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Evidence-Based Practice in the United States: Challenges, Progress, and Future Directions

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Abstract

Scientific literature demonstrates that advances in evidence-based nursing have improved systems of care and women's health outcomes. Experts agree that nurses worldwide can play a key role in building such evidence and working with interdisciplinary health care teams and systems to accelerate its implementation.

Evidence-based nursing is intended to standardize health care practices to the latest and best science available in order to minimize variations in care and avoid unanticipated health outcomes. How findings from evidence-based research are translated into effective nursing practices and policies considerably impacts health outcomes, the improvement of health care systems, and the performance of individual and group providers. (Stevens, 2013).

Significant barriers still exist in adopting or implementing evidence-based nursing (Melnik et al., 2012). Despite nurses being the largest group of health professionals in the majority of health care systems worldwide, three immediate and internationally recognized challenges largely affect their ability to provide services including evidence-based care: 1) Limitations with health care systems, leading to decreased support for their education and development; 2) Prejudice against their intent to advance their practice; and, 3) Issues associated with workforce reduction. Other factors specifically stimulating or restricting the implementation of evidence-based nursing include nurses' basic research training, beliefs, and difficulties faced with eliciting and integrating patients' preferences (Thompson et al., 2007; Grol et al., 2013). Communication skills and knowledge of culturally competent care can significantly lessen the challenges associated with eliciting and integrating patients' perspectives. The effects or benefits of patients' involvement in evidence-based nursing, however, are still an area of research in development (Strauss & Jones, 2004).

Increasingly, health care teams and policymakers have involved nurses in decisionmaking, and their decisions can have important implications to patients' outcomes and wellbeing. Access to reliable evidence-based information, the ability to critically appraise and incorporate that evidence in clinical decisionmaking are critical steps toward successful implementation of evidence-based nursing (Thompson et al., 2004). Frequently, though,

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implementation models fail to take into account the relationship between the nature of the decisions and how the information is used and processed. A review of systematic reviews on the implementation of evidence-based practice identified educational outreach and reminders as promising implementation strategies, and multifaceted interventions against diverse barriers to change likely to be effective (Grimshaw et al., 2001). In another systematic review, however, education was found to be effective only when also provided to local leaders or experts (Thompson et al., 2007). More recently, Munten et al. (2010) reported that using action research is a promising method in implementing evidence-based nursing, but studies have failed to openly discuss the specifics of the pursued implementation strategies.

Concerns with health care professionals' lack of training and the health care system's inability to deliver the highest quality of care possible led the Institute of Medicine (IOM) to recommend that training and curriculum development include five core competencies essential to closing the quality chasm (IOM 2001 and 2003). Much of the progress made in response to the IOM recommendations are described below. Table 1 summarizes the IOM recommended competencies.

Despite the barriers and concerns mentioned above, the nursing field in the United States has responded successfully and in many different ways to the call for evidence-based practice to support quality improvement and health care transformation (Stevens, 2013). Increasing demands for accountability in safety and in health care quality improvement has driven such responses, but much is still to be accomplished. This article describes examples of great progress made toward adoption of evidence-based nursing, the status of selected areas of evidence-based nursing research, and the impact on specific practicing areas including women's health; it provides examples of relevant evidence-based resources, and discusses future directions in evidence-based nursing.

PROGRESS WITH IMPLEMENTATION OF EVIDENCE-BASED NURSING

The nursing field has been very responsive to the IOM recommendations on competencies to help close the quality chasm. New competencies were identified using the ACE Star Model of Knowledge Transformation ©. These competencies include essential skills of knowledge management, accountability for the scientific basis of nursing practice, organizational and policy changes, and the development of scientific foundations for evidence-based practice. In addition, the ACE Evidence-based Practice Readiness Inventory was developed and is being used in clinical and educational environments to assess nurses' promptness to practice evidence-based care and to measure the impact of related professional development programs. (Stevens, 2012).

The American Association of Colleges of Nursing (AACN) also made a significant investment in curriculum development, with the establishment of new program standards for undergraduate, masters, and doctoral levels of education that focus on systems of care, the use of evidence for clinical decisionmaking, and the creation of the Quality and Safety Education in Nursing Institute (QSEN), which encloses a central resource of information on

its competencies (AACN QSEN, 2013, available at <http://qsen.org/>, accessed September 10, 2015).

