In 2017, contemplating a future for nursing research is daunting, in part because of the uncertainty and unknowns for financing health care and for models for care (Obama, 2017), as well as for financing for higher education and research. A discussion of the future is further challenging because the varied topics for investigation by the current generation of nursing researchers have a wide span, from bench to bedside, and to community, some with combined and intersecting approaches and methods. Despite these challenges, the purpose of this paper is to consider future directions for nursing research while we celebrate the sixtieth anniversary of the Western Institute of Nursing (WIN) and the fiftieth anniversary of the WIN conference Communicating Nursing Research. These celebrations provide an opportunity to envision a future in which the best of nursing science positively influences the health of the public and leads to the best of nursing practice. They further provide an opportunity to offer suggestions for how WIN can support these scientific endeavors. One way to begin this discussion is to provide a regional perspective of health. In the twenty-first century, many research questions may be influenced by the diverse and changing characteristics of the populations in the thirteen member states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). States from the West in WIN share more than geographical boundaries; they also share a relatively recent history in nursing not bound by tradition.

To imagine a future for nursing research from the perspective of the West, it is helpful to first examine the current health status among the peoples in the states comprising WIN as this may suggest areas of inquiry. Knowledge about the population characteristics and the social determinants of health influence our understanding of health risks, health conditions, and needs for nursing care. This information can help identify gaps and priority areas for nursing research needed to augment population health, to reduce risk of disease and disability, to address suffering, promote recovery, and to improve quality of life across the life span in the West, the nation and beyond. It also may suggest areas for basic science approaches needed to advance knowledge.

Priorities for nursing research as identified by the National Institute of Nursing Research (NINR) are relevant to this discussion, along with the recognition of opportunities for nurse researchers to take advantage of the exploding technological advances in science that will transform health care and influence nursing interventions. Ultimately, the vision of the future must include how research will impact nursing care, including the implementation of evidence into practice and the use of data to inform practice and health care policy. How best to share research findings, how research is funded, and what type of preparation will be needed for the next generation of scholars are all important questions for the future. Following the consideration of these gaps and opportunities, recommendations are made as to how WIN can help shape the direction of nursing research by supporting areas of inquiry and through programs and structures for nurse scientist and doctoral students.

An Historical Perspective on Nursing Research in the West
Much has changed since the mid-twentieth century when the WIN collaboration of educators, institutions of higher education, public agencies and foundations sought to address pressing societal needs for health and health care. At the core, nursing leadership in WIN recognized that “…the greatest single obstacle in nursing is the lack of nurses with preparation to do research” (Coulter & Western Interstate Commission for Higher Education, 1963). Decades later, Donaldson and Crowley’s paper presented at the Communicating Nursing Research Conference in 1977 on the discipline of nursing challenged nurse scholars about the importance of the intersection of research and clinical practice, a topic that still is relevant today (Western Institute of Nursing, 2007). Quint Benoliel’s landmark presentation about qualitative research at WIN in 1984 influenced a generation of nurse researchers. How will nursing research today provide a springboard for the next generation?

I am especially pleased to present this paper as the Lulu Wolf Hassenplug Endowed Chair in Nursing. Lulu Wolf Hassenplug was the founding dean of the School of Nursing, University of California, Los Angeles. She was one of the members of the advisory committee of the Western Interstate Commission for Higher Education (WICHE), along with deans from the University of Oregon School of Nursing and the University of Colorado School of Nursing, the Deputy Director of the National League for Nursing, the Director of Nursing for the W.K Kellogg Foundation, and the Chief Nurse Officer of the Public Health Service (Western Institute of Nursing, 1992). As a member of the “Committee of Seven” appointed by the executive director of WICHE, Hassenplug helped to create an action plan for nursing in the West, with goals including to “stimulate research in nursing within the colleges and universities of the western region” and to educate nurses who could conduct “research to improve the actual practice of nursing or the quality of care that patients receive” as part of the Western Council on Higher Education for Nursing (Coulter & WICHE, 1963).

