OHIO NURSE

The Official Publication of the
Ohio Nurses Foundation
www.ohionursesfoundation.org

Quarterly circulation approximately 237,000 to all RNs, LPNs, and student nurses in Ohio.

VOLUME 7 | NUMBER 4 | SEPTEMBER 2014

Nursing's Finest Hour: A Call to Healthcare Leadership for the 21st Century

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INDEPENDENT STUDY

This independent study has been designed to give nurses a better understanding of the future of nursing and the effects on their nursing career.

1.3 contact hours will be awarded for successful completion of this independent study.

The author and planning committee members have declared no conflict of interest. Disclaimer: Information in this study is intended for educational purposes only. It is not intended to provide legal and/or medical advice or to be a comprehensive compendium of evidence-based practice. For specific implementation information, please contact an appropriate professional, organization, legal source, or facility policy.

The Ohio Nurses Association (OBN-001-91) is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

OBJECTIVES

Upon completion of this independent study, the learner will be able to:

1. Identify the activities of nurse leaders.
2. Discuss the role of the Institute of Medicine.
3. Identify problems with healthcare cost, quality and access in the US.
4. Relate the evolution of the nurse education system in the US to challenges for the present nursing education system.
5. Compare and contrast nurse education programs in the US with countries abroad.
6. Identify three nurse workforce/workplace factors which research shows that influence patient care outcomes in the US and abroad.
7. Identify variables associated with nursing supply and demand.
8. Describe the responses of organizations to problems in a) healthcare delivery; b) nurse education and practice; and to 3) the IOM recommendations.
9. Describe actions nurses everywhere can take to assure that the nursing profession leads in healthcare transformation.

STUDY

The signs are clear, and signs are everywhere. Nursing, embedded in every culture in every part of the world, is emerging from traditional background roles well suited to improve the quality of direct care and to lead in the reorganization of care delivery systems for consistent access to safe and cost effective care. Leadership describes the actions of one who facilitates goal setting, helps identify and mobilize resources, and participates wholeheartedly in subsequent activities and evaluation. Every nurse is a leader; every nurse can become a more effective leader. Leadership is not a title; it is a characteristic of the profession.

Worldwide, transformation of healthcare is accelerating through new knowledge about health and disease; the value of population-based care delivered in communities; the use of complex technology in patient care, healthcare systems operations, and research; foundational and continuing education as well as deeper appreciation for moral and ethical obligations to the public. There are also problems with healthcare delivery systems. Safe and effective care depends on the abilities of highly educated healthcare teams to coordinate care delivery in a cost effective manner across institutional boundaries in all settings.

Many developed countries adopted population-based universal healthcare plans after World War II while the United States (US) chose to continue its fee-for-service system for individuals. Health care insurance, first provided by employers or through individual policies, has come to represent access to care in the US while in universal health care systems the government pays directly for care. The staggering financial burden for society's healthcare is evident in both approaches and is driving the nature of solutions.

The Institute of Medicine (IOM) is the independent, nonprofit, nongovernmental health arm of the National Academies of Sciences. The function of the IOM is to convene expert interprofessional committees known as panels to ask and answer questions about the nation's health and healthcare.[1]

The IOM established a panel on nursing in 2008 and issued its report *The Future of Nursing: Leading Change, Advancing Health* in 2010. Donna Shalala, former Secretary of Health and Human Services and chair of the Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing at the IOM, stated that "this report is really about the future of health care in our country. It points out that nurses are going to have a critical role in that future especially in producing safe, quality care and coverage for all patients in our health care system."[2]

The eight recommendations of the IOM Report on *The Future of Nursing* are generating great interest: 1) Remove scope-of-practice barriers; 2) Expand opportunities for nurses to lead and diffuse collaborative improvement efforts; 3) Implement nurse residency programs; 4) Increase the proportion of nurses with a baccalaureate degree to 80 percent by 2020; 5) Double the number of nurses with a doctorate by 2020; 6) Ensure that nurses engage in lifelong learning; 7) Prepare and enable nurses to lead change to advance health; and 8) Build an infrastructure for the collection and analysis of interprofessional health care workforce data.[2]

Independent study objectives will be met though the integration of IOM recommendations #4-7 with an overview of healthcare cost, quality, and access problems; the sharing of significant related research findings; examination of supply/demand cycles; and descriptions of how the evolution of the nurse education system in response to society's needs and those of the healthcare system influences problem solving. Note examples of leadership and opportunities to lead throughout. Many nurses will need to earn more than one academic and professional credential in their careers to support safe practice. There is every reason to believe that nursing's finest hour is now when it is urgent for all countries to solve healthcare problems.

Cost, Quality and Access to Healthcare

Costs of Healthcare

The US spends about twice as much per capita as Canada, the United Kingdom (UK), Australia, Germany and Japan which have universal healthcare programs with government as the single payer. Total US healthcare spending is expected to reach 4.2 trillion by 2016 and comprise 19.5% of the gross domestic product by 2017. Nearly half of every dollar spent on healthcare comes from government sources.[3]

The Centers for Medicare and Medicaid Services (CMS), an $820 billion federal agency, provides insurance coverage for 100 million people through Medicare, Medicaid, and the Children's Health Insurance Program (CHIP). CMS will cover more people through the Health Insurance Marketplace that is part of the 2010 Affordable Care Act (ACA). The CMS website indicates that "coverage isn't our only goal. To achieve a high quality health care system, we also aim for better care at lower costs and improved health." CMS Administrator Marilyn Tavenner RN, BSN, MHA notes that "over the last three years, we have seen

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Interested in joining ONA? See page 3 for membership information and five reasons for joining the only professional organization in Ohio for registered nurses.

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The official publication of the Ohio Nurses Foundation, 4000 East Main St., Columbus, OH 43213-2983, (614) 237-5414.

Web site: www.ohnurses.org

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The **Ohio Nurse** is published quarterly in March, June, September and December.

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References
References will be sent upon request.

Questions
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Go to www.ohnurses.org to join today!

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national health care cost growth slow significantly and we want to continue that trend by helping to improve the delivery of health care by testing new models of paying for quality care."[4]

Further increases in healthcare spending are unsustainable and carefully chosen cost containment measures are essential. The global recession has reduced resources available for healthcare services whether the system is one of universal access/single payer or the mixed fee-for service, insurance mediated access model used in the US.

Quality of Healthcare

Consumers expect safety and quality whether purchasing a car or healthcare. Healthcare providers assure consumers that they deliver quality care. Yet there is ongoing evidence of deficiencies in the safety of care; at a minimum, healthcare must be safe.

The Institute of Medicine (IOM) 1999 Report *To Err is Human: Building a Safer Health System* publicly acknowledged that too many mistakes were being made in health care delivery. The report enumerated the human toll of mistakes: unnecessary suffering and needless deaths, loss of trust in the system as well as frustration and lowering of morale among health care professionals. The IOM identified systems problems as the chief culprit and recommended strategies for the improved functioning of health care delivery. A goal of a 50% reduction in medical errors in five years was established.[5] Problems with health care errors remained sufficiently unresolved in 2007 to the extent that the CMS announced, beginning in 2009, Medicare would no longer pay for the costs of preventable conditions, mistakes and infections resulting from a hospital stay. Such errors include surgical and catheter related infections, pneumonia, falls, bed sores, and air emboli.[6] It is obvious that most of these problems are nurse sensitive and that nurses can and should play leadership roles in solving systems problems.

The American Nurses Association (ANA) joined the Institute for Healthcare Improvement (IHI) in 2006 for its *5 Million Lives Campaign* focused on reducing harm to five million patients in both hospitals and the community between 2006 and 2008. Strategies focused on the conditions the CMS identified as preventable and not reimbursable. This goal was based on estimates that there are 40-50 incidents of harm per 100 hospital admissions.[7] Evidence-based practice of nursing, with 24/7 responsibilities in hospitals and presence in all community settings, is key to reducing nurse sensitive errors through problem solving at the unit and systems levels.

Patient safety remains a significant component of the US national agenda for healthcare because the outcomes of today's system are unacceptable. The IHI estimates that 40,000 instances of harm occur every day in just our hospitals; 15 million mistakes per year.[8] HealthGrades, a leading healthcare rating organization, reported in 2011 that "patient safety events" in hospitals cost the federal Medicare system $7.3 billon and resulted in 79,670 preventable deaths among Medicare patients between 2007-2009.[9] Hospitalized Medicare patients who experience a healthcare error have a one in five chance of dying as a result.[10] The Harvard School of Medicine reports that approximately 18% of all hospitalized patients are harmed by mistakes; many of these injuries are life threatening or fatal. If the Centers for Disease Control (CDC) classified preventable errors with other causes of death, mistakes would be the sixth ranked cause of death in the US.[11]

Hospitals value reputations for safe care as a humanitarian component of mission and, in part, to preserve market share. It is significant that in a March 2012 report from Johns Hopkins University it is noted that risk adjusted data bases on safety contain aggregate data, without institutional identifiers, for such problems as surgical site infections. Public reporting laws on safety incidents vary widely from state to state. This study's lead author concluded that "Nothing motivates hospitals to improve quality and listen to their front line staff like public reporting."[12] The industry provides too little useful information to either researchers or to consumers. Much of what is available is limited to hospitalized Medicare patients; data on safety in community-based care delivery systems are even less accessible. It is likely that healthcare errors are underreported.

American hospitals do take the prevention of errors quite seriously as does the Joint Commission (TJC). In the Joint Commission *Annual Report on Quality and Safety 2013*, detailed information on improvements in quality over time is provided and top performing hospitals are identified.[13]

The public is understandably very interested in the quality of healthcare. Seventy percent of adults surveyed in 2011 by the Commonwealth Fund said the healthcare system needs fundamental change or complete rebuilding. Respondents reported receiving wasteful, inefficient care and have fears about getting safe care in the future.[14] The press regularly reports on the quality of hospital care through various ratings systems, some of their own devising. National News and World Report lists are widely read. Safe hospital care is a standard topic for the American Association of Retired Persons (AARP) magazine readers. The July 2012 *Consumer Reports* provided its analysis of safety in 1159 US hospitals based on measures of communication, infections, repeat CT radiation exposure, complications, readmissions, and mortality. The study included data from only 11% of hospitals because "data on patient harm are still not reported fully or consistently nationwide."[15]

Rowe and Calnan, writing in the *European Journal of Public Health* in 2006, noted that public trust in health care providers and institutions is steadily eroding in the UK. They state that "beliefs about the limits of medical expertize together with concerns about the effectiveness of professional regulatory systems to ensure high standards of clinical care, highlighted by the media coverage of medical errors and examples of medical incompetence, have eroded trust in health care organizations, in the medical professions in general, and in health systems as a whole."[16] Safe care is a global concern.

Year after year the Gallup Poll identifies nursing as the most trusted profession based on perceptions of the honesty and ethics of nurses.[17] Advocating for patient safety requires moral courage when nurses suffer reprisals for their advocacy. To illustrate, two Winkler County, Texas nurses were fired and criminally prosecuted for reporting an unsafe practitioner at their facility to the state medical board. They were ultimately exonerated after a long legal process.[18] The voluminous literature on hospital quality, error reduction, and litigation prevention rarely mentions nursing. Focus falls on the practice of physicians. Why? Is nursing invisible?

Access to Healthcare

Access to healthcare in the US is financed through one or often a combination of 1) self pay; 2) privately purchased healthcare insurance; 3) employer provided/subsidized health insurance; 4) government funded Medicare, Medicaid, and CHIP; and 4) emergency room visits subsidized by hospitals and state reimbursement. Insurance coverage for particular health problems varies widely by insurer and type of policy leaving many patients with unpayable bills. Americans have also gone without health insurance due to the cost of a policy, rejection of coverage for prior conditions or as a result of lifetime limits, unemployment/underemployment, and a belief prevalent among younger people that they will not need healthcare and therefore don't need healthcare insurance.

According to the Kaiser Family Foundation, over 47 million nonelderly Americans were uninsured in 2012. Decreasing the numbers of the uninsured is a key goal of the ACA and state insurance exchanges which began in 2014 to provide Medicaid or subsidized coverage to qualifying individuals with incomes up to 400% of poverty.[19]

Americans without healthcare insurance generally forego primary care and enter the system when healthcare concerns are acute and most expensive. If more Americans have access to primary care, healthy behaviors can be promoted, chronic illnesses will be better managed, and many costly hospitalizations avoided. Nurse practitioners (NPs) are prepared to improve systems of primary healthcare delivery.

If the present primary care system were to remain fundamentally the same in 2020, there will be a projected shortage of 20,400 primary care physicians. Under a scenario in which primary care NPs and physician assistants (PAs) are fully integrated into health care delivery, such as in patient-centered medical homes that emphasize team-based care, the projected shortage of primary care practitioners in 2020 could be somewhat alleviated.[20] In many parts of the country NPs do not practice to the full scope of their education (IOM recommendation #1); overly restrictive state laws require revision.

The Health Resources and Services Administration (HRSA), an agency of the U.S. Department of Health and Human Services, is the primary Federal agency for improving access to health care services for people who are

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uninsured, isolated or medically vulnerable. Its mission is to improve health and achieve health equity through access to quality services, a skilled health workforce and innovative programs. *Mary Wakefield, PhD, RN, was named administrator of the Health Resources and Services Administration (HRSA) by President Barack Obama in 2009. Dr. Wakefield oversees the agency's $8.1 billion annual budget and brings the perspectives of an experienced nurse leader to the interrelated problems of healthcare cost, quality and access.*[21]

Nurse Education

The US Nurse Education Infrastructure

Education of nurses in the US did not follow the model created by Florence Nightingale in England for the establishment of autonomously operated schools focused on the learning needs of students. The Nightingale School at St. Thomas Hospital in London was financially independent, endowed with money contributed by a grateful British public after the Crimean War. Scientist and gifted administrator, Nightingale raised the stature of nursing through credible education.

Nurse scholar Dr. JoAnne Ashley, writing in *Hospitals, Paternalism, and the Role of the Nurse* (1976), described early US nursing students as "housekeepers for the sick." Since the 1870s, American hospitals have needed caregivers and young women needed a respectable way to earn a living and to answer spiritual calls to serve. Hospital-based diploma nursing schools represented American problem solving. Room, board, and service on the wards were exchanged for education in a barter system with focus on the needs of the hospital. Early diploma program education was of variable quality since society viewed education for women as unnecessary. For nursing, the further view was that the practice of nursing was maternally instinctive without need of specialized science and art.[22] These schools of nursing, operated by hospital boards of trustees, conferred a diploma in nursing and prepared a significant number of the country's nurses throughout the 20th century. Over a century later, demographics show that nursing is still viewed as the work of women.