Various evidence-based practice models and frameworks have been developed by nurses. These models and frameworks have significantly contributed to expanding the field by establishing a better understanding of the numerous aspects of the evidence-based practice including the utilization and knowledge transformation processes; the strategic/organizational change theory to promote uptake and adoption of new knowledge; and, the knowledge exchange and synthesis for application and inquiry (Mitchell et al., 2010; Stevens, 2013). One of these models, the ACE Star Model of Knowledge Transformation ©, positions nursing's previous scientific work in the context of evidence-based practice. In addition, the model serves as an organizer for assessing and applying the evidence, and places nursing into the formal network of evidence-based practice (Stevens, 2012). It also provides an approach toward translating evidence into practice by identifying the nature of knowledge and knowledge transformation needed for utility and relevance to clinical decisionmaking. Five forms of knowledge mirroring prior work by 'Sackett et al, 1996, are identified to address barriers and solutions to adoption of evidence-based nursing: 1) Discovery (primary research studies); 2) Evidence summary (systematic reviews); 3) Translation into action (evidence-based practice guidelines); 4) Integration into practice (best evidence or evidence-in-action); 5) Evaluation (impact on health outcomes, satisfaction with care, efficacy and efficiency of care, and changes in health policy).

The Iowa Model for Evidence-Based Practice to Promote Quality Care, developed by Titler et al, 2001, is well-known and highlights the importance of considering the entire healthcare system from the provider, to the patient, to the infrastructure, using research within these contexts to guide practice decisions. A number of steps have been identified in the Iowa model to facilitate nurse practitioners' engagement in problem identification and solution development as it relates to incorporating evidence findings into practice. The model has been recently updated (see <http://www.uihealthcare.org/otherservices.aspx?id=1617>, accessed September 18, 2015).

The TeamSTEPPS® is another program where nurses play a critical role in fostering the adoption of evidence-based care. The program is designed to optimize patient safety and outcomes through enhanced communication and teamwork among health care professionals, health care systems' leaders, and policymakers. Ready-to-use materials and a training curriculum are available, designed to positively integrate teamwork principles into any health care system. Implementation of TeamSTEPPS® across organizations and in health care systems is progressing, but challenges remain (TeamSTEPPS, available at <http://teamstepps.ahrq.gov/aboutnationalIP.htm>, accessed August 3, 2015).

The Magnet Recognition Program® developed by the American Nurses Credentialing Center (ANCC), recognizes healthcare organizations for the quality of services provided to patients, nursing excellence, and innovations in professional nursing practice. The program requires organizations to develop, disseminate, and embrace evidence-based criteria. This results in positive work environments for all health care professionals and makes the program a source of successful evidence-based nursing practices and strategies worldwide.

The benefits to consumers are overwhelming as they rely on the Magnet designation to identify high quality nursing settings. In 2013, 15 of 18 U.S. medical centers listed in the *U.S. News Best Hospitals in Honor Roll* held Magnet designation. (Magnet Recognition Program, available at <http://www.nursecredentialing.org/magnet.aspx>, accessed August 3, 2015).

By applying skills in mixed methods and systems settings, nurse researchers continue to play an important role in translational research aiming at improving the adoption of best practices in the community (Stevens, 2013). Emerging promising fields of nursing research include translational and improvement science, implementation research, and health delivery systems sciences. The U.S. Federal government has established several grant programs seeking to advance research to determine the base for effective strategies in adopting evidence-based practice. Nurse researchers have been significantly involved in these initiatives focusing on both basic and applied research, with relevant contributions to interdisciplinary and interprofessional perspectives. In 2013, the National Institutes of Health (NIH) called for proposals addressing dissemination/implementation strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings. Currently, 62 medical research institutions in 31 states and the District of Columbia in the United States are members of the Clinical and Translational Science Awards (CTSA) Consortium (CTSA, available at <http://www.ncats.nih.gov/ctsa>, accessed September 14, 2015).

Because nurses play a vital role across all health care settings and microsystems, this program announcement has been a major opportunity to expand evidence-based nursing research and practice (Stevens, 2013). In 2013, however, only 4% of research grants addressing dissemination/implementation have been awarded to nurse researchers (Tinkle et al., 2013). Grant awardees/institutions are working to help accelerate the translation of laboratory findings from diverse medical disciplines into treatments for patients; train and foster the development of the translational science workforce, and engage patients and communities in every phase of the translation process. In addition, CTSA has promoted advances in information technology, through the use, for example, of REDCap, an easy-to-use, freely available tool for clinical study management and data capture (REDCap, available at <http://project-redcap.org/>, accessed September 14, 2015).

