editor, Drugs and Therapeutics section of the Tennessee Pharmacist
2007 - 2009 Pharmacotherapy referee
2011 – present International Society of Disease Surveillance

Honors
2000 ACCP Best Student, Resident, Fellow Poster Competition Award, Spring Research Forum, Monterey, California, April 2000, “Justifying Technical Support in an Indigent Care Clinic through a Sample Drug Procurement Program.”


2010 Student Government Association Executive Committee - Excellence in Teaching Award.

2014 Drake University – Alumni Achievement Award.

Selected peer-reviewed publications [selected out of 51] *denotes trainee


D. Research support

Ongoing Research Support

Department of Veterans Affairs, Rehabilitation R&D: SPIRE 10/1/2014-9/30/16
“Burden and outcomes of resistant Gram-negative organisms in Veterans with SCI/D
Goal of the study: To describe the national burden, risk factors and impact of multi-drug gram-negative organisms in Veterans with SCI/D.
Role: Co-Investigator

Department of Veterans Affairs, QUERI: Rapid Response Project 10/1/2014-3/31/16
“Antibiotic prescribing practice in the spinal cord injury system of care.”
Goal of the study: To conduct a mixed-methods study to assess variation in inadequate prescribing in bloodstream infections by VA facility type (hub vs. spoke) and implement a pilot antibiogram intervention to improve prescribing. Role: Co-Investigator

Department of Veterans Affairs, HSR&D: Locally Initiated Projects. 7/1/14-12/31/14
“Medication use and diagnoses in women Veterans.”
Goal of the study: To determine the extent to which women Veterans receive 1) prescriptions for hormone replacement therapy (HRT), sedatives, psychiatric and pain medication and 2) diagnoses of breast cancer, cardiovascular disease, stroke, dementia, mental health, pain, and sleep disturbance. Role: Principal Investigator

Completed Research Support

Project Diabetes Implementation Grant, State of Tennessee Center for Diabetes and Health Improvement Project 7/1/08-6/30/09
“Pharmacist-Physician Collaboration in Diabetes Care: the Diabetes Initiative Program.”
Goal of the study: To implement a statewide collaborative physician-pharmacist Diabetes Initiative Program to achieve therapeutic treatment goals outlined by the ADA Standards of Care and improve preventive care. Role: Co-Investigator

Project Diabetes Grant, State of Tennessee Center for Diabetes and Health Improvement 1/1/10-12/30/10
“Pharmacist-physician collaboration in diabetes care: the diabetes initiative program (DIP).”
Goal of the study: To improve A1c, blood pressure, total cholesterol, LDL, urinary microalbumin, self-blood-glucose-monitoring, eye and foot exams, daily aspirin, and patient education as outlined in the ADA Standards of Care in patients participating in the DIP. Role: Co-Investigator

Centers for Disease Control and Prevention 11/01/11-10/31/12
A national analysis of outpatient anti-infective prescribing patterns.
Goal of the study: Examine prescribing patterns and expenditures of antibiotics in the community over six years in the United States. Role: Co-Principal Investigator

Scholarship of Teaching and Learning Research Grant, University of Tennessee 10/1/12-6/30/12
“Student pharmacist experience and academic performance after implementation of a blended learning drug information and literature evaluation course.”
Goal of the study: Determine whether a blended learning drug information and literature evaluation course impacts academic performance and student experience. Role: Principal Investigator

Academic Support Grant, Intel Corporation 4/1/13-3/1/14
Predicting contagious disease outbreaks with social media.
Goal of the study: To determine the correlation between influenza-like illness (ILI) keywords and ILI rates with seasonal influenza and the 2009 H1N1 pandemic. Role: Co-Principal Investigator
10. Daniel Touchette, PharmD, MS

NAME Touchette, Daniel, Rene
POSITION TITLE: Associate Professor
eRA COMMONS: TOUCHETTED

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>University of Manitoba, Winnipeg, Canada</td>
<td>BSc (Pharm)</td>
<td>1991</td>
<td>Pharmacy</td>
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<tr>
<td>Wayne State University, Detroit, MI</td>
<td>Pharm.D</td>
<td>1997</td>
<td>Clinical Pharmacy</td>
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<td>Wayne State University, Detroit, MI</td>
<td>Fellowship</td>
<td>1999</td>
<td>Outcomes Research</td>
</tr>
<tr>
<td>Wayne State University, Detroit, MI</td>
<td>M.A.</td>
<td>2000</td>
<td>Economics</td>
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</table>