In 1889 the University of Cincinnati College of Nursing was founded as the Cincinnati Training School for Nurses. By 1896 the school was integrated into the College of Medicine as a professional school and in 1916 became the first nursing school to grant the Baccalaureate of Science in Nursing (BSN) degree.[23] Three years of nursing education were combined with two years of study in science and the liberal arts in early university programs; these programs multiplied more slowly than diploma schools. Today 36% of new nurses begin with the BSN and 3% enter practice through graduate degree entry programs.[24]

Both diploma and university programs used service learning on the wards in apprentice style learning with diploma program students generally working longer hours. The study of nursing is a formidable undertaking in any era. Students formed close bonds under stressful learning conditions as well as pride in their identities as "diploma" or "BSN" graduates. Distinctive caps and pins once proclaimed the educational programs are the background of the wearer.

Nursing is the holistic practice of nursing science, art, and the spirit of compassion. Nursing is the only profession prepared to care for people throughout the life span in both health and illness. Nurses are prepared to lead in the redesign of health systems because they are systems thinkers and problem solvers.

At the outset of World War II it was feared that a draft would be needed to provide adequate numbers of nurses for the war effort and to maintain civilian hospitals. Nurse leaders assured members of Congress that nursing could meet recruiting challenges. Although black nurses had served in France in WW I, the Army Nurse Corps would not accept their services. Mabel K. Staupers RN, Executive Secretary of the National Association of Colored Graduate Nurses, lobbied with other nurse leaders for the recruitment of all nurses in a concerted political effort. Recognizing the need for action, First Lady Eleanor Roosevelt urged the army surgeon general to intervene. Nurse leaders helped to break the color barrier in the armed forces.[25]

US Congresswoman Frances Payne Bolton of Cleveland sponsored legislation, known as The Bolton Act, to create the US Cadet Corps in 1943 which enabled nursing education programs to admit more students and prepare them for practice in record time. The Corps united American nurses from diverse cultural and ethnic backgrounds to work for a common purpose. By 1945, 85% of all nursing students in the country were Cadet Nurses, and the Corps' funding represented more than half of the entire U.S. Public Health Service budget.[26] Nurse leader Lucile Petry, Director of the Division of Nurse Education of the US Public Health Service, reported that education standards were maintained as the profession executed an extraordinarily complex endeavor with great efficiency.[27] It was a fine hour for nursing.

Following World War II hospitals again found themselves in great need of registered nurses (RNs). Subsequent to the research of nurse educator Dr. Mildred Montag in the early 1950s, another example of American problem solving emerged: associate degree nursing (ADN) programs in community colleges. As the research demonstrated, AD graduates could be prepared to work in structured hospital settings under the supervision of RNs educated in diploma and baccalaureate programs. Hospital leaders asked that AD nurses also be licensed and titled as RNs; it was agreed to do so.[28, 29] The numbers of AD programs increased rapidly.

Controversy arose when The American Nurses Association (ANA) published its 1965 position paper *Concepts for Change* advocating that the minimum preparation for beginning professional nursing practice by 1985 should be at the baccalaureate level. The position paper recommended 1) that there be a requirement making the baccalaureate degree the minimum standard for the RN license; 2) that a new license and title be created for associate degree nurses designating these practitioners as Registered Associate Nurses (RANs) and 3) that two types of technical nursing education programs: hospital-based diploma programs and practical nursing programs, be eliminated.[30]

Graduates of diploma, AD, and BSN are equally successful on the RN licensure exam. Patient safety remains the foundation of NCLEX and the fundamental goal of practice. All nurses strive to give safe care to the extent of their knowledge, skills and the circumstances of the patient care environment.

BSN completion programs for AD and diploma prepared RNs are now widely available on-site and online. They accept prelicensure credits and extend, but do not repeat, the knowledge and skills contained in diploma and AD programs. In exit interviews, BSN completion program graduates often state that they have found renewed satisfaction in practice. They express heightened confidence that their new knowledge and skills will help them to be better advocates for patients and for making improvements in care delivery. The BSN is the conduit to graduate degree programs which prepare nurses for expanded roles as nurse practitioners, administrators and executives, faculty, and researchers. Demand is high for nurses in these practice areas as well as at the bedside.

Licensed practical/vocational nurse (LPN, LVN) programs as a first step in addition to diploma and AD programs provide access to nursing careers for many individuals who might not otherwise be able to enter nursing. These nurses bring welcome diversity to the profession that helps the profession address the many healthcare disparities in society. Nursing is a US exemplar for career mobility.

Global Nurse Education

The World Health Organization's *Global Standards for the Initial Education of Professional Nurses and Midwives,* developed between 2005 and 2007, call for all nurses to be educated with the bachelor's degree. The Standards recognize that progress toward baccalaureate education requires country-specific strategies.[31] The use of articulation plans for seamless transitions between AD and diploma programs with BSN/higher degree programs is widespread in the US and often include RN to MSN options. This country-specific solution fits the American nurse education infrastructure and facilitates the ability of nurses to continue their studies.

Canada, Sweden, Portugal, Brazil, Iceland, Korea, Greece and the Philippines require the BSN for the practice of nursing.[32] The UK adopted the BSN standard in 2000 in an initiative known as Project 2000. The process there began in the late 1980s with dialogue, identification of desired outcomes and an implementation plan for moving all nursing education into universities by the year 2000 with the BSN as the first professional credential. The UK has accomplished this goal and is now refining the system.[33]

Throughout the European Union (EU), the aim of the Bologna Process is to create convergence of each country's education and practice standards for all regulated disciplines. The expected outcomes are higher quality of practice in every profession and the facilitation of mobility across national boundaries. It is a complex endeavor that will transfer all nursing education into university settings.[34]

Global Research on Nurse Workforce Factors Associated with Patient Outcomes

Research conducted in a number of countries for over a decade demonstrates that a nurse workforce with a higher proportion of BSN and higher degrees is linked with better patient outcomes and lower rates of morbidity and mortality. In addition to education, research shows that staffing levels and the nature of the patient care environment are also significantly related to patient outcomes. Nurse researchers have provided data that nurse leaders can apply in policy development, regulators should act on, and that nurses everywhere can use to manage their careers. The following review of the literature highlights the accomplishments of nurse leaders and researchers while illuminating the interrelated effects of educational preparation, staffing and the patient care environment on safe patient care.

A 2010 Carnegie Foundation for the Advancement of Teaching study, *Educating Nurses: A Call for Radical Transformation,* recommended that the BSN be required for RN licensure. Well known nurse leader Dr. Patricia Benner and colleagues eloquently argued for radical transformation of nursing education.[35] However; many believe that the current multi-entry system (LPN/LVN to PhD) fits infrastructure resources, helps to meet demand for new nurses, and facilitates career mobility for students of diverse backgrounds.

In a study published in 2003 in the *Journal of the American Medical Association* (JAMA) nurse researcher Dr. Linda Aiken and her team at the University of Pennsylvania found that surgical patients have a "substantial survival advantage" if treated in hospitals with higher proportions of BSN and higher degree educated nurses. Cross-sectional analyses of outcomes data for 232,342 general, orthopedic, and vascular surgery patients discharged from 168 nonfederal adult general Pennsylvania hospitals between April 1, 1998, and November 30, 1999, linked to administrative and survey data providing information on educational composition, staffing, and other characteristics, indicated that a five percent increase in the proportion of nurses with the BSN decreased the risk of patient death and failure to rescue by five percent.[36]

Canadian nurse researcher Dr. Carole Estabrooks and her colleagues at the University of Alberta found that BSN nurses have a positive impact on mortality rates in examination of 18,000 patient outcomes in 49 Canadian hospitals. This research, published in *Nursing Research* in 2005, confirmed the findings of Aiken's 2003 landmark study.[37]

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In a second Canadian study published in 2007 in the *Journal of Advanced Nursing*, Professor Ann Tourangeau and colleagues examined 30 day mortality rates for 46,993 acute medical patients in Ontario hospitals. They found that hospitals with higher proportions of BSN nurses had lower 30 day mortality rates. A ten percent increase in BSN prepared staff was associated with nine fewer deaths for every 1,000 discharged patients.[38]

In 2008, the Aiken team published *The Effects of Hospital Care Environment on Patient Mortality and Nurse Outcomes* with the objective of analyzing the net effects of nurse practice environments on nurse and patient outcomes after accounting for nurse staffing and education. They stated, "staffing and education have well-documented associations with patient outcomes, but evidence on the effect of care environments on outcomes has been more limited." Data from 10,184 nurses and 232,342 surgical patients in 168 Pennsylvania hospitals were analyzed. "Nurses reported more positive job experiences and fewer concerns with care quality, and patients had significantly lower risks of death and failure to rescue in hospitals with better care environments…..care environment elements must be optimized alongside nurse staffing and education to achieve high quality of care."[39]

Friese and a team at the Dana-Farber Cancer Institute at the Harvard School of Public Health also examined the interactions of staffing, education, and practice environment on outcomes for surgical oncology patients in a 2008 study. The principle findings were that nurse staffing and the levels of BSN preparation of RNs were significantly associated with patient outcomes. After adjusting for patient and hospital characteristics, patients in hospitals with poor nurse practice environments had significantly increased odds of death and of failure to rescue.[40] Poor nurse practice environments are characterized by incivility, lack of teamwork, and inadequate support systems.

The American Nurses Credentialing Center's (ANCC) Magnet Hospital Recognition Program has achieved prominence among strategies for achieving quality care. Proportion of BSN prepared nursing staff is one of the components in Magnet status designation.[41] The Leapfrog Group, a voluntary program focused on mobilizing employer purchasing power, added Magnet status in 2011 to its criteria for ranking top hospitals.[42] Researchers, again at the University of Pennsylvania, reported in 2012 in *Medical Care* that surgical patients in Magnet hospitals had 14% lower odds of inpatient death within 30 days and 12% lower odds of failure-to-rescue compared with patients in non-Magnet hospitals.[43]

Dr. Mary Blegen and her colleagues at the University of California-San Francisco School of Nursing examined the relationship between RN education and patient outcomes (risk-adjusted patient safety and quality of care indicators), controlling for nurse staffing and hospital characteristics, at 21 University HealthSystem Consortium hospitals. Patients in hospitals with a higher percentage of RNs with baccalaureate or higher degrees had lower congestive heart failure mortality, decubitus ulcers, failure to rescue, and postoperative deep vein thrombosis or pulmonary embolism and shorter length of stay.[44] Published in the February 2013 issue of the *Journal of Nursing Administration,* this research is significant because it directly ties the education of the nurse workforce to nurse sensitive conditions identified by Medicare as preventable conditions.

Looking at the Pennsylvania nurse survey and patient discharge data from 1999 and 2006, researchers at the Davis Institute of Health Economics at the University of Pennsylvania found that a ten-point increase in the percentage of nurses holding a baccalaureate degree in nursing within a hospital was associated with an average reduction of 2.12 deaths for every 1,000 patients--and for a subset of patients with complications, an average reduction of 7.47 deaths per 1,000 patients. They estimated that if all 134 hospitals in the study had increased the percentage of their nurses with baccalaureates by ten points during the study's time period, some 500 deaths among general, orthopedic, and vascular surgery patients might have been prevented.[45]

The British medical journal *Lancet* published research titled "Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study" on February 26, 2014. Austerity measures and health systems redesign have potential to adversely affect patient outcomes. Discharge data for 422,730 patients aged 50 years or older who underwent common surgeries in 300 hospitals in nine European countries were analyzed. Aiken and an international research team stated that "an increase in a nurse's workload by one patient increased the likelihood of an inpatient dying within 30 days of admission by 7% and every 10% increase in bachelor's degree nurses was associated with a decrease in this likelihood by 7%.

These associations imply that patients in hospitals in which 60% of nurses had bachelor's degrees and nurses cared for an average of six patients would have almost 30% lower mortality than patients in hospitals in which only 30% of nurses had bachelor's degrees and nurses cared for an average of eight patients."[46]

Researchers, working in interprofessional teams on large scale studies around the world, have demonstrated that the education of the nurse workforce, staffing and nature of the practice environment significantly affect patient care outcomes. All nurses can draw on this information to transform nursing locally and globally.

Nurse Workforce Supply and Demand

The Market Place

Nursing workforce supply and demand ebbs and flows in cycles in which the two seldom balance. To illustrate, the demand for nurses in the early decades of the 20th century greatly exceeded supply which was then met by further expansion of hospital operated diploma schools and the labor of their nursing students. Hospitals hired few to none of their graduates, preferring the free labor of students. Most graduate nurses engaged in private duty nursing, paid for by patients and their families, provided in homes or in the hospital setting when families wanted more expert care than students could offer. Times were especially harsh economically for graduate nurses during the Great Depression. Ashley explained this exploitive practice as structured sexism in healthcare which discriminated against women.[47] Whenever demand, or perceived demand, exceeds the supply of nurses, the education system responds and another cycle begins. Where are we in the supply/demand cycle?

Supply

Nurse workforce reports from the National Center for Health Workforce Analysis at HRSA and from the National Council of State Boards of Nursing (NCSBN) and National Forum of State Nursing Workforce Centers in 2013 indicate that there are more than three million RNs in the US; 93% are women with male participation in the workforce increasing slowly among younger cohorts. Eighty-three percent of nurses are identified as Caucasian, six percent as African-American, six percent as Asian, and three percent as Hispanic. Approximately 2.8 million RNs are employed, an increase of 200,000 from 2008. More than half of the nurse workforce is age 50 or older with 72% of faculty respondents age 50 or older.[48]

Fifty-seven percent of the 2013 NCSBN survey respondents entered nursing with the diploma or AD. Five percent of RNs began their nursing careers as LPN/LVNs. HRSA and NCSBN reports differ on how many nurses hold the BSN or higher degree with HRSA indicating 55% and the NCSBN putting the percentage at 61%. There is a small trend upward in the numbers of RNs entering the workforce with the BSN.[48, 49]

The American Association of Colleges of Nursing (AACN) reports age-related concerns on the availability of faculty. AACN President Dr. Kathleen Potempa stated in 2010 that, "With the faculty shortage expected to balloon over the next ten years and the demand for expert nurses increasing in response to healthcare reform, policymakers and other stakeholders must take decisive action now to maximize enrollment in graduate nursing programs."[50]

The NCLEX survey reported unemployment at seven percent with three percent actively seeking employment; 27% of these nurses indicated difficulty in finding a position.[48] A nursing career has represented secure full employment in many minds for years. Yet new graduates in some regions of the country, particularly AD graduates, describe disappointment and long trying job searches. A national survey of BSN programs found that 59% of new BSN graduates had job offers at the time of graduation; four to six months after graduation the survey found that 89% of new BSN graduates had employment in nursing.[51] These findings are contrary to past employment experiences and contradict projections.

The economic recession has confounded supply/demand modeling in a number of ways. Older nurses have delayed retirement. Healthcare employers have been uncertain of income streams as the ACA becomes reality. They may budget conservatively and limit hiring. For-profit providers budget for a return on investment to shareholders; staffing cuts add to margin. Since numerous reports have predicted severe nurse shortages for some time, education programs have increased enrollments to capacity and generated waiting lists. Historically, when there are public perceptions that nursing employment is constricting, applications to nursing programs decline.