The Chronic Disease Self-Management Program (CDSMP) at Stanford University was established to test the hypothesis that people with comorbid conditions could benefit when placed in a common intervention (Lorig, 2015). As with any evidence-based translational program, the issue of fidelity is a concern because without standardization, the evidence-base is lost. The use of webinars, administrative and fidelity manuals and discussion groups support centralization of training and technical assistance to those trying to replicate or implement the program. Despite numerous challenges including the financing of core translational activities, the program is well-known. Evaluations of translational activities in many areas including self-management of diabetes, pain, HIV/AIDS, arthritis, and cancer survivor show successful results. (see <http://patienteducation.stanford.edu/programs/cdsmp.html>, accessed September 17, 2015)

The Improvement Science Research Network (ISRN), the first national collaboration of clinical and academic leaders, is an open research network devoted to accelerating Improvement in science in the context of health care systems (ISRN, available at <http://isrn.net/>, accessed September 14, 2015). Established in response to NIH calls for projects that build infrastructures to advance new fields of science, the ISRN facilitates exchange of information and experiences from innovations and quality improvement efforts. The relevance of the ISRN actually is multiple. First, existing research gaps may be fulfilled through initiatives targeting the systematic planning of studies to be carried out in multiple settings in the context of implementation research. This is an important aspect due to its potential to increase the generalizability of findings. Second, measuring impact and enhancing the description of improvement interventions can lead to significant expansion of the field. Third, investigating and reporting on sustainability and economic value can lead to new information to support considerable savings to health care systems. ISRN's research priorities touch areas of high impact for nurses such as transitions in care, high performing clinical microsystems, evidence-based quality improvement; and, organizational culture (Stevens, 2013).

With the establishment of the Patient-Centered Outcomes Research Institute (PCORI), the development and dissemination of high integrity, evidence-based information derived from research guided by patients, caregivers, and the broader health care community became an important target for nurse researchers and practitioners to help improve quality of life and other outcomes relevant to patients and families. Similar investments on the Patient Centered Outcomes Research (PCOR) program are ongoing supported by the Agency for Healthcare Research and Quality (AHRQ) and NIH to ensure meaningful patient and stakeholder engagement in all phases of research studies, i.e., developing the research question(s), conducting the study, and interpreting results. (PCORI available at <http://www.pcori.org/>, accessed September 17, 2015; AHRQ PCOR available at <http://www.ahrq.gov/health-care-information/topics/topic-patientcentered-outcomes-research.html>, accessed September 17, 2015; Stevens, 2013)

A large clinical trial using an innovative model of care delivery by a nurse – Falls Care Manager – is ongoing. It aims to reduce falls in community dwelling older adults 75 years. Falls-related injuries represent serious events for older adults, are a common source of mobility-disability and death, and a major public health problem. To identify effective, evidence-based strategies to address the personal and public health burden of falls in this population, the National Institute on Aging (NIA) at NIH, and the PCORI have joined efforts to support STRIDE–Strategies to Reduce Injuries and Develop Confidence in Elders to test individually tailored multifactorial interventions to prevent fall-related injuries. Substantial patient and stakeholder engagements are a critical component of the study design. In addition, having the nurse falls care manager responsible for the delivery of the multifactorial interventions and for all levels of interactions with study participants including connecting them to appropriate community resources and services is a novel approach, which if proven to be effective, has a great potential to change clinical practice and policy. (NIH, RFA-AG-14-009, available at <http://grants.nih.gov/grants/guide/rfa-files/RFA-AG-14-009.html>; <http://www.nih.gov/news/health/jun2014/nia-04.htm>, accessed September 18, 2015)

Finally, an essential way for improving clinical knowledge development, adoption of evidence-based practice, and work satisfaction in nursing is continuing professional development. While heavy workloads affect nurses' ability to fully engage in continuing professional education, in some work environments (e.g., intensive care, acute hospital) the adoption of nursing grand rounds have been reported to be feasible and an effective strategy for initiating change to patient care (Gardner et al., 2010; Aitken et al., 2011). In addition, advanced-practice nurses' are viewed as resources that can assist staff in linking direct care to current evidence (Mahanes et al., 2013)

EVIDENCE-BASED NURSING RESEARCH

In the United States, the National Institute of Nursing Research (NINR) at NIH is a major source of support for clinical and basic research necessary to build the scientific foundation for clinical practice; the prevention of disease and disability; the management and elimination of symptoms caused by illness, and the enhancement of end-of-life and palliative care. Increasingly, the engagement of patients as active participants in their own health and health care provides a significant opportunity for nurses in preventing the development of chronic diseases. NINR's research agenda targets the special needs of at-risk, vulnerable, and underserved populations with particular emphasis on eliminating health disparities and promoting health equity. (Tinkle et al, 2013; NINR, <http://www.ninr.nih.gov/>, accessed September 18, 2015)