A. Personal Statement
The University of Illinois at Chicago, and particularly the faculty within the Department of Pharmacy Systems, Outcomes and Policy, have considerable experience leading and conducting comparative effectiveness research (CER) and patient-centered outcomes research (PCOR). Our graduate and post-graduate training programs focus on these areas and are nationally renowned. I will personally serve as faculty and mentor for the proposed program. I currently teach Social and Behavioral Pharmacy in the College’s PharmD program and Advanced Decision Modeling as well as Medication, Identity, and Illness in the graduate (MS and PhD) programs. I have served as the primary advisor to two MS and currently to two PhD students, as a mentor to two K-award trainees, primary advisor to four fellows, and mentored numerous residents, PharmD students, and faculty. I have a broad background in designing and evaluating clinical programs designed to improve adherence to medications and patient outcomes, evaluating of health policies, and in assessing the use and comparative effectiveness of medications using a variety of prospective, retrospective, and decision modeling methodologies. The proposed program brings together the considerable expertise at UIC and I am confident that we will be highly effective in expanding the availability of qualified CER and PCOR researchers.

B. Positions and Honors.
Honors
2010 Fellow, American College of Clinical Pharmacy, Lenexa, KS
2011-present Fellow, University of Illinois at Chicago Institute for Health Research and Policy, Chicago, IL
2014-present Professorship in Medication Adherence, University of Illinois at Chicago (sponsored by Takeda Pharmaceutical Company Limited)
2014 2014 Clinical Research Paper Award, American Pharmacists Association- Academy of Pharmaceutical Research and Science

Positions and Employment
1991-1993 Staff Pharmacist, St. Boniface Hospital, Winnipeg, Manitoba, Canada
1993-1995 Staff Pharmacist, Winnipeg Health Sciences Center, Winnipeg, Manitoba, Canada
1997-1999 Fellow, Pharmacoeconomics / Outcomes Research, Wayne State Univ., Detroit, MI
1999-2005 Assistant Professor, Oregon State University College of Pharmacy, Portland, OR
2005-2011 Assistant Professor, University of Illinois at Chicago, Chicago, IL
2011-present Associate Professor, University of Illinois at Chicago, Chicago, IL
2011-present Director, American College of Clinical Pharmacy Practice-based Research Network

Other Experience and Professional Memberships
2001-2003 Chair Elect and Chair, ACCP Outcomes and Economics PRN
2007-present Chair, AADE Behavior Score Workgroup
2011-present Network Director, ACCP Practice-based Research Network

C. Selected peer-reviewed publications (selected from 47 peer-reviewed publications).
Most relevant to the current application


D. Research Support

Ongoing Research Support
1R01DK091347 Sharp/Gerber (PI) 4/1/2011-3/31/2016
Health promoters and pharmacists in diabetes team management.
Role: co-investigator
This grant provides funding for assessing the impact of health promoters in assisting study participants incorporate lifestyle changes necessary for improving the quality of life of persons with diabetes. Dr. Touchette will be leading the economic analysis and assessing participant adherence to medications.

Sunovion Pharmaceuticals Touchette (PI) 9/1/13-8/1/2016
Beliefs and attitudes towards antipsychotic use in patients with schizophrenia and bipolar disorder.
This contract is to develop and conduct a survey, within the American College of Clinical Pharmacy Practice-based Research Network, identifying clinical psychiatric pharmacist and physician beliefs and preferences for prescribing antipsychotic medications.

Pfizer Inc. Touchette (PI) 11/25/2013- 11/24/2015
ACIP pneumococcal immunization recommendations for adults with immunocompromising conditions – a scientific survey of clinical practice guideline implementation.
The purpose of this contract between Pfizer Inc. and the American College of Clinical Pharmacy Practice-based Research Network is to assess the operational, support, and attitudinal barriers to clinical practice guidelines for the prevention of pneumococcal disease in adults 19 years of age and older with immunocompromising conditions from the pharmacist’s perspective.

Completed Research Support
HHSA29020050038I TO2 Touchette (PI) 9/30/2005-5/30/2010
Design and Evaluation of a Medication Therapy Management Program to Improve Patient Safety in Medicare Beneficiaries.
Agency for Healthcare Research and Quality.
This competitive grant is a DEcIDE Center Task Order to develop and evaluate a Medication Therapy Management (MTM) program. A prospective randomized trial of a comprehensive MTM program is being developed and conducted and its impact on patient health and safety evaluated.