Demand

The Bureau of Labor Statistics at the US Department of Labor states that, "employment of registered nurses is projected to grow 19 percent from 2012 to 2022, faster than the average for all occupations. Growth will occur for a number of reasons, including an increased emphasis on preventative care; growing rates of chronic conditions, such as diabetes and obesity; and demand for healthcare services from the baby boomer population, as they live longer and more active lives."[52]

Growing numbers of US hospital chief nursing officers, citing increasing complexity in the practice environment, are implementing policies that require the BSN in hiring and retention decisions. Nurses practicing in long term care and all community-based care delivery settings also work in complex high acuity environments. Competencies in planning, implementing and evaluating population-based care as well as health promotion, known to improve outcomes and control cost, are gained in baccalaureate and master's degree programs.

The American Organization of Nurse Executives (AONE) surveyed its membership in the fall of 2011 to determine the extent to which healthcare organizations are adopting policies and practices to incentivize and assist nurses to complete BSN degrees. Slightly over half of the 300 respondents listed their organizations as a hospital or medical center. Facilities reporting were urban (47%), suburban (32%) and rural (21%) and were evenly divided by bed size. Thirty five percent of facilities were under 201 beds, 33% reported their bed size as 201-500 beds while another 32% stated their bed size as over 500 beds.[53]

Over half of the 300 AONE survey respondents stated that their institution had a policy for preferential hiring of BSN prepared nurses. Some nurse executives reported that their organizations are planning to adopt such a policy and others noted that they hire preferentially without a stated policy. Other institutions without a policy on BSN hiring are requiring their current RN staff to complete the BSN within five or six years.[53]

In those organizations with a preferential policy for BSN educated nurses, about half of those responding reported that quality of care and safety were their chief reasons. One nurse executive indicated in the survey that "We embrace the evidence that supports that patient outcomes are better in organizations with a high number of BSN nurses. We also rely on our nurses to lead improvement efforts and bedside care, which requires them to be qualified to do so." [53]

AONE President Linda Caramanica and AONE CEO Pamela Thompson stated in 2012 that "a well-educated nurse is better prepared for changes in technology, advanced treatments and protocols and most important, can offer better and safer patient care. As we work through the challenges of health care reform and advancing technology, it's in everyone's best interest to support advanced nursing education."[53]

The US Army Nurse Corp,[54] the Navy,[55] and the Air Force[56] require the BSN; military nurses are commissioned as officers for leadership roles. The Veterans Administration (VA) Office of Nursing Services 2011 Annual Report *Future of Nursing* is devoted to a review of how VA nursing is addressing the implementation of the IOM recommendations nationwide. The VA Nursing Academy partners with local accredited nursing schools to increase the numbers of BSN, MSN, and doctorally prepared nurses caring for veterans.[57]

Dr. Patricia Pittman, expert on healthcare workforce policies, and her colleagues at the Georgetown University School of Public Health and Health Services reported in the November/December 2013 issue of the *Journal of Healthcare Management* that the IOM recommendation for an 80% BSN nurse workforce has shifted the debate about the education of nurses from state legislatures to the executive suites of large healthcare corporations. In this study, nearly 80% of 447 nurse executives in hospitals, nurse-led clinics, and home and hospice companies reported that their organizations either required or preferred that newly hired nurses have a bachelor's degree and 94% of these facilities offer some form of tuition assistance. On the other hand, only 9% paid a salary differential on the basis of education. The authors also note that the dynamics of nursing supply and demand influence hiring practices.[58]

Without a commitment in statute to a standard for advancing the education of the workforce, shortages or fears of shortages will override employer policies. There are mixed messages about how the supply/demand cycle will unfold in coming years.

US Institutional Responses to Demands for a Better Prepared Nurse Workforce and Safer Patient Care Environments

Nurses understand the complexities of solving problems with cost, quality and access to healthcare in the US. IOM panel members from related disciplines during the 2008-2010 study on nursing recognized the potential for nursing to transform healthcare and reform healthcare delivery systems. **The IOM's comprehensive and sweeping recommendations call nursing to its finest hour of this century.**

Acknowledgement of longstanding problems with cost, quality and access to healthcare led President Obama to ask Congress to enact the ACA in 2010. Some Americans object to mandated insurance coverage. Others fear change of any kind and object to all mandates. Most mandates are unpopular. Some see the ACA as a step to a single payer system in America and either like or reject the idea. The activities of appropriately-educated nurses, many already in leadership positions, are essential to the full implementation of the Act's provisions.

Nurse education and practice leaders understand the nurse supply/demand cycle, recognize the strengths and weaknesses of the nurse education infrastructure, and are aware of the WHO recommendation for baccalaureate education and the adoption of baccalaureate entry standards in other developed countries. In a compromise measure, using problem solving unique to the American nursing experience, the ANA House of Delegates in 2008 adopted a resolution to require associate degree (AD) or diploma prepared RNs to obtain a BSN within ten years after initial licensure, exempting those individuals who are licensed or enrolled as a student in an AD or diploma program when legislation is enacted.[58] The BSN-in-Ten initiative, as this resolution has come to be known, builds on the strengths of the US nurse education system, is achievable using current resources, and presents a fair and ethical academic standard for nursing and for the safety of the public.

Nursing's Finest Hour continued on page 7

Nursing's Finest Hour continued from page 6

The Ohio Nurses Association (ONA) House of Delegates adopted the BSN-in Ten resolution in 2009 and delegated its implementation to the Nursing 2015 Collaborative, a coalition group of ONA, the Ohio Organization of Nurse Executives (OONE), the Ohio Hospital Association (OHA) and the Ohio League for Nursing (OLN) which met between 2005 and 2012 to address nursing related concerns in Ohio. In one example, the Collaborative was instrumental in passage of the Ohio nurse staffing bill. This coalition was the precursor group to the Ohio Action Coalition (OAC) formed in 2012.

The Ohio Student Nurse Association (OSNA), with over half its members enrolled in AD programs, endorsed BSN-in-Ten legislation in its 2011 House of Delegates meeting. Student leaders viewed degree completion as essential for their own careers and for the future of nursing.

The Tri-Council for Nursing, ANA, AONE, AACN, and the National League for Nursing (NLN), issued a consensus statement in 2010 calling for all "registered nurses to advance their education in the interest of enhancing quality and safety across healthcare settings… Current healthcare reform initiatives call for a nursing workforce that integrates evidence-based clinical knowledge and research with effective communication and leadership skills. These competencies require increased education at all levels. At this tipping point for the nursing profession, action is needed now to put in place strategies to build a stronger nursing workforce. Without a more educated nursing workforce, the nation's health will be further at risk."[60]

The Center to Champion Nursing in America (CCNA) was launched in 2010 to promote implementation of recommendations contained in the IOM Report with the vision that everyone in America can live a healthier life, supported by a system in which nurses are essential partners in providing care and promoting health. The Robert Wood Johnson Foundation (RWJF) leads the campaign coordinated through the CNAA which is an initiative of AARP, the AARP Foundation, and RWJF. RWJF believes that the nation cannot adequately address the challenges facing the health care system without also addressing the challenges facing the nursing profession.[61]

CNAA has organized state action coalitions charged with achieving the recommendations of the IOM Report. The OAC is comprised of diverse health related organizations headed by Co-Chairs from OLN and OHA. Member organizations include AARP Ohio, the Ohio Board of Nursing (OBN), OONE, ONA and a variety of specialty organization representatives. CNAA, the OAC, and the OBN at present indicate they will not seek legislation as a strategy for implementing IOM recommendations, preferring voluntary means.

There is consensus in Ohio that the Institute of Medicine (IOM) recommendation #4 for an 80% BSN workforce by 2020 is appropriate but it remains unknown whether the current system of voluntary BSN completion among AD and diploma prepared nurses will be adequate. The ONA Advancing Nursing Education Task Force (ANET) analyzed 2011 and 2013 OBN workforce data to project the outcomes of the current voluntary BSN completion compared to the results if BSN-in-Ten legislation for new licensees were already in place in 2013.

The OBN collected workforce education data in 2011 and again posed workforce education questions during the 2013 online renewal period which were answered by 166,764 RNs, 97% of RNs with an active Ohio license. Forty-eight percent of respondents indicated they held a BSN or higher degree in 2013 compared to 47% in the 2011 survey.[62]

Twelve percent of the Ohio nurses responding (10,607) in 2013 reported that they are currently enrolled in a BSN completion program and a further 37% (32,678) stated that they have plans for a BSN or higher degree in the next 15 years. Surprisingly, given the attention generated by the IOM Report and changing employer policies, 51% of the respondents (44,177) indicated that they have no plans for a BSN or higher nursing degree.[62]

The projection model assumed that:

- Numbers and proportions of AD/Diploma and BSN prepared new licensees remain stable due to constraints in pre-licensure capacity, faculty shortages, and clinical site availability.
- All the nurses enrolled in BSN completion programs or intending to will complete the degree and that this rate of degree completion continues each year.
- The effects of retirements, reported in 5 year increments, are apportioned and entered annually.
- Adequate online and traditional BSN completion program capacities are adequate or will evolve to meet need. It is known in 2014 that current BSN completion programs in Ohio have unused capacity.[63, 64]

The ANET workforce projection model used "free basic" programming in which code was written expressly for the task of testing multiple assumptions. Statistical consultation indicated that no tests of significance were warranted. The findings on voluntary degree completion using both 2011 and 2013 data are shown in Table 1.

Table 1. Projected Outcomes of Voluntary BSN Completion on Workforce Education Comparing 2011 with 2013 OBN Data January 2014

	2013	15 years	30 years
Voluntary BSN Completion Projections based on 2011data	Number BSN & higher degree prepared = 82,880 47% of workforce N=176,341	Number BSN & higher degree prepared =122,133 54% of workforce	Number BSN and higher degree prepared= 152,144 58% of workforce
Voluntary BSN Completion Projections based on 2013 data	Number BSN & higher degree prepared = 80,844 48% of workforce N=171,922	Number BSN and higher degree prepared =147,212 60% of workforce	Number BSN and higher degree prepared=191,674 65% of workforce

Table 2 contains the projected outcomes of voluntary degree completion versus the effects of BSN-in-Ten legislation for only new licensees if the law were in effect in 2013.

Table 2. Projected Outcomes of Voluntary BSN Completion versus the Effects of BSN-in-Ten Legislation March 2013 Study

	15 years	30 years
Voluntary BSN completion based on 2013 data	Number BSN and higher degree prepared =147,212 60% of workforce	Number BSN and higher degree prepared=191,674 65% of workforce
BSN-in-Ten Legislation for new licensees if effective 2013	Number BSN prepared=161,560 72% of workforce	Number BSN prepared=240,236 92% of workforce

For the Ohio nurse workforce, neither voluntary nor mandated degree completion will be adequate to reach the IOM 80% BSN goal for 2020. Absent a requirement, current Ohio nurses and new graduates must decide whether to continue their educations in response to other motivations: personal and career goals, marketplace factors, and a desire to increase leadership and critical thinking skills necessary to transform healthcare delivery into a safer, more effective, accessible and moral system.

When consumer safety advocates examine product safety problems, such as those that occurred at General Motors over a span of years, they ask questions. Who knew about problems? When did they know? What did they do? Healthcare systems also have to address safety problems. Licensed professionals have obligations to the public as well as to their employers; leadership is expected.

In New York State, leadership at the New York State Board for Nursing a decade ago initiated coalition development to seek BSN-in-Ten legislation in the State Assembly. The Coalition for Advancement of Nursing Education (CANE) has bills in both the Assembly, and Senate in the 2013-2014 legislative session which are supported by 29 state and national nursing and health-related organizations. Notable among proponents are the New York Academy of Medicine, the New York State Board of Pharmacy, and the Hospital Association of New York State.[65] The Service Employees International Union (SEIU) opposes this legislation.[66] CANE views its legislative work as a model for other states. If the NCSBN endorsed the BSN-in-Ten concept, legislative initiatives could begin simultaneously in all 60 jurisdictions.

In 2012 the American Association of Community Colleges, the Association of Community College Presidents, the American Association of Colleges of Nursing, the National League for Nursing, and the National Association for Associate Degree Nursing issued a joint *Academic Progression Position Statement*. In the statement these organizations expressed their collective support for academic progression for nurses. "Our common goal is a well educated diverse nursing workforce to advance the nation's health."[67]

Transforming the healthcare system is something like turning a large ship at sea. It takes time, energy, and expert leadership from all disciplines aboard. To lead in the transformation of the healthcare system, the profession of nursing must transform itself and develop in ways never envisioned. Business as usual transforms nothing; lost opportunities negatively affect patient care. When systems ignore longstanding evidence, the clinical outcomes of an insufficiently educated nurse workforce, inadequate staffing and poor patient care environments are measured in patient morbidity and mortality.

Nursing is the everyday practice of heroism from the bedside to the boardroom and throughout government and society. Nursing at the bedside depends on expert application of science and art with compassion; direct care nurses require respect, cooperation and support from all colleagues as well as the system to provide safe effective care. Nursing management and administration contribute additional expertise; administrators merit the same respect, cooperation and support from all colleagues and the system to affect meaningful problem solving.

Transformations are accomplished one step at a time, one day at a time, by a critical mass of stakeholders. The IOM panel identified the key elements for the transformation of the profession. Nursing's finest hour is indeed now if we act for the good of the whole. The profession can lead in the development of solutions; or become just another problem in the system. Where to begin? What to do?

1. **Respect** for human dignity is a hallmark of nursing.

2. **Cultivate teamwork.** Help others to learn the art of teamwork across disciplines and throughout systems.

3. **Cherish a mentor; be a mentor.** Honor those who nurtured you by nurturing the next generation. Encourage and support the growth and development of colleagues, all colleagues.

4. **Understand history** as a component of transformation and use that knowledge as insights for solving problems in today's culture. Don't be bound by historical limitations; reject discrimination of any origin.

5. **Consider your next educational step.** The BSN? A graduate degree for advanced practice? Doctoral studies for faculty, executive and research roles? Then, just do it. Each return to school is intimidating until you get your sea legs and each return to school brings the exhilaration of new knowledge and skills which transforms your practice.

6. **Participate** in the organizational life of the profession. Lend your support to the major initiatives that are transforming nursing. Speak up! Link up! Experience for yourself the power of the profession that transforms healthcare.

7. **Advocacy** is a commitment nursing makes to patients and to the public. Learn best practices for patient and systems advocacy; then act on matters of moral outrage with moral courage. Others will rally.

Celebrate heroism whenever and wherever it occurs. Nursing's finest hour is realized when every nurse is a leader and nurses lead in transforming healthcare everywhere.

References available upon request.

