

6-1-2010

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Recommended Citation

Schommer JC, Brown LM, Doucette WR, Goode J, Oliveira DR. Innovations in Pharmacy through Practice-Based Research. *Inov Pharm*. 2010;1(1): Article 9. <http://pubs.lib.umn.edu/innovations/vol1/iss1/9>

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Innovations in Pharmacy through Practice-Based Research

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ABSTRACT

The overall purpose of this article is to serve as an invitation for submissions to the 'Practice-Based Research' section of INNOVATIONS in pharmacy. To provide background about this section of the journal, this paper describes: (1) the concept of innovations that we will apply, (2) the practice-based research domain, and (3) the use of practice-based research networks for this area of inquiry.

We propose that uncertainty surrounding an innovation often will result in the postponement of the decision regarding its adoption until further evidence can be obtained. Such evidence often is gathered through considering the advice and experiences of opinion leaders and members of social systems who have adopted the innovation.

We invite authors to present ideas, arguments, and evidence for innovations in pharmacy that arise out of practice-based research. We propose that this journal will be an excellent communication vehicle for providing convincing arguments and sound evidence in favor of innovations. Discourse regarding new ideas in such a format can further develop the ideas, create a critical mass of evidence, and be used for convincing others that the innovation should be adopted.

We welcome submissions to the INNOVATIONS in pharmacy, PRACTICE-BASED RESEARCH content area that: (1) provide convincing arguments and sound evidence in favor of innovations for pharmacy, (2) are based upon practice-based research from case studies of single patients on one end of the continuum to findings from large populations of patients on the other end of the continuum, and/or (3) introduce innovations for practice-based research networks. We encourage articles from all perspectives and from all methods of inquiry.

The overall purpose of this article is to serve as an invitation for submissions to the 'Practice-Based Research' section of INNOVATIONS in pharmacy. To provide background about this section of the journal, this paper describes: (1) the concept of innovations that we will apply, (2) the practice-based research domain, and (3) the use of practice-based research networks for this area of inquiry.

INNOVATION

Everett Rogers [1] defined an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption." For the pharmacy profession to persist in its leadership role regarding aspects of medication therapy, it continues to innovate. However, the diffusion of new ideas into new standards or norms of a profession is not instantaneous or easy. According to Rogers [1], each member of a social system (e.g. pharmacy profession) faces his or her own innovation decision that follows a 5-step process:

1. Knowledge: awareness of an innovation and how it functions.
2. Persuasion: formation of favorable or unfavorable attitude towards an innovation.
3. Decision: engagement in activities that lead to a choice to adopt or reject an innovation.
4. Implementation: putting an innovation to use.
5. Confirmation: evaluating the results of an innovation decision that has been made.

Since people are, on average, risk-averse, uncertainty surrounding an innovation often will result in the postponement of the decision regarding its adoption until further evidence can be obtained. Such evidence often is gathered through considering the advice and experiences of opinion leaders and members of social systems who have adopted the innovation [1].

It should be noted that there are two types of social systems: (1) heterophilous and (2) homophilous. Heterophilous social

systems consist of individuals with different backgrounds, and characterized by a greater interest in being exposed to new ideas. These systems encourage change from norms. Within such a system, a few key opinion leaders often can effect change and innovation.

Conversely, homophilous social systems consist of individuals with similar backgrounds and encouraging the diffusion of an innovation within these social systems is more difficult. Within a homophilous system, those who initially adopt an innovation may be regarded as being too far outside established norms. In homophilous systems, opinion leaders do not control attitudes as much as pre-existing norms do. Change agents must provide a convincing argument and sound evidence in favor of the innovation that accentuates the compatibility of the innovation within system norms. If such evidence resonates with the larger group, innovation is more likely.

PRACTICE-BASED RESEARCH

Our section within the INNOVATIONS in pharmacy journal focuses on Practice-Based Research. Broadly defined, this type of scholarship “involves practice-based clinicians and their staffs engaged in activities designed to understand and improve patient care.” This section overlaps with the Pharmacy Practice section of the journal which has a focus on “developing the professional roles of pharmacists.” What differentiates the two sections is the Practice-Based Research section’s focus on inquiry that takes place within practice settings to address societal-relevant problems and the Pharmacy Practice section’s focus on inquiry that can be used for developing the professional roles of pharmacists.