The West has produced scholars who have significantly influenced nursing research over the past sixty years; a brief mention of such individuals is warranted. The history of the development of the National Institute of Nursing Research (NINR) includes nurses from the West (e.g. Fugate Woods) who were involved in the creation of the NINR, and who were members of the Charter Study Section of NINR (Cowan, Chang) (National Institute of Nursing Research with Cantelon, 2010). Others have received recognition by the Friends of NINR for their achievements through Pathfinder awards that acknowledge nurse researchers whose work has advanced our knowledge of health and health care through sustained grants supported by NINR (Phillips, Mitchell, Heitkemper, Landis, Moore, Koniak-Griffin), and through Protégé awards for promising new scientists (Thompson, Lee). Since 1989, WIN also has identified significant accomplishments of members with its Distinguished Nursing Research Lectureship Award and other awards (such as the Mentorship award for faculty who have demonstrated excellence in preparing the next generation of nurse scientists) (Western Institute of Nursing, 2017). The National Academy of Medicine (formerly the Institute of Medicine, IOM) includes distinguished nurse scientists from the West (e.g., Burnes-Bolton, Dracup, Heitkemper). Many others have received awards from professional nursing and specialty organizations. A comprehensive listing of these is beyond the scope of this paper. It must be noted that the landmark report, Future of Nursing: Leading Change, Advancing Health (Institute of Medicine, 2010), included leadership from the West in the Vice Chair, Linda Burnes Bolton. Future leaders in nursing research from the West can build on the achievements of the past.

**Regional Health Issues and Future Nursing Research**
In order to speculate about the future of nursing research, it is important to think about the present. The profession of nursing is influenced by the national and increasingly global landscape of politics, legislation, policies and regulations. Future priorities for nursing research, especially in the West, will be influenced as well by the characteristics of the populations in our states. Demographic characteristics of populations in the states, population size, density (as in indication of rural or urban areas), and social determinants of health (high school graduation, violent crime, children in poverty and poverty) are displayed in Table 1. The United Health Foundation (United Health Foundation, 2016b) has created health rankings and rankings of influencing factors for every state. Table 2 displays overall rankings of health for all adults, for seniors, and for woman and children along with rankings for infant mortality, premature death, deaths caused by drugs and opioid deaths for the thirteen states. These rankings allow us to compare the states in the West with the other states in the United States (U.S). Rankings for health risk behaviors (smoking, physical inactivity, excessive drinking), obesity and immunization are displayed in Table 3. State rankings for health conditions/deaths include cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease (COPD), mental illness and adults living with human immunodeficiency virus (HIV). This is not an exhaustive list of health risks or health conditions, but it provides a lens for considering future priority areas for nursing research and health care policy, and benchmarks for future comparisons. Rankings where states in the West fare worse when the majority of states in the U.S. are emphasized.

**Population Size and Density.** The population in the U.S. has skyrocketed in the past half century. Over 23% of the population of the US resides in the West (United States Census Bureau, 2016a). Over 51% of the population in the West is in California, which has almost quadrupled its population since the mid-fifties (Hobbs & Stoops, 2002; United States Census Bureau, 2016b). The population in Los Angeles alone is higher than the populations of 32 states (Los Angeles Almanac®, 2016). Other states (Nevada along with Arizona, Utah and Colorado) also have exhibited rapid growth creating new opportunities and challenges for health and health care. Among our consortium, we have states with high population density (California, Hawaii) and rural states with low density (Alaska, Wyoming and Montana) (United States Census Bureau, 2016b). Five major causes of death (cancer, cardiovascular disease, chronic lower respiratory disease, unintentional injury and stroke) are higher in rural areas (Moy, et al., 2017). The West is also home to many Veterans (U.S. Department of Veterans Affairs, 2016). The Veterans Administration is the largest healthcare integrated system in the U.S. and serves almost nine million veterans, and it is an important site for nursing research. These and other factors will influence the challenges and opportunities for research that will influence health care policy.