NURSING RESEARCH RELEVANT TO WOMEN'S HEALTH

Findings of nursing research have resulted in significant impact and advances in women's health. Nursing research at NINR and other organizations is addressing the most important issues affecting the health of women such as: 1) Rapid increase in older female population faced with complex chronic diseases; 2) Rapid increase in population of women with diverse racial and ethnic backgrounds, underserved women, and the ongoing health disparities they are subjected to; 3) Symptom management for complex chronic conditions, in particular, cardiovascular diseases and diabetes; 4) Health promotion and disease prevention, important in the management of physical activity and obesity; 5) Nurses' continuing education to practice evidence-based care, and the development of nurse scientists to conduct research on women and gender health. Specifically, NINR is advancing the science of women's health by studying women as patients, caregivers, or community members, and emphasizing clinical research on promoting health and quality of life across their lifespan - from the perinatal period to the end-of-life. The sections below summarize selected research findings relevant to women's health, supported by diverse funding sources including NINR.

Pregnancy and Perinatal Health

Nurses have made significant contributions to improving pregnancy outcomes. *Midwifery* care has resulted in high levels of patient satisfaction, as well increased access to care, and has been associated with lower costs due to fewer unnecessary, invasive, and/or expensive interventions (ACNM, 2012). In the United States, the vast majority of midwives are certified nurse-midwives (licensed, with prescriptive authority in every state) and certified midwives (licensed in five states). In 2009, both categories of midwives attended 313,516

births, i.e., 11.3% of all vaginal births or 7.6% of all births in the United States. Midwife-led models of care showed more benefits compared to physician-led models of care for women at similar risk status. These benefits included having a significantly higher chance of a normal vaginal birth, receiving fewer interventions, and fostering successful initiation of breastfeeding (Hatem et al, 2009). These women were also more likely to be cared by a known midwife and experienced an increased sense of control during the labor/birth. In a more recent systematic review of studies comparing midwifery care to physician care, a significant reduction in the incidence of third and fourth degree perineal tears and higher rates of breastfeeding have been reported in those who received care from certified nurse-midwives (Newhouse et al, 2011). Moreover, women cared by certified nurse midwives were more likely to receive prenatal education (e.g., health promotion risk reduction behaviors); have closer supportive relationship with their provider during labor and birth, and receive fewer technological and invasive interventions (Oakley et al, 1995). It is possible that pre-natal education by these professionals have influenced the higher rates of breastfeeding observed in many of these studies.

Midwives are also thought to be in a great position to provide oral health assessment and referrals to pregnant women as part of their antenatal care. The study by George et al., 2014, emphasizes that role and provides preliminary evidence of a newly developed and tested tool for oral health screening of pregnant women. Studies in numerous countries including developed countries have shown that pregnant women frequently do not seek oral health care. It is well documented that during pregnancy women are at risk of suffering dental problems, gum disease, and poor health outcomes such as pre-term birth, low birth weight, and early childhood caries. The study by George et al., 2014, is a pioneer in the development of a screening tool to assess oral health. While results are preliminary and validation of the tool is still needed, nurses midwives are encouraged to take the lead in educating pregnant women about the relevance of oral care and play a key role in screening these women and establishing the evidence of effectiveness of such screening tool.

A cohort of first-time mothers had equivalent sleep length in the last trimester of pregnancy, but those who breastfed exclusively slept an average 30 minutes longer at night compared to women who included formula in their feedings. An emphasis on *breastfeeding* shortly after birth may improve mothers' nighttime sleep quality. (Doan et al., 2014)

Sepsis occurs in a significant number (22%) of very low birth weight infants in the United States. Costs associated with neonatal intensive care units for these babies are very high, and survivors frequently present with other debilitating health conditions such as neurodevelopmental issues. Because human milk contains high concentrations of protective factors, feeding very low birth weight infants in their first month with human milk decreases their chances of developing sepsis and, consequently, reduces costs associated with care. The higher the amount of human milk, the lower the risk of sepsis. (Patel et al., 2013)

Pregnant women and new mothers who experience post-traumatic stress disorder or childhood maltreatment, including physical or sexual abuse, face increased risk for post-partum depression or problems with bonding with their newborn children. While these events can lead to childhood and adult psychological trauma in subsequent generations,

interventions targeting pregnant women with pre-disposing risk factors may interrupt the cycle of depression and abuse. (Seng et al., 2013)