There are many applications for practice-based research including goals to (1) improve norms applied to clinical practice, (2) improve the health care system’s ability to provide access to and deliver high quality health care, (3) train future practitioners and scientists in this domain, and (4) provide policy makers with tools and expert advice to assess the impact of system changes on outcomes, quality, access to, cost, and use of health care services; particularly in areas related to the medication use process [2-5]. Practice-Based Research provides a venue in which not only can science be translated to practice, but also practice needs can be communicated to guide scientific inquiry. In addition, findings from practice-based research can be used as a voice for advancing the practice of pharmacy and its role in the health care system. Just a few examples of topics for inquiry include post-marketing surveillance, comparative effectiveness, policy impact, outcomes evaluations, clinical effectiveness,

and inquiries focused on specific diseases, populations, or policies.

We invite authors to present ideas, arguments, and evidence for innovations in pharmacy that arise out of practice-based research. We believe that the readership of INNOVATIONS in pharmacy during the first few years of its existence will consist of a homophilous group comprised of those interested in and devoted to pharmacy practice. In light of such a readership, we propose that this journal will be an excellent communication vehicle for providing convincing arguments and sound evidence in favor of innovations. Discourse regarding new ideas in such a format can further develop the ideas, create a critical mass of evidence, and be used for convincing others that the innovation should be adopted.

We encourage submissions based upon practice-based research from case studies of single patients on one end of the continuum to findings from large populations of patients on the other end of the continuum. Inquiry that is practice-based, practice-led, and practice-as-research is encouraged. These novel approaches do not yet have standards and norms for the conduct of such research in pharmacy. With that in mind, we welcome a diverse array of articles that address methods and tools for this type of inquiry.

In healthcare, practice-based research networks have been utilized for practice-based research. However, in other disciplines such as the arts and humanities, applications include inquiries that are not only practice-based, but also practice-led, and practice-as-research (i.e. traditional approaches to the study of a discipline are complemented and extended by research through the practice of the discipline). These approaches help link theory driven research with routine practice and are useful for closing the gap between knowledge and practice (i.e. what we know and what we do).

For example, the pursuit of practice-as-research has become increasingly important to the research cultures of the performing arts (drama, theatre, dance, music) and related disciplines involving performance media (film, video, television, radio). A growing number of performing arts / media departments in higher education are now offering degree programs which place practice at the heart of their research programs. This represents a major theoretical and methodological shift in the performance disciplines — traditional approaches to the study of these arts are complemented and extended by research pursued through the practice of them.

In pharmacy, similar approaches can be applied. Practice can be viewed as research. Dissemination of practice-as-research can be accomplished through not only the written word, but also through other communication channels such as video. We welcome such submissions to [INNOVATIONS in pharmacy](#) and look forward to working together to develop suitable peer review and dissemination for such work.

Although we embrace a broad-based approach for inquiry, we acknowledge that in the health care domain, practice-based research networks (PBRNs) have been developed for conducting practice-based research. These networks are growing in pharmacy. To help foster dialogue about PBRNs, we also welcome submissions that introduce innovations for practice-based research networks (PBRNs) that are emerging in pharmacy-focused inquiry. In order to provide context, we provide some background information about PBRNs in the next section.

PRACTICE-BASED RESEARCH NETWORKS (PBRNs)

(Some of the text in this section originally appeared in the (October 2008) issue of [America's Pharmacist](#) [6], published by the National Community Pharmacists Association, Alexandria, VA. Reprinted with permission)

A **Practice-Based Research Network (PBRN)** is “a group of ambulatory practices devoted principally to the primary care of patients, affiliated with each other (and often with an academic or professional organization) in order to investigate questions related to community based practice” [7]. PBRNs grew in primary care practices in the late 1970s [8-9] and involved community-based clinicians and their staffs in activities designed to help understand and improve primary care [7]. The goal was to link relevant practice questions with rigorous research methods in community settings to provide information that was reliable, valid, and transferable into everyday practice. Currently, the goal for most PBRNs is to focus upon (1) questions encountered by primary care clinicians in their practices, (2) issues that are relevant to members of diverse communities served by these practices, and (3) research that can be shared quickly with the practice community [7].