Nursing's Finest Hour: A Call to Healthcare Leadership for the 21st Century

Post-Test and Evaluation Form

DIRECTIONS: Please complete the post-test and evaluation form. There is only one answer per question. The evaluation questions must be completed and returned with the post-test to receive a certificate.

Name:_____

Date:_____ **Final Score:** _____

Please circle one answer.

1. Leadership describes activities carried out
   a. As an elected officer in an organization
   b. As part of a job description
   c. By one who facilitates group goal setting, mobilization of resources, actions taken and evaluation.
   d. All of the above.

2. Nurse leaders are
   a. All nurses
   b. Administrators of healthcare facilities
   c. Faculty in universities
   d. Federal officials

3. The Institute of Medicine is a/an
   a. Institute at the National Institutes of Health
   b. Independent, nonprofit, nongovernmental arm of the National Academy of Sciences
   c. Federal Agency administered by the Centers for Medicare and Medicaid Services
   d. Federal Agency administered by the Centers for Disease Control

4. The purpose of the IOM is to
   a. Set policies
   b. Fund research studies
   c. Assemble leaders to ask and answers questions about healthcare
   d. Advise the President

5. Membership of the IOM 2008-2010 panel on nursing included
   a. Interdisciplinary leaders
   b. Only physicians
   c. Only nurses
   d. Only scientists

6. The 2010 IOM Report *The Future of Nursing: Leading Change, Advancing Health* recommended only one of the following
   a. The BSN as entry to practice
   b. The BSN-in-Ten as federal legislation
   c. That 80% of the nurse workforce be BSN prepared by 2020
   d. Closing AD and diploma programs

7. Healthcare costs are
   a. Rising
   b. Constant
   c. Slowing
   d. Only a problem in the US

8. HealthGrades reported in 2011 that "patient safety events" (mistakes) between 2007 and 2009 in hospitals cost Medicare alone
   a. 3.0 billion dollars
   b. 4.5 billion dollars
   c. 6.7 billion dollars
   d. 7.3 billion dollars

9. If the Centers for Disease Control (CDC) included preventable errors with other causes of death, how would mistakes be ranked as causes of death in the US?
   a. 15th
   b. 13th
   c. 10th
   d. 6th

10. Safe healthcare is a concern for
    a. US hospitals
    b. Rural and community-based settings
    c. Healthcare facilities worldwide
    d. Healthcare in third world countries

11. The US fee for service system and single payer national healthcare plans provide equal access to care
    a. True
    b. False

12. Scope of practice acts for nurse practitioners (NPs)
    a. Are uniform across the country
    b. Require revision at the federal level for all NPs to practice to their full scope
    c. Require revisions at the state level for NPs to practice to their full scope
    d. Meet the IOM *Nursing for the Future* recommendation

13. The US nurse education system
    a. Is a direct copy of the British system
    b. Is autonomously funded
    c. Is operated exclusively in four- year universities
    d. Offers multiple entry points to nursing

14. Research was applied in the establishment of
    a. LPN/LVN programs
    b. Diploma programs
    c. AD programs
    d. BSN programs

15. Nurse leaders, including Mabel Staupers, lobbied Congress for the recruitment of black nurses into the military during
    a. WW I
    b. WW II
    c. Korean Conflict
    d. Viet Nam War

16. Nursing in the US is united on standards for nursing education
    a. True
    b. False

17. The World Health Organization's *Global Standards for the Initial Education of Professional Nurses and Midwives* call for nurses everywhere to be educated with
    a. The diploma
    b. The AD
    c. The BSN
    d. A graduate degree

18. The BSN is not required for practice in
    a. The US
    b. The UK
    c. Canada
    d. Sweden, Portugal, Brazil, Iceland, Korea, Greece and the Philippines

19. The Bologna Process in the European Union (EU) is designed to address all the following except
    a. Standardize practice and education standards for all professions in the EU
    b. Facilitate the mobility of professionals across EU borders.
    c. Attain higher quality of practice in every profession
    d. Ensure that EU nurse education follows the US example

20. Research conducted for over a decade worldwide demonstrates that better patient outcomes are related to all of the following except
    a. Higher proportions of BSN and higher degree nurses in the workforce
    b. Staffing levels
    c. Specialty certification
    d. Nature of patient care environments

21. Researchers report that surgical patients in MagnetR hospitals in which the proportion of BSN and higher-degree prepared nurse workforce is a component in achieving Magnet® status have
    a. Lower odds of inpatient death and failure to rescue
    b. The same odds of inpatient death and failure to rescue
    c. Higher odds of inpatient death and failure to rescue

22. Nursing employment supply/demand cycles
    a. Are unrelated to the global economy
    b. Follow migration trends
    c. Are predictably unpredictable
    d. Are stable

23. The BSN-in-Ten initiative was proposed by the
    a. Institute of Medicine
    b. National League for Nursing
    c. The American Organization of Nurse Executives
    d. The American Nurses Association

24. Ohio workforce projections indicate that the IOM 80% BSN workforce by 2020 recommendation
    a. Can be met by voluntary BSN completion at the present rates
    b. Can be met by legislation requiring BSN completion within ten years of initial licensure for new graduates only
    c. Can be met only if significantly more nurses and new graduates complete BSNs
    d. Lacks consensus from among nursing groups and employers

25. The Center to Champion Nursing in America (CNAA) is an initiative to promote implementation of the IOM recommendations supported by all the following except
    a. The National Institutes of Health
    b. The Robert Wood Johnson Foundation
    c. The American Association for Retired Persons
    d. The American Association for Retired Persons Foundation

26. The BSN-in-Ten bills in the New York State Assembly and the New York State Senate are supported by all the following except
    a. The New York Academy of Medicine
    b. The New York State Board of Pharmacy
    c. The Hospital Association of New York
    d. The Service International Workers Union

Evaluation

	YES	NO
1. Were you able to achieve the following objectives?		
a. Identify the activities of a nurse leader.	__ Yes	__ No
b. Discuss the role of the Institute of Medicine.	__ Yes	__ No
c. Identify problems with healthcare cost, quality and access in the US.	__ Yes	__ No
d. Relate the evolution of the nurse education system in the US to challenges for the present nursing education system.	__ Yes	__ No
e. Compare and contract nurse education programs in the US with countries abroad.	__ Yes	__ No
f. Identify three nurse workforce/ workplace factors which research shows that influence patient care outcomes in the US and abroad.	__ Yes	__ No
g. Identify variables associates with nursing supply and demand	__ Yes	__ No
h. Describe the responses or organizations to problems in a) healthcare delivery; b) nurse education and practice; and to c) the IOM recommendations.	__ Yes	__ No
i. Describe actions nurses everywhere can take to assure that the nursing profession leads in healthcare transformation	__ Yes	__ No
2. Was this independent study an effective method of learning?	__ Yes	__ No

If no, please comment:

3. How long did it take you to complete the study, the post-test, and the evaluation form? _____

4. What other topics would you like to see addressed in an independent study?

Being an Expert Witness

Developed by Barbara Walton, MS, RN, NurseNotes, Inc.

INDEPENDENT STUDY

This independent study has been developed for nurses to explore various roles of a nurse expert witness.

1.9 contact hours will be awarded for successful completion of this independent study.

The author and planning committee members have declared no conflict of interest. Disclaimer: Information in this study is intended for educational purposes only. It is not intended to provide legal and/or medical advice or to be a comprehensive compendium of evidence-based practice. For specific implementation information, please contact an appropriate professional, organization, legal source, or facility policy.

The Ohio Nurses Association (OBN-001-91) is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

OBJECTIVES

Upon completion of this independent study, the learner will be able to:

1. Define the role of consulting, factual and testifying nursing experts.
2. List the rewards of serving as an expert witness.

STUDY

So you want to be an expert witness?

Having served as a testifying expert for 20+ years, I can say that being an expert witness can be both rewarding and exhilarating at the same time. Many nurses are curious about serving as an expert witness. Sometimes nurses are asked by attorney acquaintances to review records for them. Or perhaps the nurse is asked for an opinion from an attorney acquaintance. There are a number of courses nurses may take and eventually become a "certified legal nurse consultant" if desired. However those programs do cost money and before the nurse makes such an investment, the nurse might like to explore the types of things expert witnesses do. That is the purpose of this independent study: to explore the various roles of a nurse expert witness. The reader may also want to complete the Ohio Nurses Association Independent Study titled "A Nursing Malpractice Primer." That particular independent study offers definitions of malpractice and legal terms that the budding expert witness will find helpful to know.

Types of Experts: There are several types of experts and you will want to understand the role of each of these experts. It is also imperative to clarify with a hiring attorney just what role you are being asked to fulfill. In some instances you may be asked to fill more than one role. The types of roles are:

The Consulting Expert: Consulting experts are just that-they *consult only*. Consulting experts do not provide expert testimony at deposition or trial. Consulting experts work behind the scenes of a legal case and any work they perform is considered "work product" of the hiring attorney and is therefore not necessarily disclosed to the opposing attorney. We will discuss the role of a consulting expert in further detail in a later section of this independent study.

The Factual Expert: A factual expert or fact witness as they are sometimes called, will give deposition and/or trial testimony. However, factual experts *do not render opinions*. Factual expert testimony serves to educate the judge and/or jury as to aspects of nursing care, the facts of the case, such as what happened to a patient, medical terminology and equipment utilized in rendering care to a patient. Often, a testifying expert will also serve as a factual witness and will educate the judge and jury. Nurses, doctors and others, who rendered care to the patient, may also serve as factual witnesses and give testimony as to what happened, when it happened and what they knew about the patient.

The Testifying Expert: The testifying expert is the nursing expert who *does render opinions* as to whether or not proper care was provided to a patient. Plaintiff's attorneys must present expert testimony in a medical malpractice case. This is because it is a burden of the plaintiffs to prove malpractice occurred. Defendants do not have to provide expert testimony and at times choose not to do so, particularly if the plaintiffs have failed to prove malpractice. We will discuss the role of the testifying expert in greater detail in a later section of this independent study.

Qualifications of Experts: What does it take to qualify to be an expert witness? It does *not* require any advanced degrees, or certifications. All that is required to serve as an expert witness is to be a licensed professional in the area in which he or she is testifying. By this we mean, if the nursing expert is a testifying expert, the nurse may only address nursing care. A testifying nursing expert may not render opinions as to what a physician did or did not do. Nurses may only testify as to what nurses do or do not do. Some states stipulate that a testifying expert must have current practice experience or be an instructor in credentialed programs such as a school of nursing or credentialed continuing education programs. This prevents an individual who has not practiced for a number of years from testifying, as his or her experience may not be up to date.

While *advanced degrees and specialty certifications* are always desirable, they are not necessary to become an expert witness. Having an advanced degree or specialty certification certainly adds credibility to the individual serving as an expert. A bachelors or masters degree sounds very impressive to a jury and the jury may lend more credence to the opinions rendered by an individual with advanced degrees versus the expert who does not have advanced degrees. A jury may be more impressed by the critical care nurse who is a CCRN versus the critical care nurse with no specialty certification. But again, advanced degrees or specialty certifications are not necessary in order to serve as an expert.

Most attorneys seek out expert witnesses who have a good solid base of *clinical experience*. Often the best expert is the professional who has been, and continues to be, in the trenches and knows what happens in everyday care. Furthermore, the testifying expert must have experience in the area in which he or she is testifying. A critical care nurse, who has never worked in labor and delivery, would not make a credible witness to testify as to what happens during a breech delivery. Similarly an obstetrical nurse, who has never worked with intra-aortic balloon pumps, would not make a credible expert for a case that took place in an ICU involving an intra-aortic balloon pump!

Another qualification imperative to being an *effective* expert is to possess *clear communication skills*. All the advanced degrees, specialty certifications and years of experience won't matter a bit if the expert is not capable of clearly articulating the facts of the case and one's opinions. Think about the patient teaching skills one possesses. Basically, as an expert, one is teaching the attorney, judge and/or jury about nursing. Thus utilizing one's patient teaching skills to teach the attorney, judge and jury is a valuable tool toward becoming an *effective* expert. Information and opinions must be presented in terms the judge and/or jury understands. Notice the use of the word effective. There are many professionals serving as experts, but not all of these individuals are effective, especially if they cannot express their opinions in terms that a judge or jury can understand.

To be or not to be a *Certified Legal Nurse Consultant*, that is the question. In recent years various institutions have offered educational programs and testing to become certified as a legal nurse consultant. Many of these programs are very good and very worthwhile to complete, as they will provide a basis of knowledge to the world of medical malpractice. However, becoming a certified legal nurse consultant is not a necessary requirement to work as a nursing expert. Your professional license and years of experience are the only items you need to qualify as an expert. Something to consider before undertaking a legal nurse consultant program is to think about what role you hope to fulfill as an expert. If you choose to work as a consulting nursing expert only, you may want to become a certified legal nurse consultant. Some law firms actually hire nurses on their staff due to the volume of medical cases they handle. Having a certification as a legal nurse consultant may give one an advantage in being hired by a law firm. Or having a certification may give one an advantage in marketing oneself as a consulting expert to various attorneys. However if one is planning to serve as a testifying expert, being certified as a legal nurse consultant may actually serve as a hindrance.

I have had attorneys tell me they will not hire testifying experts who are certified as legal nurse consultants as they do not want their experts to appear to be "hired guns." The opposing attorney may have a field day with the fact the testifying expert is a certified legal nurse consultant and may actually use it to discredit the expert as being nothing more than a hired gun or someone who is paid for their opinions. So before making the financial investment or investment of effort, give consideration as to whether or not one needs a certification as a legal nurse consultant.

Why serve as an Expert? As mentioned in the opening sentence of this independent study, being an expert witness is both exhilarating and rewarding. Attorneys need nurses to help them decipher medical records and make determinations as to whether medical malpractice occurred or not. Attorneys need, and in the case of plaintiff's attorneys, they are required to present expert witness testimony regarding evidence of medical malpractice. So there is certainly *plenty of opportunity* for nurses to serve as expert witnesses.

Serving as an expert witness provides a *learning experience* for the nurse expert. In any case I have reviewed over 20+ years, I have always learned something. Looking at the care rendered, or not rendered, by others has given me perspective regarding the care I render to patients. Reviewing medical records will result in improvements in one's *own documentation* skills. When one sees the documentation of others and how that documentation was used to either help or hurt the healthcare provider in a lawsuit, one can't help but glean some pointers for one's own use. In reviewing medical records one learns valuable clinical information, which one can put into use in one's own practice. Often in reading the deposition transcripts of other healthcare providers, one will learn valuable clinical information. Think about it, how much have you learned from other healthcare providers at work? Reading a deposition transcript is like having a conversation with that individual about the patient and one learns!

Reviewing medical records and being involved as an expert in lawsuits gives one a more *global view of healthcare* versus the singular arena of nursing. One learns to appreciate the overlap and contributions that all healthcare providers make in caring for patients. For example, let's say you are reviewing a fall case. You would want to see what medications and activity level the physician has prescribed. What medical diagnoses have been made regarding this patient? Would any of these diagnoses contribute to falling? Have any diagnostic tests been ordered and if so, what are the results?