Sexually Transmitted Diseases

Globally, women account for 25% of all new cases of HIV. In the United States, African American and Hispanic women account for a disproportionate 82% of AIDS cases among women. Training girls in sexual risk reduction strategies tailored to gender, developmental, and cultural perspectives rather than a general health promotion approach, resulted in significantly greater use of sexual risk reduction methods (Morrison-Beedy et al., 2014)

College women's perception of HIV risk is greatly influenced by educational information available through mass media and discussions with parents. Although Hispanic and African American college women communicate about sexual risk behavior more frequently with their partners than with their parents, particular types of media exposure increase their communication with both. Media exposure include popular television programs, magazine, Internet, newspaper stories, and radio messages about condom use. (Chandler et al., 2013)

A study investigating young women's knowledge of sexually transmitted diseases recruited women (ages 18–24) from a university and from public health clinics. Receiving a diagnosis of genital herpes was predicted to have significant psychosocial effects (e.g., shame, embarrassment, depression, significant worry over informing current or future intimate partners) in study participants. About 15% of the women in the cohort believed that herpes infections were lethal and a large percentage expressed misconceptions about genital herpes related to risk for contracting or transmitting the disease. These findings are important to support the development of health education strategies to address perceptions and beliefs, in addition to transmission, pathophysiology, and treatment of these diseases. (Royer et al., 2013)

An intervention developed for adolescent girls at high risk for pregnancy focused on healthy relationships, interpersonal and social-emotional skills, responsible sexual behavior (e.g., contraception use), and one-on-one counseling sessions. The intervention positively influenced responsible sexual behavior, with girls being more likely to refuse unwanted sex, and to use condoms, hormonal contraception, or both consistently. These girls were also less likely to participate in sex for exchange of material items and reported to experience greater family bonding. (Sieving et al., 2013)

Aging and Menopause

The Study of Women's Health Across the Nation (SWAN) is designed to characterize the physiological and psychosocial changes that occur during menopause and beyond in women who ranged in age from 42 to 52 years at enrollment (1996–1997) and continued to be followed. The SWAN has the capability to link the biological, medical, social, behavioral, and demographic data collected over the years to the development of both positive and deleterious health conditions, disorders and diseases in early old age. Evidence derived from SWAN shows that modifiable factors can affect menopausal age and health (Gold et al, 2013). Women who experience their final menstrual periods at a later age than the median 52.5 years have longer lifespans and lower rates of all-cause mortality, cardiovascular

disease, and orthopedic conditions (osteoporosis and fractures), but higher rates of breast, ovarian, and endometrial cancer. Although the older age of the final menstrual period is not linked to race or ethnicity, it is associated with social determinants and modifiable factors such as more formal education, prior oral contraceptive use, better self-reported health, continued employment, more alcohol consumption, not smoking, and lower levels of physical activity.

Hot flashes are more common in overweight and obese women in the early stages of menopause. Vasomotor symptoms (e.g., hot flashes, night sweats) have been linked to their fat tissue and the interplay of molecular messengers (adipokines) produced by that tissue. The adipokines include adiponectin and leptin, which are found at lower and higher levels, respectively, in obese women. In premenopausal and early menopausal women, higher levels of adiponectin and leptin are also associated with a lower and higher risk of hot flashes, respectively. These associations between weight or adipokines and hot flashes were not seen in the later stages of menopause or post-menopause, although extra weight may be protective against hot flashes in late menopausal stages. (Thurston et al., 2013)

Numerous factors are linked to mid-life onset of *urinary incontinence* in women. Certain groups of healthy women in their 40s and early 50s develop urge incontinence (resulting from a full bladder) or stress urinary incontinence (accompanying coughing or sneezing). Worse perceived health and a history of 3 or more live births were common characteristics in these women. In addition, Caucasian women in this age group were more likely to have stress urinary incontinence than African American women. Older age and high body-mass index were connected to an increased risk for urge incontinence. (Mitchell & Woods, 2013)

Obesity, Physical Activity and Disease Prevention

Nurse scientists have been leading some of the public health efforts to address the obesity epidemic through community- and clinically-based research, especially within medically underserved and minority communities. The link between obesity and diabetes is more prominent in women than in men. Maternal obesity also has profound impacts on infants and children. Increasing number of adolescents in the United States are becoming overweight and obese, particularly African Americans and Hispanics. Nutritional and lifestyle education and intervention are very important during adolescence due to obesity-related debilitation of physical and psychological conditions and other potential complications. Internet-based obesity prevention programs for teenage girls showed significant improvement over six months in breakfast habits, reduction of junk food consumption, and better exercise and other eating habits. (Whittemore et al., 2013). Interventions with a clear goal setting, self-monitoring, health coaching, social networking, and lessons about nutrition, metabolism, portion control, and physical activity components have improved health outcomes. In addition, the internet format of the program was found to be low cost, easily distributed, and attractive to young people.