Funding support for PBRNs in the United States during the 1970s and 1980s developed outside the traditional National Institutes of Health (NIH) and pharmaceutical company-sponsored research domains [10]. Initial development of PBRNs was supported by volunteer efforts of practicing primary care physicians with financial support from private foundations (e.g. Rockefeller Foundation, Kellogg Foundation, Robert Wood Johnson Foundation), professional societies and

organizations, academic institutions, and both state and federal government agencies (e.g. Health Resources and Services Administration, Bureau of Maternal and Child Health) [8]. From these efforts at local, regional and national practice networks, a body of literature grew during the 1980s and 1990s in medical journals as the enterprise slowly grew and spread [8]. Then, in its 1996 report on primary care, the Institute of Medicine viewed PBRNs as “a significant underpinning for studies in primary care” and noted that they were underfunded [11]. A few years later, the Agency for Healthcare Research and Quality (AHRQ) responded by releasing the first of a series of grant solicitations that focused on support for PBRNs. From 2000 to 2004, AHRQ provided more than \$8 million in awards for support of primary care PBRNs. By 2004, a national survey conducted by the AHRQ PBRN Resource Center identified 111 active primary care networks in the United States. These networks were headquartered in 44 states and included multiple types of practitioners (pediatricians, internists, advanced practice nurses, and family physicians). Most of these networks first emerged after 2000 when the seed money and other support offered by AHRQ became available [12]. By January 2010, there were 131 PBRNs listed in the AHRQ PBRN directory.

PBRNs have been utilized to help inform quality improvement activities within primary care practices and the adoption of an evidence-based culture in primary care practice [13]. PBRNs appear to be evolving into collaborative learning organizations through which better ways to “translate research into practice” can be achieved [13]. In addition, practice-based networks have been envisioned as places of learning, where clinicians are engaged in reflective practice inquiries and where clinicians, patients, and academic researchers can collaborate to develop new ways to improve delivery of primary care.

The July/August 2008 issue of the [Journal of the American Board of Family Medicine](#) is an example of translating research into practice through PBRN research efforts. The research reported in that practice-based research theme issue focused on disseminating evidence based on real-life medicine, reflecting patients seen in day-to-day practice rather than carefully selected subpopulations of patients from tertiary care centers [14]. Comprised of various research methodologies, the reported studies provided translatable evidence regarding: preventive services [15], mammography screening [16], cardiovascular risk education [17], dyslipidemia in children [18], high blood pressure knowledge [19], supplemental calcium use among women [20], primary care of overweight children [21], adoption of exercise [22], underinsurance in primary care [23], effects of antibiotics on vulvovaginal candidiasis [24], depression screening in

pregnancy and postpartum [25], retention of clinicians in underserved communities [26], preventive care delivery [27], and institutional review board training for community practices [28].

Funding for the studies just mentioned, as well as most current funding for sustaining PBRNs' efforts, is coming from foundations, several institutes of the NIH, corporations, and collaborative efforts with state and federal agencies [13]. Although seed funding from the Agency for Healthcare Research and Quality (AHRQ) has faded, it still supports PBRNs by serving as a central location for documenting and sharing information [7]. Recently, PBRNs have become a part of NIH-funded Clinical and Translational Science Awards (CTSAs) [29]. In these partnerships, CTSAs looked to PBRNs for access to patients and expertise in engaging communities and clinical practices. Through these partnerships, PBRNs were able to build stable infrastructure, increase financial support, and achieve greater visibility in the academic research community [29].