For example, let's say a carotid doppler study was ordered. Was it done? What were the results? Let's say a physical therapist is treating this patient. You would want to know what physical therapy was undertaken with the patient. How was the patient doing in physical therapy? From a nursing perspective, you would want to know about the patient's gait and stability when getting out of bed. Is this a patient who has been utilizing the call light and asking for assistance appropriately? Or is this a patient who is independent in spite of requests/instructions from the nursing staff to ask for help? You would want to possibly review nursing notes and perhaps patient teaching records for this information. You would want to take into account the patient's vital signs, especially blood pressure and heart rate. You would need to consider medications that might affect blood pressure or heart rate. Does this patient have a dysrhythmia? Is this patient dehydrated? You may need to consider the laboratory results to check for dehydration. While you are looking at the laboratory results, you may also want to check the hemoglobin and hematocrit levels for a possible anemia. What is the nutritional status of this patient? What type of diet is this patient receiving? Is the patient actually consuming the foods? Just in this brief paragraph, look at the various arenas we considered. We took into consideration everything from medical diagnoses and medications, to vital signs, lab results, nutrition, patient compliance and physical abilities just to figure out how this patient happened to fall.

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Serving as an expert witness gives one the opportunity to *define nursing practice* and *educate the public* about what nurses do and do not do. Whether you are putting together a report, summarizing your opinions regarding a case or presenting those opinions to a jury, you will need to develop a clear definition of nursing care and practice. Remember you are educating the attorney and/or jury. You will need to be succinct, yet use terms an attorney and/or jury can understand. Medical terminology and jargon that is second nature to us is a foreign language to a jury. Terms will have to be defined. In order to define and succinctly describe nursing care, one will give great thought. The end result is that, besides educating an attorney or jury, one will develop a clearer definition of one's own nursing practice.

Serving as an expert witness can be very *financially rewarding*. While you are not being paid for your professional opinions, you will need to charge for your professional time spent reviewing records or rendering expert testimony. Generally experts may charge anywhere from $50 to $100 per hour for record review, compilation of opinions and report preparation.

For testifying either in deposition or trial, generally testifying experts will charge $100 to $150 per hour. Generally those fees are charged "door to door," meaning that time is charged from the time the expert leaves their home or office to the time he or she returns to home or office. Some testifying experts charge the higher fee for only the time they are actually in deposition or trial. They then charge a lower rate for travel time, plus mileage expenses. It is up to the expert to devise a schedule of fees for the services he or she will be providing. It is also imperative that the expert submits invoices for services provided and the attorney is expected to remit payment.

In most states it is not legal for an expert to be paid based on the outcome of a case. An expert cannot be paid a percentage of the money awarded to a plaintiff. Both of these scenarios would be deemed to be a conflict of interest and have the appearance that the expert was paid based on his or her opinion versus paid for professional time. Therefore, one will want to submit invoices to the hiring attorney at regular intervals such as when the initial chart review is completed, then after deposition transcripts are reviewed, etc. Whenever one completes an amount of services, one should consider submitting an invoice.

The Role of the Consulting Expert

Remember a *purely* consulting expert *does not* provide testimony. Some experts provide both consultation and testimony. Be sure to discuss your role and expectations with the hiring attorney. If you are not willing to provide expert testimony, be sure the hiring attorney knows this *before* you begin any work. An attorney client contacted me and told me that he had hired a well-qualified nurse to review a very short Emergency Department case involving a patient who experienced a ruptured gall bladder that went undiagnosed. He told me the nurse expert reviewed the records, wrote a report that was three times thicker than the original medical records (that he had not requested) and sent him a big bill for all of this. He was taken aback by this, but thought perhaps he had been unclear and he paid her bill. Then it came time to take the nurse's deposition, she stated she did not provide testimony. The attorney was stunned! Here he had spent a lot of money to pay this nurse for her time and a report he did not want, thinking she was also willing to testify. So while expert witnesses make distinctions as to the role they are fulfilling, be sure the hiring attorney knows what you are willing to do or not do. This was a costly lesson learned by this attorney, as now he needed a testifying expert, which is why he was contacting me. He then paid me for my time to review records, compile my opinions, complete phone consultations and ultimately provide expert testimony at a deposition. You can be sure this attorney never hired the first nurse again.

Next we will discuss some of the major services provided by a consulting expert. How many of these services one provides are generally defined by the consulting expert. If the consulting expert is working independently, and charging $90 per hour, the attorney may most likely limit the services purchased. However if the consulting expert is on the staff of the law firm and is being paid $30 or $35 per hour, the attorney may ask more of the staff expert. Whether you are on staff at a law firm, or working as an independent consulting expert, you will want to keep track of the time you spend on a case. This time will be used to re-coup costs from a settlement if you are on staff at a law firm, or the time you track as an independent expert will be used to prepare your invoice for the hiring attorney.

Interview prospective clients: If one is working for a plaintiff's attorney, either on staff or as an independent contractor, you may be asked to speak directly with a potential client. Let's say a patient and his wife come into the attorney's office to discuss a potential lawsuit. While many attorneys interview clients directly, the attorney may choose to have a consulting nurse expert either sit in on or directly discuss the medical care, medical history and concerns the patient and wife have. The consulting nurse expert may also have the patient sign releases so that medical records may be obtained for further review. The consulting nurse expert would want to obtain a list of all treating physicians, all medical diagnoses, all medications taken, as well as past history of surgeries.

Record organization and review: Once pertinent medical records are obtained, they will need to be organized and reviewed. Be sure to ask the attorney if there is a deadline for completing the review. Some attorneys are up against filing deadlines and you will need to know this, as you may not be able to meet the deadline and the attorney will need to seek another expert. Even though many facilities have converted to an electronic medical record, when copies of the record are ordered and sent, they will be in paper format. The day will probably come when copies of the records could be electronically transmitted, but we aren't there yet. Some records arrive in a very organized manner, others not so. In my practice as an expert, I have spent hours organizing records, just so I knew what I had and could then review them. An attorney client once gave me a huge box of records to organize because he "couldn't tell what was going on" with his client's care. It was almost as if someone had taken the records and shuffled them like a deck of cards. No wonder he couldn't decipher the records. Having a large space such as a living room floor to organize piles of paper came in pretty handy! Plus once the records were organized, it became very clear much of the pertinent medical records were actually missing and had to be re-requested.

In further organizing records, some attorneys like to have page numbers added to each page of the records. One may write the page numbers directly on the records, or use a page stamp device. Some attorneys like to have the records 3 hole punched and placed in loose-leaf binders. There are special medical tab dividers that indicate physician orders, notes, nursing notes, lab results, etc. that can be placed in the records. When dealing with a volume of medical records, the more they can be organized eases finding pertinent facts. Each binder may be labeled as to health care facility or provider and dates. There is also a variety of folders, pockets, binder clips, or prong clips that may be used to organize records, all varying in costs as well.

Again, before spending a huge amount of money at the office supply store; be sure to discuss with the attorney how he or she would like the records organized. Some attorneys like to use a "Post-it" type note to index medical records with either binder clips or rubber bands securing the pile of records. This method is low cost and low tech and works just as well as having 3 ring binders with medical index tabs. If working as an independent consulting expert, generally you won't find yourself doing a lot of organizing, especially if you are charging $90 per hour. Generally the attorney will pay a paralegal or secretary to organize the records and they will come to you already labeled and organized.

Once organized, the records will then need to be reviewed. *Do not* write or use any kind of highlighter on the records, unless it is an extra copy. The consulting expert may want to make notes or use a "Post-it" type note to flag pertinent entries in the records. Carefully read through the records, focusing on pertinent portions of the records as they apply to the case at hand. Be judicious with your time. By this I mean, if the case involves a medication error, you probably should not be spending hours reviewing physical therapy notes or reams of laboratory results, unless they directly pertain to the case. You will probably spend more time reviewing the physician orders; medication administration records and follow up care after the medication error was detected.

As you review the records, you can be creative. Depending on the case, you may find it helpful to make notes regarding each section of the records. Or it may be helpful to put together a chronology of events, having gathered the information from a variety of sources in the medical records. If vital signs are an issue, one may devise a flow sheet to show changes in vital signs as they relate to various treatment modes rendered to the patient. Some cases are very straightforward and the consulting expert will find she or he makes just a few notes of pertinent times, dates and entries. I have reviewed records that were a foot high and ended up with a very few pages of notes. On the other hand I have reviewed very thin charts, but due to the minute by minute detail needed devised quite elaborate flow sheets. Each case is different. The consulting expert needs to consider the best manner to illustrate key points of the case that will be used to educate the attorney, judge and/or jury.

Besides reviewing medical records, you may be asked to review deposition transcripts. The deposition transcripts may arrive with the medical records, or they may arrive at a later date after the depositions have been taken. You will need to carefully read the transcripts and correlate statements from the depositions with the medical records. This is where having notes from the initial medical record review and having well organized records pays off. Besides reading deposition testimony of nurses and doctors involved in the patient's care, you may also be asked to review the deposition testimony of the patient and/or significant others.

Research: This is again dependent on the type of case one is reviewing. If the patient has a diagnosis that is very unusual, one will have to do some research. But again, be judicious with your time. If you are an independent consultant, you were hired because of your expertise and an attorney would reasonably expect not to have to pay for hours of research. In many of the cases I have reviewed the most research I found myself doing was to look up some medications because I was unfamiliar with generic names being used. However in one case, the attorneys wanted brain injury facilities researched and visited. I spent many hours researching facilities and actually visited a number of these facilities at the request of the attorneys. So not only was I paid for my time I was also reimbursed for my travel expenses. Keep open lines of communication with your attorney clients as to the amount of research needed and be prepared to give an estimated cost for the research. You don't want to find yourself having put in hours of research only to find the attorney did not want it or would have had a paralegal or legal assistant complete the research.

Formulating opinions: Once the records have been reviewed you will need to formulate your opinions. In giving your opinions, generally it is helpful to list your opinions and site examples or supporting information obtained from the medical records. Let's look at the following example:

Opinions: The nurses failed to recognize a postoperative paralytic ileus.

- The nurses failed to follow the physician's order, written 5/14 at 10 AM, that read "Advance diet as tolerated."
- The nurses failed to inform the physician of the persistent vomiting.

The Nursing Flow sheets show the following:
5/14: Full liquid diet
5/15: Soft diet
5/15: Regular diet

The Nurse's Notes reveal the following:

5/14, 8 AM: Pt. had large emesis of liquid
10:15 AM: Pt had emesis of approximately 50 mL, clear liquid
3 PM: Pt had emesis of 200 mL

5/15, 9 AM: Pt had emesis of approximately 300 mL, semi liquid
12:20 PM: Emesis, approx. 200 mL
6:30 PM: Vomited dinner after consuming it.

5/16, 9:25 AM: Large emesis, undigested food, approx. 400 mL
1 PM: Large emesis, semi-liquid, approx. 350 mL.
4 PM: Patient had experienced a large emesis. Stopped breathing. Code called. 500 mL was suctioned out of her throat for intubation. NG inserted,obtained 1500 mL.

Discussion with attorney: Patients should not be vomiting postoperatively for 3 days. A common postoperative complication, of which nurses are aware, is paralytic ileus. Paralytic ileus can cause persistent vomiting postoperatively. The persistent vomiting needed to be brought to the attention of the physician. Furthermore, the physician's order read "Advance diet as tolerated." This patient was not tolerating the diet, as she persisted in vomiting, therefore the diet should not have been advanced. Rather, the patient should have been made NPO (given nothing by mouth) and the physician needed to be informed. The persistent vomiting due to the paralytic ileus was contributing factor to the aspiration of gastric contents, subsequent airway occlusion and respiratory arrest. The occluded airway and respiratory arrest caused this patient to sustain a hypoxic brain injury.

You want to avoid scathing remarks such as "Oh my gosh, I've never seen such sloppy nursing care. These people don't know what they are doing!" Keep your remarks to the point, professional and substantiated with information from the records and depositions you have reviewed. Use your education and clinical knowledge to substantiate remarks and opinions.

You also want to avoid applying your *personal standards* to a situation. You need to bear in mind a standard of care is the *minimum* that is required. For example let's look at this example: A nurse phones a physician to give an update regarding a patient's condition. The patient was having some breathing problems. You may have placed more emphasis on the patient's condition if it were you making that call to the physician. Your opinion is that the nurse should have been more "emphatic" in describing the patient's condition. *Emphatic is your opinion.* However it is not the national standard. The national standard is that nurses are required to notify physicians of pertinent changes in patients' conditions. In this case, the nurse did in fact notify the physician. Therefore, the nurse did meet the standard of care.

If you find you are reviewing a case for a defense attorney, besides the medical records and depositions, you will generally receive a copy of the complaint that has been filed by the plaintiff attorney. Remember that it is a burden of the plaintiffs to prove malpractice. Therefore, the defense only needs to address the issues raised in the complaint. You will want to read the complaint, paying particular attention to the "Counts." The Counts will list the specific issues plaintiff's have in regard to the nursing care. Generally in giving my opinions to a defense attorney, I organize them according to the counts. I then give my opinions, again substantiated by the medical records. Let's look at the following example:

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The Counts allege the nurses failed to notify the physician of the patient's persistent pain, in spite of having given more and more pain medications.

The Nurses Notes reveal:

4 PM: Patient had received Tylenol gr. X at 3 PM. Pain was not relieved. Patient was given Demerol 50 mg and Vistaril 25 mg IM.

5 PM: Patient still complains of pain. Physician was notified. Order for Dilaudid 2 mg obtained. Dilaudid 2 mg given IM.

6 PM: Patient is still complaining of pain. Physician was notified. No orders received. Nursing supervisor was updated regarding patient's condition.

7 PM: Patient continues to complain of pain. Physician notified and given update as to medications administered to patient and complaints of pain. No orders received. Notified nursing supervisor of patient's condition. Contacted the Emergency Department physician.

7: 15 PM: Dr. ER in to see patient. Ordered abdominal CT scan. Patient found to have intra-abdominal bleed. Dr. ER consulted with patient's physician. Patient was taken to surgery.

Discussion with attorney: While the counts allege the nurses failed to inform the physician of the patient's persistent pain, there are 3 contacts made with the patient's physician by the nursing staff (at 4, 5 and 6 PM). Therefore the nurses did inform the physician.

Furthermore, when the patient's physician did not give any additional orders at 6 PM and again at 7 PM, the nurse properly notified the nursing supervisor. Ultimately the nursing staff contacted the ER physician at 7 PM in order to procure a physician for this patient. Therefore, it is my opinion, the nurses acted properly in this case.