Adult Latinas in the United States have lower rates of physical activity compared to non-Latina Caucasian counterparts, which likely contributes to high rates of diabetes and obesity. Previously inactive Latinas who followed a tailored intervention increased their physical activity significantly over six months, and presented with positive outcomes in behavioral

and cognitive measures, suggesting that these women are likely to maintain their new levels of physical activity. The intervention utilized printed Spanish language physical activity manuals and tip sheets. These materials can be disseminated widely to reach those with limited access to wellness programs. (Marcus et al., 2013)

Rural women in the United States are at particular risk for hypertension due to high rates of abdominal obesity, poor diet, low physical activity, and less access to health and preventive care compared to urban women. An intervention tested in rural, middle-aged women that included education about hypertension and prehypertension, goal-setting, and personalized web-based or mailed printed instructions (e.g., healthy eating, diet, blood pressure, activity and self-monitoring of activity), showed after 12 months, decreases in blood pressure in those who received web-based or printed instructions compared to a single educational and goal-setting session. After 24 months, there were significant reductions in waist circumference and improvements in the women receiving the intervention. It is likely that distance learning interventions may improve blood pressure, diet, and physical condition in rural women. (Hageman et al., 2014)

Chronic Diseases and Comorbidities

Chronic diseases and comorbidities are a leading challenge as the world's population grows older. The issue is of particular relevance to women because women live longer than men and are affected by higher rates of chronic conditions. In addition, women's caregiving role poses increased burden for this population. Chronic disease self-management is complex and burdensome, especially for African American and Hispanic women and those with socioeconomic disadvantages. The IOM has called for efforts to help people live well with chronic conditions and comorbidities. In response, NINR continues to build the science of self-management to enable individuals and families to be active partners in their own care and to better manage their chronic conditions. A study supported by NINR demonstrated that an integrated intervention for individuals with both heart failure and diabetes was effective in improving components of self-care and had sustained effects on selected health care behaviors. (Dunbar et al., 2015)

Diabetes is indeed a growing problem worldwide and minority populations in the United States are affected by the condition disproportionately in terms of prevalence and complications. Spirituality helps African American and Hispanic women and those of lower socioeconomic power cope with the stress of their disease and self-care, and is associated with better foot care and dietary control. Among middle age African American women, social support from the religious communities increased their ability to adhere to a diabetes-specific diet. Based on this finding, self-management interventions for African Americans with diabetes should account for patient spirituality and social support. (Watkins et al., 2013)

Korean immigrants with diabetes experience healthcare disparities due to lack of insurance, language barriers, and cultural issues (e.g., social stigma created by dietary restrictions). A study found that female Korean immigrants with diabetes may neglect self-management of their conditions by making household and caregiving their priority duties. Increasing awareness of diabetes self-management and family involvement, and providing translation

services in the healthcare settings are important components of interventions to eliminate or minimize disparities in such populations. (Nam et al., 2013)

Medication Safety

Nurses play an essential role in promoting patient safety. This is particularly relevant to medication use and women's health. A survey of obstetricians and gynecologists reveals that misdiagnosis (95.6%), failure to follow-up with patients (94.9%), and administration of the wrong medication or dosage of a medication (90.5%) are the most often reported patient safety problems in the delivery of evidence-based care (Stumpf et al., 2009).

A positive relationship between level of medication adherence and event-free survival is important in heart failure, a condition highly prevalent in women, particularly minority women. A study supported by NINR provided an evidence-based recommendation about the level of adherence needed to achieve optimal clinical outcomes in patients with heart failure (Wu et al., 2009). Despite being a serious and costly cardiovascular disorder, the progression of heart failure can be modified by appropriate, sustained, life-long adherence to prescribed medication. Even with this knowledge, the level of medication adherence that distinguishes clinically significant adherence vs. non-adherence is not clearly defined. In prior investigations, adherence has been randomly defined as taking prescribed medications between 70% and 100%. The study by Wu et al., identified an evidence-based cut-point (taking 88% of prescribed medication doses and taking it correctly on 88% of days) by which to define medication adherence in patients with heart failure. Individuals meeting the cut-point had a longer event-free survival compared to those less adherent. The level of medication adherence determined in this study has significant implications to improved outcomes, time to the composite endpoint of emergency department visits for exacerbation of heart failure, cardiac re-hospitalizations, and all-cause mortality. These findings should be validated in future studies and implemented in clinical practice to evaluate patients' adherence levels.