**Aging.** While the percentage of children in the U.S. has remained relatively stable, the accelerated increase in older Americans is well known, with an estimated 46.2 million adults (14.5% of the population) aged 65 and older alive in 2014 (U.S. Department of Health and Human Services, 2015). By 2050, the older population is expected to double in the US and triple worldwide (National Institute on Aging, 2011; Vincent & Velkof, 2010). From 1980 to 2014, centenarians more than doubled. Aging is an especially important issue for the West which has states with the highest percentage of older adults. Montana, Arizona and New Mexico have higher percentages, but California has the largest actual number of seniors, almost 6 million (World Atlas, 2016). Three of the states, Hawaii, Arizona, and Colorado, reported the highest well-being among adults aged 55 years and older (Witters, 2016). The critical importance of considering aging is addressing the increased risk older adults face for chronic conditions. Increased risk for health concerns are also relevant for older caregivers. Since 2001, WIN recognized the importance of nursing among the aged
Diversity. Despite the dramatic improvements in access to and quality of health care in the past sixty years, not all have benefited equally from these advances. Progress has varied by gender and by racial, ethnic and socioeconomic groups (Agency for Healthcare Research and Quality, 2016; IOM, 2003). Diversity of the population in the West has dramatically increased. In several states, non-whites are the majority (Table 1). In the U.S., one in five of the population is Hispanic (53 million) with projections for increases by 2045 to one in four (2016a). Hispanics/Latinos make up a greater share of the population in the West, with several states more than 25% Hispanic/Latino. Compared to Whites, they are more likely to report fair or poor health (12% vs 9%) and be at increased risk for other health conditions (Centers for Disease Control and Prevention, 2016a). More than 25% of the population in California is composed of citizens born in other countries, not including the undocumented population which is estimated to be higher in the West (Migration Policy Institute, 2014). All of the states in the West except for Montana are below the median for high school graduation rates. Not revealed in this table is gender diversity. Some states a higher percentage male and others a higher percentage female. Data about lesbian, gay, bisexual and transgendered (LGBT) persons are only recently being collected. LGBT persons are at higher risk for health issues across the health span, including HIV, sexual violence, depression, suicide and substance abuse (Healthy People, 2016). Religious beliefs can influence health beliefs; beliefs among the population also are changing (Pew Research Center, 2015a). Christianity has declined, but is still the most dominant group of religions, ranging from 61% in Washington to 75% in New Mexico; and non-Christian faiths are highest in Hawaii (10%) (Pew Research Center, 2015b). To create a future where nursing research provides a foundation for reducing health disparities by addressing barriers in vulnerable and underserved populations, adequate representation of these diverse populations is needed among study participants.

Social Determinants of Health in the West
The conditions in which people are born, grow, live, work, and age, comprising the social determinants of health, are recognized as critical factors that influence health (U.S. Department of Health and Human Services, 2017). There is substantial evidence that social determinants of health contribute to health disparities and are barriers to wellness (Institute of Medicine, 2003; Marmot, 2015). A national focus on creating a “culture of health” (The Robert Wood Johnson Foundation, 2016) is relatively recent and one that would benefit from nurse researchers’ efforts to evaluate models of care that address social injustice. In Table 1, selected conditions that are markers for health risk are ranked, including the percentage of adults who have achieved high school education, the prevalence of those who have experienced violent crime and those who live in poverty, especially children. These conditions vary across or our states. Compared with the majority of states in the U.S., some states have the lowest levels of education, some the highest levels of violent crime, and some the greatest percentage of children living in poverty in the U.S.. Not included in this table are data about homelessness, a significant problem for some states. In California alone, almost 119,000 people experienced homelessness on one night in 2016 (US Interagency Council on Homelessness, 2016). Nursing health policy research which influences these risks linked to health and to nursing care is urgently needed.