Advantages of Pharmacy PBRNs to Pharmacy Practice and Pharmacists

In addition to benefits to patient care and to society, pharmacy practice and pharmacists can benefit from participation in Pharmacy PBRNs. Goode and colleagues [30] reported that research in community practice expands interaction of the practice-site pharmacists with practice and science faculty. Such collaboration can raise job satisfaction by adding new opportunities and dimensions to the activity mix for the practice. A survey of Australian community pharmacists confirmed many of the same benefits to improving professionalism and job satisfaction through participation in practice-based research [31]. Over time, professional friendships between practitioners and academic researchers can transcend beyond practice-based research into other professional endeavors.

Another benefit is stronger relationships and more referrals from physicians whose patients participated in practice-based research studies [30]. Pharmacists may develop deeper intellectual curiosity and further commitment to advance practice through such collaborative research. Furthermore, this involvement affords opportunities to publish, starting or adding to their publications portfolio [30]. As practice-site pharmacists feel a sense of accomplishment, they may begin to look for other projects and methods for improving patient care. Over time, pharmacists may deepen their relationships with patients as both parties become more engaged in patient-centered care and solving patient care problems.

Sinclair-Lian and colleagues [26] reported that professional isolation can be a barrier to practicing in rural and underserved communities. They suggested that one of the potential contributions of a practice-based research network may be its beneficial effect on the retention of providers in medically underserved areas. Interviews with practitioners revealed that membership in a PBRN helped decrease the feeling of intellectual isolation, increased connections with peers, and contributed to better recruitment and retention of practitioners.

Pruchnicki and colleagues [32] adopted a PBRN model for a pharmacy residency training program. The PBRN was formed for the primary purpose of research training of residents and described as a practice-based research training network (PBRTN). By allowing the resident to assume the role of project manager, the experience provided time management, resource management, and communications experiences. The PBRTN structure enabled increased productivity and greater opportunity for leadership in patient care. The authors suggested that residency program directors and/or preceptors would experience advantages in residency training by participation in PBRTNs.

Finally, Pinto and Coehrs [33] outlined other advantages for pharmacists' involvement in Community Pharmacy PBRNs. Participation in practice-based research will increase clinical expertise and help stay up-to-date with current and emerging therapies. Furthermore, new financial opportunities might be found through participation in PBRNs. Pinto reported that pharmacy owners in a PBRN located in Toledo, Ohio experienced significant financial gains as a result of streamlined workflow and improved efficiency from project experiences [33]. In addition, partnerships with employer groups to find funding for new programs, increased pharmacy traffic, and increased patient loyalty resulted in financial gains as well.

A CALL FOR PAPERS

We welcome submissions to the INNOVATIONS in pharmacy, PRACTICE-BASED RESEARCH content area that: (1) provide convincing arguments and sound evidence in favor of innovations for pharmacy, (2) are based upon practice-based research from case studies of single patients on one end of the continuum to findings from large populations of patients on the other end of the continuum, and/or (3) introduce innovations for practice-based research networks. We encourage articles from all perspectives and from all methods of inquiry. Thank you for considering this journal as a communication outlet for sharing your ideas, your findings, and your practices with others.

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Five Useful Web Sites for Further Information on Practice-Based Research Networks

1. <http://www.ahrq.gov/research/pbrn/pbrnfact.htm> - Agency for Healthcare Research and Quality (AHRQ) web site containing useful background information about PBRNs.
2. <http://www.aacp.org/site/page.asp?TRACKID=&VID=1&CID=1400&DID=8104> – American Association of Colleges of Pharmacy web site containing useful background information about Pharmacy PBRNs.
3. <http://www.aphafoundation.org/programs/Practice%5Fbased%5FResearch/> - American Pharmacists Association Foundation web site containing examples of projects that utilized a practice-based research approach.
4. <http://www.jabfm.org/> - Journal of the American Board of Family Medicine web site where the July/August 2008 special issue of JABFM can be accessed. This issue contains examples of reports based upon primary care PBRN work.
5. http://www.annfammed.org/content/vol3/suppl_1/index.shtml - A supplement to the Annals of Family Medicine in July 2005 was devoted to Practice-Based Research Networks.