In formulating opinions, one may find the following list of questions helpful. As one reviews a case, keep these questions in mind:

- What should have occurred with this patient versus what actually happened?
- How did the patient's course of admission differ from other similar patients with whom you have had experience?
- What was the patient like prior to the incident?
- Did the healthcare professionals act appropriately prior to the incident?
- Did the healthcare professionals do everything they could to prevent the incident?
- What did the healthcare professionals do to meet standards of care?
- What should the healthcare professionals have done to meet standards of care?
- What aspects of care were not within the standards of care?
- What standards of care are missing? (What should have happened for this patient?)
- Did healthcare professionals respond appropriately to the incident when it occurred?
- Did healthcare professionals respond appropriately after the incident occurred?
- Who was involved or should have been involved in the patient's care?
- Are there any portions of the medical records that are missing? Do you need additional information? (If so, you will need to request the hiring attorney supply/procure additional records.)
- Are there any portions of the medical records that appear to have been altered or falsified? (You will want to bring that to the attention of the hiring attorney.)

In concluding your opinions, you need to also bring to the attorney's attention any other details you have found. For example, you might be questioning what a physician did or did not do. You may couch your comment in terms of what you have customarily seen physician's do. You might say something like: "When I've encountered patients with breathing difficulties, I have seen physicians order pulse oximetry, a chest x-ray and breathing treatments. In this case the physician did none of those things. You may want to ask your physician experts to comment on this." As a non-testifying expert, this is one of the roles the hiring attorney expects of you. As a testifying expert, while you cannot testify as to the standard of medical care, you can pass along your insights during consultation with the hiring attorney.

Written reports: Prior to writing any reports, I again stress the importance of discussing with the hiring attorney what if anything does he or she want in report form. You definitely want to avoid spending hours writing a very detailed report that the attorney did not request. You may find your invoice for this unwanted report will not be honored. If you are working as a purely consulting expert, the attorney will have you label the report as "work product." Work product reports are generally not shared with the opposing side.

However, if you are working as a testifying expert, any written reports that you may rely upon in expressing your opinions will be shared with the opposition. For this reason, generally most attorneys will not request reports from testifying experts. Or if they do request a report from a testifying expert, it may consist of a simple listing of your opinions only, without the substantiating information you found in the medical records. If the attorney does want a report, discuss the details of the report. Does the attorney want a lot of detail, with everything you discussed with him or her? Does the attorney want a flow sheet of pertinent details? Does the attorney want a chronology of events? You might make suggestions. Perhaps you developed a flow sheet to help you understand the facts of the case. Perhaps the attorney would also find this helpful, even as he works with other experts or takes the depositions of healthcare staff. If the attorney requests a copy of your flow sheet, you may then provide it and invoice for it. But provide only what the attorney requests.

Identify needed testifying experts and witnesses: Another role the consulting expert plays is to suggest possible needed experts. In discussing a case with an attorney client, he thought he needed a urologist to look at the case. What he needed was a nephrologist. The patient didn't have any problems with the ureters, bladder or urethra, but had kidney disease. Thus a nephrologist was needed. I was able to recommend a nephrologist that I knew who also worked as a testifying expert. In reviewing a case, think about what types of physicians saw the patient, or should have seen the patient. Make a list of these healthcare professionals. Based on this list, the attorney may want to hire additional experts to review and/or provide testimony regarding the case. Also consider ancillary professionals such as respiratory therapists, physical therapists, occupational therapists, counselors, social workers, dieticians, and pharmacists. Were they involved with the patient's care? What was their role? Does the attorney need to consider contacting one of these specialty professionals for consultation and/or testimony?

In thinking about other witnesses, one may want to consider the following. Who else had contact with the patient? In some cases, I have seen attorneys take the depositions of housekeepers, because they had had contact with the patient at or around the time of the incident under question. Did the patient have a roommate? If so, the deposition of that individual may be taken. When were family members or friends visiting the patient? What did these individuals know about the incident under question?

There was a case I reviewed where every evening a patient, who was a drug addict, would go into status epilepticus. It would take quite a lot of anticonvulsants to get the seizures to cease. The patient did end up expiring when ultimately seizures could not be stopped. The family then decided to file suit against the doctors, nurses and hospital. Upon investigating the case, it was noted in the nurses' notes that there was always a "friend by the name of Joe" who visited every day at dinnertime. Joe's name was obtained from the family members and Joe's deposition was taken. In his deposition Joe revealed that he knew the patient was a drug addict and he "didn't want him to go through withdrawal." Thus Joe was bringing IV narcotics into the hospital, and using the established IV line to push narcotics. Then he would use either the sharps container available in the room to dispose of the needle and syringe, or simply take it home with him, leaving no visible evidence in the room of having done this. Upon learning this, the case against the hospital, doctors and nurses was dismissed. So give consideration to all persons who had or might have had contact with the patient. You never know just what one of those individuals may reveal!

Help attorneys prepare for and conduct depositions and/or trials: As a consulting expert, you may be asked to help in the *preparation of questions* prior to depositions being taken. Generally questions focus on what a person knew, what actions were taken, if any, and follow up in regard to the patient's condition. You may be asked to assist with trial preparation, giving input into the sequence of witnesses, questions and exhibits. You may be asked to be present at the trial to assist the attorney by keeping exhibits in order and handing them to the attorney when needed. Should

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the attorney need to suddenly use a page from the medical record that had not been a planned exhibit, you may be the person who can find the page the quickest-particularly if you have well organized records. As a trial proceeds, additional questions may occur to you. Those additional questions may be discussed with the attorney at an appropriate break, or may be written on a page of paper so the attorney may read it while court is in session.

If *attending a deposition or trial,* you will need to dress professionally and conduct yourself in a professional manner. This means no rolling of one's' eyes or gasping at comments made during the deposition. (Amazingly I have seen this happen!) Avoid joking with individuals and becoming too friendly with other individuals in the room. Be sure you know who each individual is that is present. You would not want to inadvertently slip and say something to someone from the opposing side. It's best to keep any casual conversation limited to traffic or the weather. Be cordial, but not overly friendly. Depositions are generally taken in an attorney's office. If the hiring attorney is hosting the deposition at his or her office, be sure individuals are comfortable. Do they need water or coffee? Do they need to use a restroom? Do they need to hang up a coat? If attending a deposition at another attorney's office, they should extend these comforts to you as well. Besides the deponent (the person whose deposition is going to be taken), attorneys representing all parties and a court reporter will be present. In some cases the patient or family member may be present as well. Once the deposition begins, anything anyone says will be on the record. Therefore you will need to not make comments during the deposition. If you need to communicate to the hiring attorney, you may ask to a brief break to discuss any issues.

Trial exhibits are those items the jury will see. Give careful consideration to what items will be needed at trial. Generally trial exhibits are kept to a minimum so as to not "bore" the jury. For example, you are preparing for a medication error trial. You would not want to show the jury pages and pages of medication administration records or physician order pages. But selecting one or two pages to illustrate the error, then have a testifying expert state how many times the error occurred would probably be sufficient. In displaying the medication administration records a variety of tools may be used. In some cases, having the page greatly enlarged and mounted on a foam-core board is very effective. The attorney or testifying expert, at trial, may take a highlighter and highlight the error for the jury. The foam-core board can be placed on an easel and displayed for the jury during expert testimony. Enlarged photos, room schematics or diagrams of patient rooms, overhead projectors, PowerPoint ™ with a LCD projector, and videotapes are also commonly used. Sometimes even equipment is brought into the court room. I have worked with attorneys who used tracheotomy tubes and specialty flotation beds in the courtroom. Having the equipment present really can make an impact on a jury when they get to see the actual equipment and how it is used.

There may be other roles the consulting nurse expert will be asked to fulfill. Each case is different and attorneys have different approaches to cases. Hopefully this has given the reader at least an introduction to the more commonly requested services a consulting expert can supply.

The Role of the Testifying Expert

Remember the role of the testifying expert is to give testimony and render opinions at depositions and trials. Testifying experts are in great demand as attorneys often have difficulty finding healthcare professionals who are willing to render opinions at trial or depositions. Some attorneys find testifying experts, but then they are less than pleased with the expert. Perhaps the testifying expert did not present well at a deposition or trial. Some experts might come across as braggarts or "loose cannons," making them unreliable. Because so much is at stake in a lawsuit, the attorney seeks the most reliable, well credentialed, testifying expert he or she can find. They look for someone who can relate to a jury and clearly express his or her opinions in a manner that the jury can understand. Generally testifying experts can charge more for their time versus the purely consulting expert. Testifying nursing experts may charge in the range of $100 to $150+ per hour. Let's look at some things testifying experts do.

Record review, research, formulating opinions, and written reports: In order to develop opinions and get to a point of testifying, testifying experts have to complete much of the same work as a consulting expert. Therefore testifying experts need to review records and deposition testimony, conduct any research necessary and formulate their opinions, just as we have previously discussed. Seldom will a testifying expert be asked to write a report. Remember a consulting expert's reports can be classified as attorney work product and is not produced for the opposition. However anything a testifying expert puts into writing is given to the opposition. On the rare occasion an attorney does request a report from a testifying expert, the testifying expert should discuss exactly what is to be contained in the report. As a testifying expert, I have authored reports, but they were very short. Often the reports were a simple list of my opinions without the substantiating information from the medical records. In some very complex cases where I had devised a flow sheet of pertinent details, I was asked to provide those to the attorney. Since I was going to utilize the same flow sheet at deposition, the opposing attorney was given a copy of the flow sheets then. Most often no report was requested of me.

Just a note about notes. In the process of reviewing a record, the expert may make notes. In the process of making those notes, one may include some detail of interest, that later turns out not to be significant. Therefore notes may tend to become quite messy as one sifts out the significant details of a case. It is a good idea to re- copy notes, omitting any extraneous jottings made in the first set of notes. When it comes time to give a deposition, the opposing counsel will request to see any notes the testifying expert made. You would not want to take notes into a deposition that contained large question marks, doodles in the margin, items that have been underlined or have exclamation marks, as you would find yourself having to explain all of those marks and remarks. However taking in a clean set of notes, listing of opinions, created flow sheets, etc. is totally appropriate.

Giving deposition testimony: Deposition testimony generally is given prior to reaching a trial situation. Often cases settle out of court, based on the opinions expressed by testifying experts. When asked to render deposition testimony, the testifying expert will be contacted for available dates. Once both sides agree upon a date, the testifying expert will receive a deposition notice. The notice will give the date, time and location for the deposition. The notice will also list everything the testifying expert is to bring to the deposition. Typically the testifying expert is asked to bring a current curriculum vita or resume, all records and deposition transcripts that have been reviewed, and any reports or notes.

On the day of the deposition, generally the testifying expert arrives an hour earlier than the scheduled deposition time. By arriving early, it allows time to meet with the hiring attorney to review your anticipated testimony. Also the attorney may give the testifying expert some tips as to handling various types of questions or tricks the opposing attorney likes to use. You will want to dress professionally, but comfortably. Depositions may last 1 to 5 hours, with the average being 2 to 3 hours. Besides the hiring attorney, attorneys representing any other party to the lawsuit and the court reporter will be present. You will be introduced to all present and if not, you should ask or introduce yourself to each person present. As stated before, you want to be professional in your behaviors, cordial, but not overly friendly. It is best not to engage in conversation beyond the weather. If you need a glass of water or coffee, etc. be sure to ask for these.

To begin the deposition the court reporter will ask you to raise your right hand and swear to tell the truth, the whole truth and nothing but the truth. You will then be asked to state your name for the record. The opposing attorney will review some ground rules for giving answers.

Deposition rules include the following:

- All answers must be verbal, nods of the head cannot be recorded
- Avoid uh-huhs and uh-uhs, as those may be confused
- If you do not understand a question, say so, so it can be rephrased
- Answer only when the attorney has finished asking the question
- Speak only when others are not speaking
- Speak in a slow, deliberate, clear manner.

The opposing attorney will then review your curriculum vita (CV) and may question you about your education and experience. Feel free to refer to your CV, as this is not a test. The attorney may ask when you were first contacted regarding the case and what you were asked to do. Next he or she will ask you what records you reviewed. You will have these piled on the table in front of you. Simply go through the pile, identifying each item. You might say something like: "I reviewed the medical records for the admission to St. Elmo's Hospital for March 15, 2011 through April 1, 2011; the doctor's office records of Dr. Teddy Behr for January, 2002 through April, 2011; the deposition transcripts of Mary Smith, RN, Teddy Behr, MD, and Milly Tilly, the patient." The opposing attorney may ask to see the records you have reviewed. He or she may flip through them looking to see if you made any notes directly on the records. Next he or she will ask if you have formulated opinions as to the care the patient received.

You will then be asked about your opinions. Each attorney seems to have a different approach to taking depositions. In some cases the attorney will ask you to list your opinions, and then will go back to each opinion individually to ask you for more details. If you brought notes or a report, you will be able to refer to these during the deposition. Some attorneys will explore one opinion at a time, then move on to the next opinion. Just carefully listen to each question and answer. Take your time and if you need to refer to any of the medical records, be sure to do so. The deposition is not a test of your memory.

You will want pause before answering questions to allow time for any of the other attorneys present to make an objection if necessary. Periodically look at the court reporter. Generally he or she will give you a nod to let you know you are speaking at a good pace. If you are speaking too quickly, the court reporter may ask you to slow down a bit. If you use words that you think may be confusing or easily misspelled, spell the words for the court reporter, on the record. If you need to take a break during the deposition, you may do so. Do not be uncomfortable. Answer the question you were asked and do not offer additional information. Let the attorneys ask questions. Every attorney present will have an opportunity to ask you questions.

Some common tricks and tactics used by attorneys in depositions are:

Silence: Be comfortable with silence. This is often a tactic used to get a person to say more than he or she should say. Finish your answer and wait for the next question.

Interrupting you: The attorney may attempt to interrupt you before you have completed your answer. Should this happen, you should state you had not completed your answer, and finish your answer before proceeding on to the next question.

Attempts to rattle you: This may include seeing the attorney roll his or her eyes or respond in an incredulous manner such as saying "Oh really, are you sure about that?" The attorney may try to invade your personal space by leaning forward, raising his or her voice, and/or show great disbelief in your answers. Recognize these tactics for what they are and remain as calm as possible. Calmly continue to answer questions, eventually the attorney will give up on these tactics. However, don't be lulled into thinking he or she has calmed down, the attorney may try to use these same tactics later on in the deposition.

For the remainder of this independent study, please refer to CE4Nurses.org and click on Ohio Nurse Independent Studies.

Radon: A Public Health Risk

Developed by Donna Jurden,
Ohio Department of Health

INDEPENDENT STUDY

This independent study has been developed to enhance knowledge about the issues surrounding radon.

1.0 contact hour will be awarded for successful completion of this independent study.

The author and planning committee members have declared no conflict of interest. Disclaimer: Information in this study is intended for educational purposes only. It is not intended to provide legal and/or medical advice or to be a comprehensive compendium of evidence-based practice. For specific implementation information, please contact an appropriate professional, organization, legal source, or facility policy.