Gaps in Health Issues Facing the West

Health Risk Behaviors
Although the term “lifestyle behaviors” is used by researchers, this term does not adequately capture the complexities of risk behaviors, especially for substance abuse and addiction. Such characterizations unfairly stigmatize the individual as having made a “choice”, and limits approaches to intervention. In large part, these behaviors may be significantly influenced by upstream environmental, economic and social factors and necessitate other approaches. Rankings of health risk behaviors vary by states (Table 2). Four of these behaviors (i.e. tobacco use, physical inactivity, unhealthy eating, and alcohol misuse) have been found to increase risk of non-communicable diseases (cardiovascular disease, cancer, respiratory diseases, diabetes) which are expected to accelerate in the twenty-first century (World Health Organization, Sarna, & Bialous, 2013). These risk behaviors are modifiable and nursing interventions can reduce risk. Information about health risks is important as nurse researchers identify and address the gaps. Smoking, the leading cause of preventable death, has declined in the U.S. and six states in the West are among states with the lowest smoking prevalence (Utah, California, Idaho, Arizona, Hawaiii, Washington). Obesity continues to increase with 29.8% of the US population in that category (United Health Foundation, 2016b). In general, states in the West have low ranks of physical inactivity compared to the majority of states in the U.S.. Almost 18% of the general population engages in excessive drinking (United Health Foundation, 2016b). Three states in the West are among the ten states in the U.S. with the highest ranking of excessive drinking (Alaska, Montana, Hawaii). Several states in the West have the lowest vaccination rates in the country among infants and children 19-35 months in the U.S.. The many rural states and areas in the West also are important to consider, as higher rates for smoking, obesity and physical inactivity have been noted in these nonmetropolitan areas (Moy et al., 2017). Not included in this description are the state variations in environmental challenges and changes in the region that influence air quality, and food safety and risk for injury. New Mexico has the highest rate of mortality from unintentional injuries in the U.S. (CDC, 2017).

Current and Changing Health Issues in the West
Based on the analysis of demographic and health issues, there are public health challenges and opportunities for future nurse researchers in the West. These may vary by state. Focusing on the overall health rankings, four of our states (Hawaii, Washington, Utah and Colorado) are ranked in the top ten healthiest states in the nation (Table 3). However, individual states have higher rankings in cancer, cardiovascular disease, diabetes and chronic obstructive pulmonary disease (COPD) than the majority of states in the U.S. (Table 2). Eight states have rates of mental illness higher than most states in the U.S. (Utah, Oregon, Washington, Idaho, Wyoming, New Mexico, Alaska and Arizona). Seven states in the West have higher rates of drug deaths, and five higher rates of deaths due to opioid overdose than the majority of U.S. states (Utah, New Mexico) (Table 3). The suicide rate, not included in the table, is highest for men and women in Montana (CDC, 2017).

Acute and chronic infectious diseases that emerged in the later part of the twentieth century, including human immunodeficiency virus (HIV) (Farmer, 2013), demanded urgent nursing action. HIV continues to be a serious issue for several states in the West. Important work in the West by nurse researchers has addressed a variety of infectious diseases, including tuberculosis (Nyamathi et al., 2008), HIV (Koniak-Griffin, Lesser, Takayanagi, & Cumberland, 2011), and human papilloma viruses (Monk & Wiley, 2006). New infectious diseases and older antibiotic-resistant infections will emerge in the twenty-first century and will benefit from the attention of nurse researchers. Based on low rates of immunization of the majority of states in the West (Table 2), research considering regional barriers to immunization is needed.
In 1993, almost forty years after the launch of the nursing research efforts in WIN, the National Center for Nursing Research became an Institute of the National Institutes of Health (National Institute of Nursing Research with Cantelon, 2010). In the early years, reflecting societal need, HIV/AIDS and low-birthweight infants were top nursing research priorities. NINR continues to support basic and clinical research that integrates the behavioral and biological sciences to support nursing practice. In 2016, after extensive deliberation about strategic directions, NINR identified four themes for priority funding (National Institute of Nursing Research, 2016). These four areas have been identified as core areas in many schools of nursing in the states comprising WIN. Examples of a few schools in the West that are addressing the NINR priorities by content area include 1) symptom science: promoting personalized health strategies (University of California, San Francisco, University of Colorado), 2) wellness: promoting health and preventing disease (University of Arizona, University of Washington, University of New Mexico), 3) self-management: improving quality of life for individuals with chronic illness (University of Oregon Health Sciences) and 4) end-of-life and palliative care: the science of compassion (University of Washington, University of Utah). As recommended by NINR, promoting innovation and technology to improve health is a common theme as is addressing the needs of vulnerable underserved populations (University of California, Los Angeles). These are a few examples of schools of nursing doing work in this area.