HHSA29020050038I TO2 Touchette (PI) 9/1/2006-5/30/2010
Expansion of Design and Evaluation of a Medication Therapy Management Program to Improve Patient Safety in Medicare Beneficiaries: A Multicenter, Randomized, Prospective, Study.
Agency for Healthcare Research and Quality.
This extension grant provides funding to expand the original competitive DEcIDE Center Task Order into a multicenter, randomized, prospective study. The Chicago area DEcIDE Center will serve as the coordinating site for the study.

1U18HS016973-01 Lambert (PI) 7/1/2007-6/30/2011
Role: Co-investigator.
This grant provides funding for a number of studies with a goal of improving the use of information in formulary decision making and prescribing. Dr. Touchette will be providing pharmacoeconomic support for several of the research projects.

UIC PAF 2010-00557 Touchette (PI) 3/10/2009- 6/30/2011
This contract provides funding to evaluate an intervention designed to reduce therapeutic gaps identified by Medco in State of Illinois employees. Identified therapeutic gaps are forwarded via a web-based platform to trained community pharmacists, most of who were from rural areas across Illinois.

W81XWH-09-1-0092 Touchette (PI) 11/26/2008-12/25/2012
Assessment of a Telepharmacy Robotic Medication Dispensing Unit in Miliary Warrior Transition Units. Department of Defense; INRange Systems Inc.
This grant provides funding for a clinical trial evaluating the effects of a robotic medication dispensing unit with its associated medication administration record on adherence, medication related problems, patient quality of life, and patient satisfaction in soldiers with traumatic brain injury, post-traumatic stress disorder, or polytrauma. The study also assesses the costs, offsets, and cost-effectiveness of the unit.

Pharmacy Quality Alliance Crawford (PI) 4/1/2011-3/31/2013
PQA phase II demonstration project: Evaluation of modalities for delivering medication therapy management services. Role: co-investigator
This grant provides funding for a controlled comparison of telephonic and in-person medication therapy management on medication adherence and drug-related problems. Dr. Touchette will be providing support for various aspects of the study, including developing the pharmacist training and the development of methods and assessment of medication adherence and drug related problems.
11. Surrey Walton, PhD

NAME: Walton, Surrey M.  POSITION TITLE: Associate Professor

eRA COMMONS USER NAME: SURREYW

EDUCATION/TRAINING

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
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<td>University of California Los Angeles, Los Angeles, CA</td>
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<tr>
<td>University of Chicago, Chicago, IL</td>
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<td>Economics</td>
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A. Personal Statement
I would be pleased to serve as a faculty member and as a mentor for the proposed program. I currently coordinate and teach a required semester Pharm D level course titled “Principles of Pharmacoeconomics and Drug Treatment Outcomes,” a required semester graduate course titled “Principles of the Economic Evaluation of Health Care Interventions,” and I have led several independent study courses related to economic evaluation of health care services. I also have served as a mentor for numerous Master and PhD level graduate students, fellows, and PharmD students, including being the chair of ten graduate thesis committees. My areas of research and expertise are in quantitative economic evaluation of health services, health economics, pharmacoconomics, and evaluation of health care labor markets. I am confident that the proposed program will be highly successful and serve to effectively expand the availability of qualified CER and PCOR researchers.

B. Professional Positions
1995  Lecturer, University of Chicago, 1995.
1997-2004  Assistant Professor, Dept. of Pharmacy Admin., Univ. of Illinois at Chicago (UIC).
2004-2009  Director, Midwest Center for Health Workforce Studies, UIC.
1997-Present  Adjunct Assistant Professor, Dept. of Economics, UIC.
2008-Present  Assistant Director, Center for Pharmacoeconomic Research, UIC.
2004-Present  Associate Professor, Department of Pharmacy Administration, UIC.

C. Selected Peer Reviewed Publications


**D. Research Support**

**ACTIVE**

No Number (PI: Calhoun) 04/01/14 – 03/31/15 1.2 Calendar

DOI Interagency $1,069,482

Title: Training Health Insurance Enrollees for Implementation of the ACA in Illinois

My role is to lead data analyses surrounding the productivity of patient navigators involved in insurance enrollment related to the Affordable Care Act in Illinois.

No Number (PI: Vanden Hoek) 4/2012-3/2016 0.6 Calendar

UIC Vice Provost Office $1,495,362

Emergency Patient Interdisciplinary Care (EPIC) Coordination for Frequent ER Visitors Innovative Health Strategy Award

The goal of the project is to reduce repeat ER visits in a high utilization patient population.