Pain Management

The recognition of pain in cognitive impaired older adults is a serious challenge in skilled nursing and other types of long-term care facilities. In the United States, women form the majority of these long-term care facilities' populations. Guidelines requiring these facilities to assess and address pain in all residents prompted the need for improving internal nursing practices relating to pain assessment to meet compliance with new quality standards targeting residents with cognitive impairments. In a Hawaiian long-term care facility, an investigative team of nurses used the Iowa Model for Evidence-Based Practice to Promote Quality Care as a guide while establishing a standardized, system-wide interdisciplinary and culturally competent approach to pain management. Results led to an optimized multidisciplinary practice and improved residents' outcomes. (Sacoco et al, 2014)

Cancer and Other Life-Limiting Conditions

The complexity of management of breast cancer of various types and different stages puts patients, in particular minority women, at risk for making uninformed decisions. Existing measures of health literacy are not sensitive to cultural and language differences. A new tool

has been developed, tested, and shown to be effective for measuring functional health literacy specific to breast cancer in diverse populations of African Americans, Arab Americans, and Latina cohorts. (Williams et al., 2013)

During the course of radiation and chemotherapy for breast cancer, chronological patterns of symptoms (e.g., depressed mood, cognitive disturbance, fatigue, insomnia, and pain) emerged in the form of moderately stable, gradually increasing, and decreasing levels of symptoms from a high baseline. Characterization of patterns and treatment of symptom cluster (e.g., concurrent and interrelated symptoms) may lead to better outcomes by guiding treatment strategies and facilitate personalized medicine approach, according to a study supported by NINR. (Kim et al., 2014)

Irritable bowel syndrome is a debilitating chronic condition affecting approximately 20% of the United States population (more women than men are affected). Patients frequently adjust their diets to reduce disease symptoms. Those who consume moderate and light amounts of alcoholic beverages have not displayed any marked change in irritable bowel syndrome's symptoms the following day, but a strong association between binge drinking and subsequent symptomatology was observed that might be linked to gut physiology changes in patients who are generally heavy drinkers. (Reding et al., 2013)

EVIDENCE-BASED RESOURCES FOR NURSES

The availability of good quality evidence and the synthesis of research findings to inform best nursing practices and decisionmaking are needed to support the evolving complexity of nursing practice including the growing barriers they face worldwide in delivering care to diverse and complex populations. One main reason for accessing the latest evidence-based information is to reduce clinical uncertainty as relates to a desired outcome. Nurses' understanding of the characteristics of clinical decisions in which they are likely to be involved, is important to support information behavior, i.e., how they access and process information. In clinical decisionmaking, nurses tend to rely primarily on informal and experiential resources, and much less on scientific findings and protocols (Rycroft-Malone et al., 2009, Traynor et al., 2010). The usefulness of sources of information according to clinical reality is seen by some nurses to be more based on experience of the health care team than on research findings.

Systematic reviews of the literature represent the highest standard of evidence. The Cochrane Collaboration established in 2009 the Cochrane Nursing Care Network, a group of scholars dedicated to supporting the conduct, dissemination and utilization of systematic review relevant to the field of nursing. Its core functions include (Davison et al, 2010): 1) Identification of priority topics or questions related to nursing care that are not covered by existing Cochrane reviews; 2) Identification of primary studies in nursing care by searching databases and hand-searching relevant journals and conference proceedings, especially those published in languages other than English; 3) Promotion of the Network's perspectives and priorities across the Cochrane Collaboration; 4) Raising awareness of the role of the Cochrane Collaboration and its resources available to support nurses; 5) Dissemination of

findings of relevant Cochrane reviews to the nursing care community; and 6) Identification of sources of funding to undertake or complete Cochrane reviews of interest to the network.

Numerous relevant resources are available to those willing to practice evidence-based nursing. Table 2 shows examples of key resources to support nurses in their day-to-day practice and nurses researchers in their pursuit for advancing science and assessing the latest evidence and new directions in the field.

FUTURE DIRECTIONS

Fostering advances in evidence-based nursing should target multiple areas including those related to the management of specific diseases or populations, and in particular, translational research. The field of translational research will always be a priority as new evidence becomes available, but designing and implementing evidence-based programs continue to require methodological improvements to ensure fidelity. In addition, of particular significance is the integration of special and underserved populations across the lifespan in translational research. Critical gap areas related to systems of care as recommended by Stevenson, 2013, include: 1) Redesigning and/or investigating the redesign of healthcare systems through creativity and mastery of teamwork; 2) Persistence in educating the future workforce, and retooling the current workforce, with awareness, skills, and power to improve the systems of care; 3) Laying aside comfortable programs of research and picking up programs of systems research; 4) Persistence on multiple perspectives and sound evidence for transforming healthcare. Experts also agree that a variety of opportunities exist to investigate women's health and gender differences in patient engagement as nurses design new research studies and evaluate the impact of study outcomes in facilitating nurses' role in clinical management, decisionmaking, and in improving ways of engaging patients in decisions about their care.