Nursing Research Priorities for the Region
Porter-O’Grady (Porter-O’Grady, 2001) challenged twenty-first century nurse researchers: “what difference does the research make and what is the value added for research activities undertaken”. NINR’s strategic priorities can be examined within the context of the societal and health care needs of the West. Where should WIN put efforts to support nursing research in the future? Based on the review of the state health characteristics among states in WIN, the issues of mental illness, drug-related deaths and excessive drinking, among other health risks and health conditions, are areas where nursing research could make an important contribution. These issues are not unique to the West, but should be a call to action for nurse researchers. Depression is the third most common disease burden worldwide and affects over a quarter of the U.S. population (Centers for Disease Control and Prevention, 2016c) and has been a focus for many nurse researchers in the West (e.g., Doering et al., 2016). Mental health issues, in particular, are related to and influence comorbid conditions, including substance abuse (Thorpe, Jain, & Joski, 2017). Having mental health as a priority nursing research agenda for WIN would benefit the peoples of the West, the nation, and the world.

Mental health issues and suffering from substance abuse are not new, but the potential for their impact on study outcomes may not have not been adequately considered. For example, tobacco, the leading cause of preventable death, is a legal substance that kills fifty percent of smokers (US Department of Health & Human Services, 2014). However, for decades smoking status, a powerful predictor for health risk, comorbid disease and cancer treatment complications was not included as a standard data element in a number of studies, including cancer clinical trials of non-tobacco related cancers (Gritz, Dresler, & Sarna, 2005). Only recently is there an organized effort to include relevant questions as part of cancer clinical trial patient-entry and follow-up (Land et al., 2016).

Given the prominence of health risk behaviors and social determinants of health in the review of the region, are we missing opportunities to collect data about variables that could influence the outcomes of research? Should indicators of alcohol use, substance abuse
(including use of opioids), as well as overweight and obesity be included in sample
descriptions in nursing research studies? How will data about the use of marijuana, now
legal in several states, be included in nursing research studies?

**Harnessing Technology to Advance Science**

Not unique to the region is the revolution in new technologies available for research.
Nursing research is already influenced by the acceleration in genomic and information
technology that will provide unprecedented opportunities for new insights into the human
condition, insights that were difficult to imagine in the mid-twentieth century. At the
inception of WIN, Watson and Crick (Watson & Crick, 1953) had just identified the double
helix structure of DNA; now we have mapped human DNA and are ready to use this
knowledge to promote health, reduce risk of disease, and in some cases, treat diseases. For
example, expanded nursing research in areas such as neuroscience will have an enormous
impact on population health and human suffering, far beyond the brain. Opportunities now
exist to view the building blocks of heredity from DNA to stem cell. We have a new
understanding of the body from biology to omics, an improved ability to view the interior
of the body from x-ray to MRI, different ways of developing drugs from plant-based to
genetic synthesis, and new ways of understanding mental illness from Freud to
neuroscience. These and other innovations and advances are influencing the opportunities
for nurse scientists. In each of these areas, many nurse scientists are contributing new
knowledge (e.g., Jarrett et al., 2016; Kumar et al., 2015; Sokolow et al., 2015).

Attempts to customize strategies to prevent disease and tailor health care treatment
considering individual variability in genetics, lifestyle and behavior are being coordinated
through efforts in the National Institutes of Health All of Us Research Program (formerly
the Precision Medicine Initiative) (National Institutes of Health, 2016). This large-scale
research enterprise will include innovative technologies which attempt to fit the correct
treatment to each person. Participants are being enrolled using mobile devices such as
smartphones.

Advances in genomics, pharmacogenomics, nutrigenomics, metabolomics, microbiomics,
and data science will influence nursing research now and in the future. Research funded by
NINR in this area will have a focus on symptom science (National Institute of Nursing
Research, 2015). Simplistic paradigms of recognizing and treating single symptoms are
being challenged. One example is the exploration of individual variability and underlying
mechanisms in individual symptoms and symptom clusters (Miaskowski et al., 2017).
Basic and clinical research on the biological, genetic, and behavioral mechanisms
underlying symptoms of chronic conditions will be an important focus for the future. For
example, the relationship of the gut microbiome is receiving attention for its influence on a
range of symptoms and disease processes, including the possibility for targeted individual
interventions (Newland, Heitkemper, & Zhou, 2016). These are just a few examples of
nursing research activity in the West.