The Ohio Nurses Association (OBN-001-91) is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

OBJECTIVES

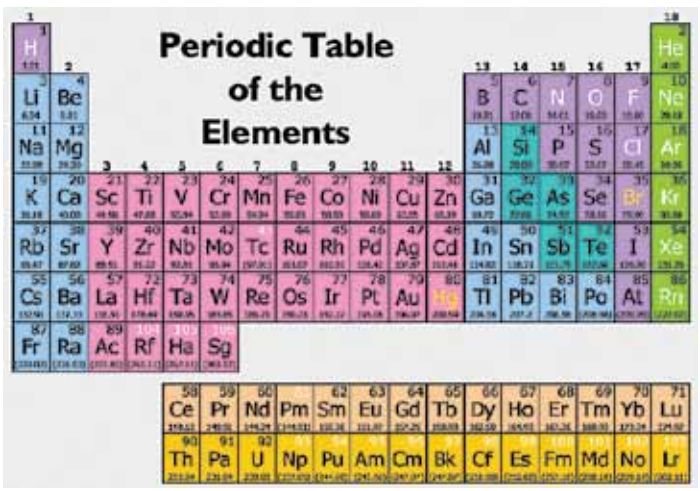
1. Discuss the impact of radon on the public health.

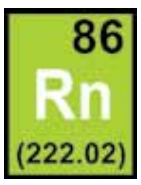
Introduction

The U.S. Surgeon General issued a health advisory in January, 2005 stating that exposure to elevated levels of indoor radon causes lung cancer and recommended that every home in the United States be tested. The World Health Organization (WHO) published, "WHO Handbook on Indoor Radon" in 2009 which also states that exposure to elevated levels of indoor radon causes lung cancer and recommends that homes be tested. The American Cancer Society and the American Lung Association both list exposure to elevated levels of radon as a risk factor for lung cancer. So, what is radon and how does it cause lung cancer?

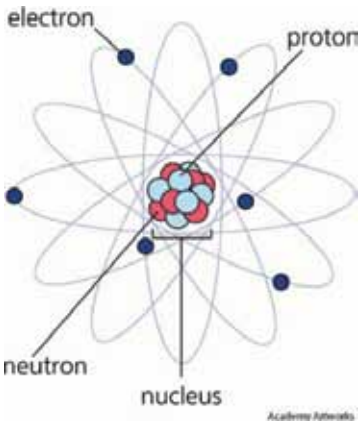
What is Radon?

Radon is a radioactive gas. It is one of the six noble gases on the periodic table of elements. It is colorless, odorless and tasteless and is classified as a human carcinogen.





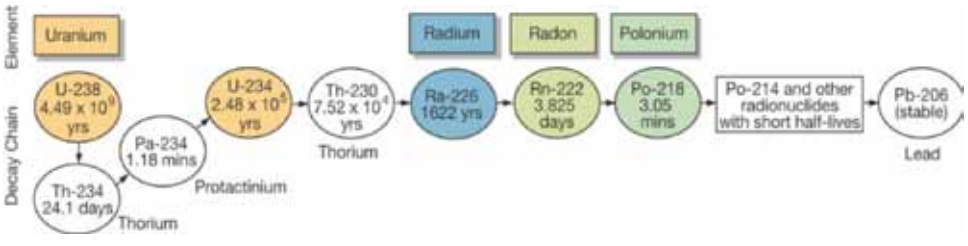
In order to better understand what radon is and how radon can cause lung cancer, you first need to understand what an atom is and what the numbers on the periodic table represents. Elements on the periodic table are made up of atoms. Atoms consist of a dense nucleus which contains neutrons and protons surrounded by electrons. Each element has an atomic number which represents the number of protons and neutrons for that element. Radon has an atomic number of 86 which means radon has 86 protons and 86 electrons.



Radon gas is produced when uranium undergoes decay. Decay or loss of energy is the process by which an unstable atom loses energy by emitting particles and transforming into a different element with a different atomic number. The particles that are emitted are either alpha particles, beta particles or gamma rays. The emission of these particles produces radiation. The decay of radon produces alpha particles.

Alpha particles consist of two protons and two neutrons. Alpha particles are heavy but very energetic. They only travel short distances but will have many interactions. Alpha particles can be stopped by a sheet a paper. Even though alpha particles do not travel very far, they are considered to be the most dangerous when they enter the body.

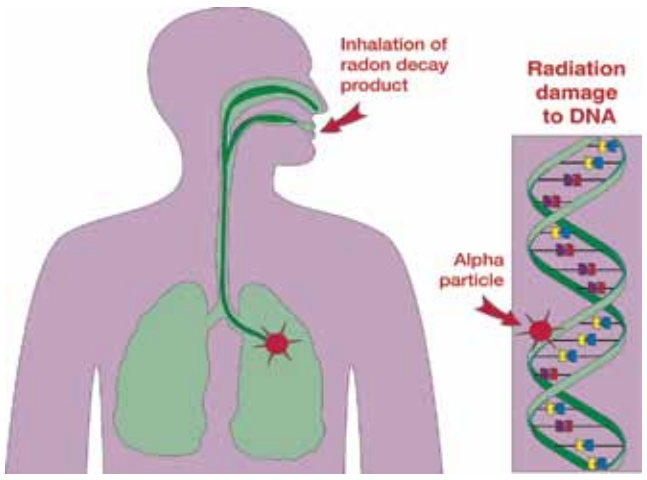
Radioactive elements like uranium and radon have what is called a "half-life". Half-life is defined as the amount of time required for a radioactive material to be reduced to half of its original value or strength. Uranium which occurs naturally and is found in soil, rocks and water has a half-life of 4.47 billion years. As uranium decays it eventually becomes radium which also undergoes decay and eventually becomes radon. Radon continues to decay and eventually becomes a stable form of lead. Radium has a half-life of 1,622 years and radon's half-life is 3.8 days.



(4.49x109 = 4.5 billion)

Radon is measured in picocuries per liter of air (pCi/l). Pico is one-one trillionth or 10-12 and curies is a unit of measurement for radioactivity. The U.S. EPA estimates the average U.S. outdoor concentration of radon is 0.5pCi/l and the average indoor concentration is 1.3pCi/l. Radon concentrations are always given as an average due to the fluctuation of radon levels. Radon like other gases is never at a consistent level. The levels increase and decrease constantly. Overall, radon averages also fluctuate from season to season. Radon levels are usually higher in the winter months and lower in the summer months. The reason for higher levels in the winter is due to the use of furnaces. It has also been determined through research conducted by the U.S. EPA that homes that are "energy-efficient" or "tight" tend to have higher radon levels.

How Radon Causes Lung Cancer



Alpha particles are known to cause chromosomal damage to the tissue that lines the lungs. The chromosomal damage caused by alpha radiation is on average 20 times greater than that of beta or gamma radiation. Specifically, the alpha particle breaks both of the DNA strands. This genetic change to the cell can lead to cancer. It is believed that cancer starts from the malignant transformation of one cell therefore one bronchial epithelial cell that has had genetic damage can initiate lung cancer.

An individual breathes in air that contains radon. The radon particles adhere to the lining of the lung where it continues to decay. The decay is loss of energy and in this instance it is in the form of alpha radiation. The alpha radiation causes a double strand break in the DNA of the cell. The cell which has genetic damage initiates lung cancer.

The higher the indoor radon levels individuals are exposed to the more particles that they will breathe in and cause more damage to the cells lining the lungs which can eventually become cancer. The deposit of radon particles in the lungs also depends on other factors such as respiratory rate and lung volume. Typically, it takes several years of exposure before the cancer will be detected. It could take up to 20-30 years of exposure, especially at the lower levels of exposure for lung cancer to develop.

The U.S. EPA has estimated that between 21,000 to 25,000 individuals die every year from lung cancer caused by exposure to indoor radon. The estimated number of Ohioans that die every year from lung cancer caused by exposure to radon is 1200. It has been suggested that 8% to 15% of lung cancer risk is due to radon exposure. This rate could be even higher in non-smokers. Also, a smoker living in a home with elevated levels of indoor radon has as much as a 16 times greater risk of developing lung cancer.

Radon Risk If You've Never Smoked

Radon Level	If 1,000 never smokers were exposed to this level over a lifetime*…	The risk of cancer from radon exposure compares to**...	WHAT TO DO:
20pCi/L	About 36 people could get lung cancer	35 times the risk of drowning	**Fix your home**
10pCi/L	About 18 people could get lung cancer	20 times the risk of dying in a home fire	**Fix your home**
8 pCi/L	About 15 people could get lung cancer	4 times the risk of dying in a fall	**Fix your home**
4 pCi/L	About 7 people could get lung cancer	The risk of dying in a car crash	**Fix your home**

*Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003)
** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports

Radon Risk If You Smoke

Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime*...	The risk of cancer from radon exposure compares to**...	WHAT TO DO: Stop smoking and...
20pCi/L	About 260 people could get lung cancer	250 times the risk of drowning	**Fix your home**
10pCi/L	About 150 people could get lung cancer	200 times the risk of dying in a home fire	**Fix your home**
8 pCi/L	About 120 people could get lung cancer	30 times the risk of dying in a fall	**Fix your home**
4 pCi/L	About 62 people could get lung cancer	5 times the risk of dying in a car crash	**Fix your home**

*Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003)
** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports

How Radon Enters a Home

The most common way radon enters a home is through cracks and openings in the foundation of the home. Openings would include the space between the foundation floor and wall, the space around pipes that penetrate the foundation and sump pumps.

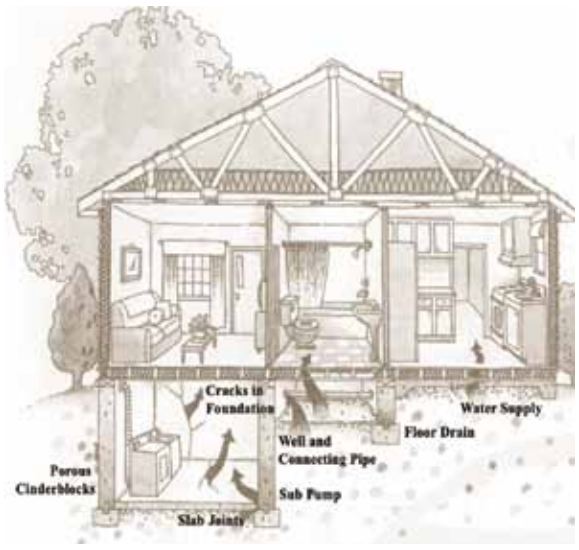
Cracks in the foundation occur over time as the home "settles". As these cracks get bigger or deeper they allow more radon to migrate into the home. Radon can migrate through concrete that isn't cracked if the radon concentration below the slab is high.

Radon Levels in Homes

Radon levels in homes fluctuate constantly. This fluctuation is mainly due to the natural characteristic of a gas but other factors can influence radon levels in homes. Homes create

Radon continued on page 14

Radon continued from page 13

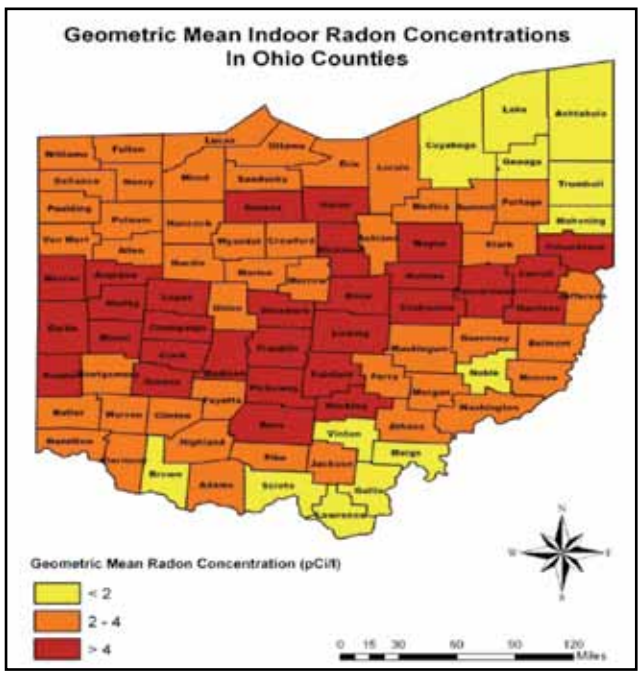


vacuums that draw in or "suck" in radon. These vacuums are referred to as air pressure differentials. Significant differences in the air pressure inside the home compared to air pressure outside of the home does influence radon levels. Everyday activities such as using the furnace, the bathroom fan, kitchen fan or the clothes dryer will pull air into the house which contributes to air pressure differentials.

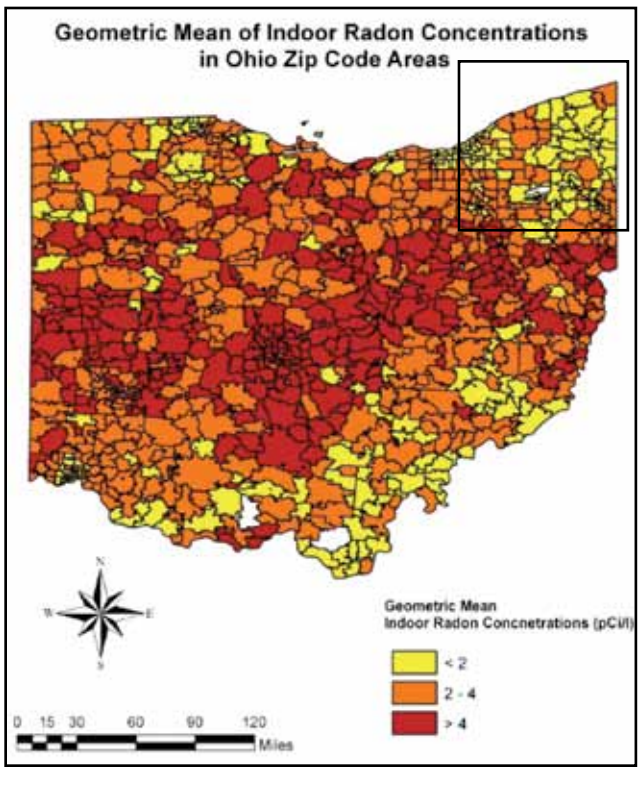
The number one contributing factor to radon levels in the home is the amount of uranium in the soil and rocks under and around the foundation of the home. Other factors that contribute to radon levels in the home are the porosity of the soil, the type of foundation and occupant activity.

Weather can also influence radon levels. High winds, temperature and barometric pressure all can significantly influence radon levels in a home. Barometric pressure and wind can have the most influence due to weather. Changes in the barometric pressure will contribute to air pressure differentials. Sustained winds of 35 miles per hour or higher can cause radon levels to be excessively elevated or "spike" for a brief period of time.