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Table 1

IOM Core Competencies (IOM 2001, 2003)

Competency	Components
Patient-Centered Care	Identifying, respecting, and caring about patients' differences, values, preferences, and expressed needs; relieving pain and suffering; coordinating continuous care; listening to, clearly informing, communicating with, and educating patients; sharing decision making and management; and continuously advocating disease prevention, wellness, and promotion of healthy lifestyles, including a focus on population health.
Interdisciplinary Teams	Cooperating, collaborating, communicating, and integrating care in teams to ensure continuity and reliability of care.
Evidence-Based Practice	Integrating best research with clinical expertise and patient values for optimum care, and participating in learning and research activities.
Quality Improvement	Identifying errors and hazards in care; understanding and implementing basic safety design principles; understanding and measuring quality of care (structure, process, and outcomes) in relation to patient and community needs; and, designing and testing interventions to change processes and systems of care.
Information Technology	Using informatics to communicate and manage knowledge, mitigate error, and support clinical decision making.

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Table 2

Examples of Relevant Evidence-Based Resources for Nurses

Resource	Key Available Information
CINAHL	Nursing content, biomedicine and allied health disciplines Qualitative and Quantitative information Primary research articles, systematic reviews, health care books, book chapters, nursing dissertations, conference proceedings, standards of practice, educational softwares Links to full-text journal articles, clinical innovations, critical pathways, drug records, research instruments, clinical trials, legal issues https://health.ebsco.com/products/cinahl-plus/allied-health-nursing
PubMed/MEDLINE	Biomedical content Primary research papers, links to full-text journal articles http://www.ncbi.nlm.nih.gov/pubmed
EMBASE	Selective nursing content Biomedical and pharmaceutical content Primary research papers, links to full-text journal articles http://www.embase.com/#quickSearch/default
PsycINFO	Qualitative and quantitative information, psychology and related disciplines. Peer-reviewed citations, summaries and full-text links to journal articles, book chapters, and dissertations http://www.apa.org/pubs/databases/psycinfo/
Science Citation Index	Multidisciplinary scientific content Access via Web of Knowledge http://apps.webofknowledge.com/UA_GeneralSearch_input.do?product=UA&search_mode=GeneralSearch&SID=2DBVhGnt2oeqDw44mW&preferencesSaved=
Current Contents Connect	Multidisciplinary scientific content Access via Web of Knowledge http://adat.crl.edu/platforms/about/isi_web_of_knowledge
Cochrane Collaboration Cochrane Nursing Care	Systematic reviews across diverse medical fields and in nursing care/reviews www.cochrane.org http://nursingcare.cochrane.org/cochrane-reviews-nursing-care
Agency for Healthcare Research and Quality (AHRQ) National Guidelines Clearinghouse	Evidence-based clinical practice guidelines www.guideline.gov
AHRQ Health Care Innovations Exchange	Profiles of innovations and tools for improving care processes. http://innovations.ahrq.gov
AHRQ National Quality Measures Clearinghouse	Comprehensive information on quality measures and measure sets http://qualitymeasures.ahrq.gov
NICE – U.K. National Institute for Health and Clinical Excellence	Evidence-based guidance for nurses and other health care professionals including clinical guidelines and technology appraisals https://www.nice.org.uk/
JBI - Joanna Briggs Institute (Australia)	Systematic reviews and best practices information http://joannabriggs.org/
BestBETs	Evidence-based summaries/responses to real life clinical questions http://www.bestbets.org/
Physiotherapy Evidence Database – PEDro (Australia)	Citation and abstracts of RCTs (randomized controlled trials) including those critically appraised or rated, and systematic reviews http://www.pedro.org.au/
Occupational Therapy Systematic Evaluation of the Evidence – Otseeker (Australia)	Abstracts of systematic reviews and critically appraised or rated RCTs http://www.otseeker.com/
Journals Relevant to Evidence-Based Nursing and Women's Health	Evidence-Based Nursing (BMJ) http://ebn.bmj.com/ World Views on Evidence-based Nursing http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1741-6787 Health Care for Women International http://www.tandfonline.com/toc/uhcw20/current