Innovation and technology are part of the West. The West was the birthplace of the first
Apple computer, released in 1976. Nineteen of the 20 top-paying technology companies,
including Facebook, Adobe, Microsoft, LinkedIn, Twitter, Amazon, and Google, among
others, are located in the West (Novinson, 2016). This proximity could provide researchers
in the region with potential advantages and opportunities to explore future collaborations
with industry to conduct research as well as to disseminate findings. Researchers can take
advantage of the expanded opportunities through the use of sensors, biometric devices,
video, and other technologies in telehealth to remotely interface and monitor patients.
Statistical modeling of these large time series data sets requires new techniques and strategies.

**Translating Findings into Practice**
The translation of findings from the laboratory to the bedside and to the community will continue to pose challenges. There are opportunities for collaboration across disciplines and professions that can accelerate this translation. Beyond traditional medicine, biological sciences and public health, nursing scientists are and can pursue questions and partnerships involving scholars in other fields such as public policy, engineering, economics, education, business, humanities, the arts, and law, among other fields.

An important area for future nursing research is the science behind the translation of scientific evidence into nursing practice. There have been many examples where there has been a substantial lag in the adoption of evidence-based effective methods to improve health and reduce suffering. The slow dissemination of tobacco dependence treatment into health care is one example that affected morbidity and mortality (Sarna & Bialous, 2016; US Department of Health & Human Services, 2014). Implementation science has emerged as a focused area of study to promote the integration of research findings and evidence into health care policy and practice. These studies include the study of nurses and their uptake and adoption of evidence-based practices in nursing care and how those changes are sustained over time. An evaluation of the various barriers for dissemination (e.g. social, behavioral, administration, economic) that impede effective implementation and the testing of interventions to improve practice is a rich area for nursing research.

**Using Research to Support the Influence of Nursing Care**
Knowledge of the regional issues and findings from the exploration and advancement in to the basic sciences can be used to influence nursing care. However, nursing research specifically focused on nursing practice is essential to the nation’s health, to the profession, and to the West now and in the future (Shalala, Bolton, & Benner, 2010). This necessitates close collaboration of nurse researchers and nurse clinicians across health care settings during the entire continuum of care. After cancer and cardiovascular disease, medical errors have been identified as the third leading cause of death in the U.S. (Makary & Daniel, 2016). Nursing research is needed to examine models of care that focus on the workplace environment and a culture of safety. Numerous studies in hospital settings have shown that the environment where nursing care is delivered matters. Patients who receive care in Magnet hospitals have better outcomes (Stimpfel, Sloane, McHugh, & Aiken, 2016). Favorable working environments for nurses have been associated with reduced mortality (McHugh et al., 2016; Silber et al., 2016), fewer infections (Kelly, Kutney-Lee, Lake, & Aiken, 2013), and reduced hospital readmissions (Lasater & McHugh, 2016; Ma, McHugh, & Aiken, 2015). A celebrated public health nursing model of care involving nurses from the West, now known as the “Nurse-Family Partnership” program, promoted home visits by nurses which resulted in positive pregnancy outcomes (Olds et al., 2010). This model has been replicated in many states. Another example of a model program with nurse-sensitive outcomes is Nursing Child Assessment Satellite Training (NCAST), currently known as the Parent-Child Interaction (PCI) program, developed at the University of Washington (Kelly & Barnard, 2000). This educational program provides nurses with a series of tools for assessing child-parent interactions across settings.

Further studies are needed, especially in the West, to test new models of care, especially in ambulatory care, linking nursing care and patient outcomes and evaluating the generalizability of other models to the diverse populations. Martsolf and colleagues (Martsolf et al., 2016) describe nurse-designed models of care recognized as “Edge
Runners” by the American Academy of Nursing, as evidence-based exemplars of nursing practice. In addition to the recognition of the Nurse-Family Partnership in Colorado (American Academy of Nursing, 2015b), a Utah “Edge Runner” program, Mental Health Integration at Intermountain Healthcare, was recognized for its family-centered care model for primary care providers in mental health clinics (American Academy of Nursing, 2015a).

One of the key recommendations of the five-year evaluation of the Future of Nursing progress report suggests building an infrastructure for the collection and analysis of interprofessional health care workforce data (National Academies of Sciences Engineering and Medicine, 2016). Such data could be used by nurse researchers in modeling needs for nurses in the health care system that can inform practice. This is especially important in considering the nursing workforce strategies to provide care for patients in rural or nonmetropolitan settings, where the risk of death from leading causes of disease is higher than in metropolitan areas (Moy, et al., 2017).

Finally, the physical and mental health of nurses delivering care should still be an area of interest for nurse researchers. Data from the Nurses’ Health Study, the longest running study of women’s health, has been used to monitor nurses’ health such as smoking status (Sarna, Bialous, Cooley, Jun, & Feskanich, 2008). Health issues, including health promotion behaviors, that affect nurses across and within our states are an important focus for future research. The American Nurses’ Association initiative “Healthy Nurse” (American Nurses Association, 2016), nurses’ health is gaining renewed attention as a nurses’ health affect patient care. Regional differences could be examined.

Using Data to Inform Nursing Care and Policy
Since Florence Nightingale, obtaining evidence about nursing, practice environments and patient outcomes has been critical to health care policy (McDonald, 2001). With an ever-increasing large volume of information or “big data”, new opportunities have emerged for nurse researchers. There are questions as to what these elements should be and how they should be collected. It may be possible to have “big data” about the outcomes of nursing care by state or region. Electronic health record (EHR) systems have the potential to acquire extensive information about patient demographics, health conditions, and medical treatment that could make this possible. These data can provide information that could influence the quality and safety of nursing care across the continuum in new ways. Access to these data provides new opportunities for researchers, and the potential for understanding of nurses’ work flow. Some nurse scientists in the West have been involved in identifying key elements describing health and health care that are collected as part of the EHR, but greater coordination is needed (Bowles, Dykes & Demiris, 2015). A variety of elements, including social determinants of health along with health risk factors, has been recommended by the National Academies of Medicine for inclusion in the EHR (Institute of Medicine, 2014). More research is needed to explore the use of EHR and patient-centered use of technology on the quality of nursing care and patient outcomes in settings beyond the hospital. The social, legal, and ethical questions surrounding access to private information that may be included in “big data” sets, including genetic information, are complex and have implications for practice and policy.

Sharing Research Findings
Consideration of a future vision of nursing science must include how we communicate research findings and how we learn about new discoveries. Who will be our audience: nurses, researchers in other disciplines, health professional colleagues, policy makers, and/or the public? Peer-reviewed journals and presentations at scientific conferences have
been the standard forum for sharing new information and scientific discoveries. How will this change in the future? How will the results be shared in the new environment of social media? How will nurse researchers facilitate translation of evidence into practice? Will policy makers have the evidence that they need from nurse researchers? These questions deserve attention because they will impact consumers and health care.

Technology is rapidly changing ways of communicating, including nursing research findings. We learn about new findings through online journals, through tweets, podcasts, webinars, and other social media, transforming the way that we communicated research findings. NINR has used the Directors’ Lecture as an effective strategy; to highlight the work of outstanding scientists where presentations are available on the website and easily accessible. Recently, this has included papers from several nurse researchers from the West (Woo, Drew and Heilemann). Other platforms that allow researchers to present information directly to the public are YouTube and TED Talks. These advances in communication are especially important as we share our findings throughout the world. For example, the interventions to help nurses increase the delivery of evidence-based smoking cessation interventions using web-based technology are available on the Tobacco Free Nurses website in seven languages.

Early *Communicating Nursing Research* conferences in the 1950’s, the first of their kind in the U.S., focused on the importance of preparing nurse scientists. Topics of these conferences included different conceptual approaches as well as the mechanics of conducting and critiquing research (Western Institute of Nursing, 1992). These conferences were among the first forums in the nation and for nurturing emerging nurse scientists, especially doctoral students.

**Expanding Opportunities for Funding**

Funding can drive the direction of research questions. Extramural funding for research from NINR and other agencies in the NIH is sought after and prestigious. Three schools of nursing in the West were ranked in the top ten for NIH funding in 2016. However, NINR’s budget cannot sustain all of the worthy research that will grow our science, and researchers may have topics that do not fit with the NINR priorities. There are other opportunities through other Institutes in NIH and through foundations such as The Robert Wood Johnson Foundation, the American Nurses Foundation (ANF); the Office of Nursing Services, Department of Veterans Affairs; the American Heart Association; Sigma Theta Tau International (STTI); and the Oncology Nursing Society Foundation, among others. Partnerships with industries could provide other opportunities but such collaborations have potential risks. Many nurse researchers will need to diversify their portfolios of funding. WIN has established small research grants for members in collaboration with STTI and ANF. Should WIN make it a priority to expand this funding for nursing research interests focused the health issues facing the West? Will future nurse researchers market their ideas to the public and use avenues such as “GoFundMe” (GoFundMe.com, 2016)?

**Preparation for Future Nurse Scientists**

The future of nursing research will depend on the recruitment and training of the next generation of scholars. The scope of this education and the type of mentorship has been an area of much discussion. Some of the areas identified for doctoral education focus on the inclusion of new knowledge about the human genome, omics and the microbiome; others include advances in biobehavioral science and the translational science (Conley et al., 2015; Grady, 2015; Henly, McCarthy, Wyman, Alt-White, et al., 2015; Henly, McCarthy, Wyman, Heitkemper, et al., 2015; Henly, McCarthy, Wyman, Stone, et al., 2015). In response to the needs for sophisticated genomic training, NINR holds special training in
In order to provide further critical evidence of the importance of nursing and nursing care for health care policy as well as for a foundation of practice, future research is needed that interfaces nursing with patient outcomes, including considerations of quality, safety and economic impact. Knowledge is needed for scaling-up nursing interventions. This will require advanced training for scholars in population health science, health services research and implementation science which are not currently available in many schools.

An awareness of the health issues and of health care challenges in regional populations also is important content. WIN could support inclusion of such data for scholars in the West by monitoring and disseminating health rankings and having these data easily available on their website. With advances in technology, WIN has provided many resources for students and for beginning nurse scientists. Efforts to promote collaborative cross-disciplinary research also are needed. The next generation of nurse scientists could benefit from opportunities for cross-professional post-doctoral training. WIN might consider ways that it could maximize interprofessional post-doctoral opportunities across the West.

### How WIN Can Help Shape the Future for Nursing Research

This paper has included an overview of an array of factors influencing health and nursing care in the West as well as an overview of the expansive opportunities available for nurse researchers from basic to translational research. Future nursing research has the potential to influence our understanding of health and nursing care in the region, in the nation and worldwide. WIN can help facilitate collaborations among researchers in the West with similar interests. This work can continue through the expansion of virtual networks and searchable databases of scholars with similar interests. WIN also could aid in facilitating recruitment of samples from diverse populations.

Some serious societal issues impacting population health, including low levels of education, poverty and violence were identified in several states. These social determinants of health and the characteristics of the populations influence nursing interventions to promote health, to reduce risks for disease, and to eliminate health disparities. Despite the good news for many states, the rates of excessive drinking, mental illness, and drug-related deaths in the region should challenge nurse scientists in the West in the same way that the HIV/AIDS epidemic did at the beginning of NINR. How can nursing researchers better address the suffering and reduce premature deaths caused by substance abuse and mental illness? Perhaps, WIN could be a champion for new targeted funding models for nursing research based on regional needs.

Based on the health issues facing our region, new scholars in the West should be given an opportunity to learn about these issues and the social, environmental, economical factors influencing risk behaviors. There is support from NINR to grow scholarship in genomics and big data analysis, however different training is needed to explore delivery of care, population health, reduce health care disparities and translate evidence into practice. Expanded content in health services research, implementation science and telehealth in doctoral programs could help influence the ability of scholars to ask questions about nursing care on patient outcomes across the continuum of care. These studies are needed to inform nursing practice models of care and health care policy.

With a strategic vision, WIN can continue to shape the future of nursing research and positively influence the health of the vast population in the West, the nation’s health and the nursing profession. Given the issues, the future will depend to a large degree on the
areas of science that are pursued and the success of efforts to translate evidence into practice. There are incredible opportunities for nursing research. The best is yet to come.

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References