Radon in Ohio



This map represents the average radon levels by county in Ohio. The map was created using actual radon test results collected by the Indoor Radon Program at the Ohio Department of Health (ODH). All licensees which include testers, mitigation contractors and labs that analyze radon test kits report to ODH on a quarterly basis.



29 counties have an average radon level of4pCi/l or higher. Licking County has the highest average level of 8pCi/l. 13 counties have had at least 1 home with an average radon level at or above 500pCi/l and 40 counties with at least 1 home with and average radon level between 100 and 499pCi/l. Overall, approximately 50% of all homes tested in Ohio every year have elevated levels of radon.

The second map represents average radon levels by zip codes. This map shows us that even within a county that has an average radon level of less than 4 pCi/l there can be zip codes that average levels between 2-4pCi/l or greater than 4pCi/l.

279 zip codes in Ohio have average radon levels of 4pCi/l or higher and 40 zip codes with an average radon level of 8pCi/l. These averages represented by these 2 maps should be used to give the homeowner an idea of what their levels will be when they test. This information should never be used to determine whether or not to test. It is important to keep in mind that radon levels are different in every home and the only way to know what the levels are in a home is to test.

Nurses and Radon

Nurses play a vital role in educating patients about a lot of health concerns. Nurses are viewed as reliable and trusted sources for information about health and medicine. In general, nurses have more patient contact than do physicians or other health care professionals which means they have more opportunities to talk with patients. While it is not expected for nurses to be the authority on radon, they certainly can help promote radon awareness.

One effective way to promote radon awareness would be to include a question on any kind of patient history form or questionnaire. One simple question, "Have you tested your home for radon?" If the patient answers no, the nurse can provide the patient with information on radon and radon testing.

The nurse could take it one step further for those who answer yes ask the patient if their test results indicated elevated levels of radon and if elevated did they install a mitigation system. The nurse could also ask if it has been more than two years since the last radon test. Radon testing should be performed every two years even with a mitigation system.

Incorporating radon awareness into a nurse's practice should be something easy and not burdensome.

The above method is just one way. Nurses should be the ones to determine the best way to promote radon awareness based on their specific practice. It shouldn't be time consuming and the nurse doesn't need to answer a lot of questions about radon. The nurse could provide the patient with information to contact the state radon program for additional information and to answer their questions. Of course a good way for a nurse to promote radon awareness is to set an example by testing their own homes. Not only is it a good example for patients but also for their co-workers.

The Indoor Radon Program at the Ohio Department of Health has available trifold brochures and brochure holders. The brochures provide brief information about radon, the health risk, radon testing, radon mitigation and information about low cost radon test kits. It also has contact information for the program and where to find additional information about radon.

If you have any questions or would like additional information, you may contact the Indoor Radon Program at bradiation@odh.ohio.gov or by calling 1-800-523-4439. You may also visit the Indoor Radon Program web site at www.odh.ohio.gov (select the letter R and then Radon).

Radon Laws

Only a few states across the country have laws pertaining to radon and even fewer have building code requirements. Ohio has one law pertaining to radon that requires individuals performing radon testing or radon mitigation on property they do not own to be licensed by the Ohio Department of Health. A few communities across the state have incorporated the installation of a passive radon system during the construction of a home into their local building codes.

The U.S. EPA in June of 2011 released the Federal Radon Action Plan. The brought together other federal partners in a collaborative effort to increase radon testing and mitigation throughout the United States. Federal partners such as HUD, USDA, Department of Defense, Department of Energy, Veterans Administration and others made commitments to incorporate radon testing and mitigation into their programs.

As an example, in 2013 HUD started requiring radon testing as a part of the multifamily housing mortgage insurance programs. HUD estimates that this would apply to an estimated 105,000 housing units in 2013. HUD also has incorporated radon testing and mitigation into the Healthy Homes Program.

While laws are a good idea in order to impact a majority of people, they are not necessarily the best way. Policies that require radon testing and mitigation can also have the same impact. Getting people to voluntarily to do something is better than mandating in most cases. Increases awareness and education so that individuals can make an informed decision and then take the action they feel is necessary provides a positive outcome.

Summary

Radon is a gas that occurs naturally from the decay of uranium found in soil and rocks. Exposure to elevated levels of radon over the course of an individual's lifetime can increase the risk of developing lung cancer. Radon when inhaled will adhere to the lining of the lungs where it continues to decay. Decay is the release of radioactive particles that can alter the DNA of cell and eventually become cancer.

Radon naturally migrates into homes but can also be pulled in by every day activities such as using a furnace or clothes dryer. Radon levels in homes can be influenced by several factors most of which individuals have no control over such as the weather or the amount of uranium in the soil. Homes create vacuums which draw in radon and are referred to as air pressure differentials.

Testing for radon is easy to do but it must be done properly in order to obtain reliable result. Once elevated levels of radon have been determined, a radon mitigation system should be installed to bring the radon levels down to below the action level of 4pCi/l. A properly installed radon mitigation system will continuously, effectively and efficiently keep radon levels below the action level.

Based on the data collected by the Ohio Department of Health, 1 out of every 2 homes in Ohio has average radon levels at or above the action level. Over half of the counties in Ohio have had at least 1 home with an average radon level over 100pCi/l and close to 300 zip codes have average levels at or above the action level.

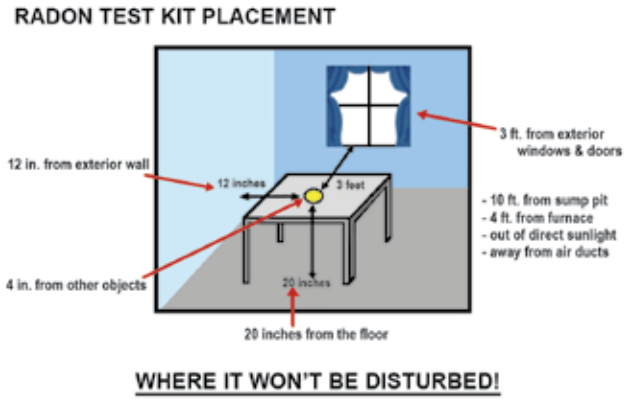
Nurses can make an impact on radon awareness by incorporating radon education into their nursing practices. Asking a simple question and providing basic information can motivate homeowners to test their homes. Also, nurses can set a good example by testing their own homes.

Radon Testing

A homeowner can test their home or hire an Ohio licensed radon tester to perform the test. Radon testing is easy to do and not expensive. Regardless of who is performing the test it is important to perform the test correctly. Not following the protocols for proper radon testing can cause the test results to be unreliable by having a false high average level or a false low average level.

All initial radon tests should be a short-term test. A short-term test is performed for a minimum of 48 hours but can last up to 90 days. The majority of short-term test devices are activated charcoal which can used for 48 hours up to 7 days. Depending on your test results, a follow-up test is recommended.

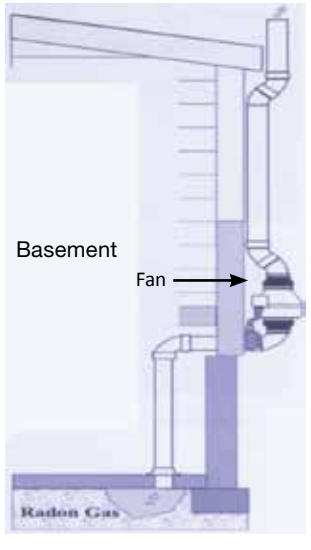
Follow-up testing can be another short-term test conducted for the same amount time, in the same location or a long-term test. A long-term test is performed for at least 90 days up to one year. When performing long term testing it is recommended to test during the heating season.



Radon testing should be performed in the lowest level of the home suitable for occupancy. Typically this would be a basement even if it is unfinished or not currently being used. A radon test should never be performed in a crawl space or in a kitchen, laundry room, or bathroom. The kitchen, laundry room and bathroom tend to have high humidity levels which can cause false low results. Also, fans located in the kitchen and bathroom and the dryer in the laundry can cause false low results.

The test device must be placed at least:

- 20 inches from the floor
- 3 feet from exterior windows/doors
- 12 inches from exterior walls
- 10 feet from the sump pit
- 4 feet from the furnace or heat source



The test device must also be placed out of direct sunlight, away from air ducts and where it won't be disturbed. Dryers, range hoods, bathroom fans, window air conditioners and ceiling fans should not be operated during the radon test. The test device must not be placed near humidifiers/dehumidifiers or air filters. The heating or air conditioning should be on and operated in a normal range of 72 degrees plus/ minus 5 degrees.

It is of the utmost importance that "closed-home conditions" are observed. Closed-home conditions is defined as closing all of the windows on all levels of the homes 12 hours prior to the start of the radon test and leaving them closed for the duration of the test. Also, all exterior doors should remain closed except for normal entrances and exits.

Radon continued on page 15

Radon continued from page 14

Opening and closing of windows greatly influence radon levels in the home resulting in false high and low test results. It is considered to be interfering with the test and the results will be considered to be invalid.

The U.S EPA set an action level of 4pCi/l which means action should be taken to lower the radon levels in your home if the average radon level is 4pCi/l or higher. A follow-up test is recommended in order to validate the initial before taking steps to lower the radon level. For initial test results less than 8pCi/l, a long-term test could be performed but it is best to perform a second short-term test for all levels above 4pCi/l. Radon testing performed by an Ohio licensed tester using a continuous monitor does not require follow-up testing.

How to Lower Elevated Levels of Indoor Radon

Elevated levels of indoor radon can be lowered to below the action level of 4pCi/l by installing a radon mitigation system. Installation of a radon mitigation system requires special training, skills and knowledge. A radon mitigation not properly installed could cause indoor radon levels to elevate and/or cause back drafting of gas appliances. Ohio requires individuals installing radon mitigation systems in property they do not own to be licensed.

The basic principle of a radon mitigation system is to remove a majority of the radon gas from under the foundation of the home and vent it to the outside air. In order to do this, the Ohio licensed radon contractor will drill a 4 inch hole in the foundation floor. The contractor will then dig out a pit approximately 18 inches in diameter in the aggregate. This pit helps to create more air movement under the foundation. A 4 inch diameter, schedule 40 PVC pipe is inserted into the hole and sealed. It is import that the pipe does not touch the aggregate so that when the fan is activated, air will flow into the pipe.

The PVC pipe will exit out the foundation wall just above ground level where the fan will be attached. Additional PVC pipe will be routed up the side of the home and terminate 12 inches above the eave of the roof. When the fan is turned on, it will create suction which pulls the radon gas out from under the foundation of the home and vent it to the outside air. Variations of this system are used or combined based on the foundation(s) of each home. Some of the variations include routing the PVC pipe through interior walls or an attached garage with the fan being placed in the attic. It is also important that the contractor seal any openings or significant cracks in the foundation floor or walls.

Radon: A Public Health Risk

Post-Test and Evaluation Form

DIRECTIONS: Please complete the post-test and evaluation form. There is only one answer per question. The evaluation questions must be completed and returned with the post-test to receive a certificate.

Name:_____

Date:_____ **Final Score:** _____

Please circle one answer.

1. Radon has a half-life of:
   A. 1,622 years
   B. 3.05 minutes
   C. 3.8 days
   D. 48 hours

2. Exposure to elevated levels of radon can cause:
   A. headaches
   B. asthma
   C. lung cancer
   D. sinus infections

3. Radon is:
   A. radioactive
   B. a gas
   C. odorless, tasteless, colorless
   D. all of the above

4. The only way to know if a home has elevated levels of radon is:
   A. test the soil
   B. use your neighbor's test results
   C. perform a radon test
   D. none of the above

5. Approximately _____ of homes tested in Ohio every year have elevated levels of radon:
   A. 10%
   B. 25%
   C. 50%
   D. 90%

6. The decay of radon produces:
   A. gamma particles
   B. alpha particles
   C. beta particles
   D. all of the above

7. Radon has an atomic number of:
   A. 86
   B. 172
   C. 222
   D. 4

8. Elevated levels of radon can be lowered consistently by:
   A. opening windows
   B. using ceiling fans
   C. sealing cracks in the foundation
   D. installing a radon mitigation system

9. The number one contributing factor to radon levels in homes is:
   A. weather
   B. air pressure differentials
   C. furnaces
   D. the amount of uranium in the soil

10. The number of counties in Ohio that have an average level of 4pCi/l or more:
    A. 88
    B. 41
    C. 29
    D. 13

11. A radon test should be performed:
    A. during the winter
    B. with the furnace off
    C. under closed home conditions
    D. all of the above

12. The risk to smokers living in a home with elevated levels of radon is:
    A. increased
    B. decreased
    C. the same as a non-smoker
    D. not important

13. The atomic number represents the number of
    A. electrons & neutrons
    B. neutrons & protons
    C. protons & electrons
    D. atoms

14. Which of the following is the correct uranium decay chain:
    A. uranium, lead, radium, radon
    B. uranium, radium, lead, radon
    C. uranium, radon, radium, lead
    D. uranium, radium, radon, lead

15. The US EPA set an action level of:
    A. 4pCi/l
    B. 8pCi/l
    C. 10pCi/l
    D. 20pCi/l

16. How many non-smokers could develop lung cancer being exposed to an average level of 8pCi/l
    A. 120
    B. 50
    C. 62
    D. 15

17. Which of the following is NOT closed home conditions
    A. keep all exterior doors closed except for normal entrances and exits
    B. keep the basement door closed
    C. observe for 12 hours prior to the start of the test and for the duration of the test
    D. keep all windows closed

18. Radon testing:
    A. can be performed by the homeowner or Ohio licensed tester
    B. should be performed on the lowest level suitable for occupancy
    C. is easy to do
    D. all of the above

19. Atoms contain:
    A. alpha, beta and gamma particles
    B. electrons, neutrons and protons
    C. gamma rays
    D. 2 protons and 2 electrons

20. A radon test device should be placed:
    A. in a crawl space
    B. in the kitchen
    C. 20 inches above the floor
    D. none of the above

21. If the average radon level is 4pCi/l or higher, the homeowner should:
    A. move
    B. open windows
    C. install a radon mitigation system
    D. all of the above

22. How many smokers could develop lung cancer being exposed to an average level of 4pCi/l:
    A. 120
    B. 50
    C. 62
    D. 15

23. Half-life is:
    A. the amount of time it takes for an element to weigh half as much
    B. the amount of time it takes for an element to double
    C. the amount of time it takes for an atom to release protons & neutrons
    D. the amount of time it takes for a radioactive element to be reduced to half its original value

24. Alpha particles cause:
    A. damage to the lining of cells
    B. a double strand break of a cell's DNA
    C. cells to move faster
    D. none of the above

25. Lung cancer can be prevented by:
    A. not smoking
    B. quitting smoking
    C. testing for radon
    D. all of the above

26. Nurses can promote radon awareness by:
    A. Asking a patient about home radon testing
    B. Asking if the patient has a carbon monoxide monitor
    C. Obtaining a lung cancer history of the family
    D. All the above

27. If a patient's home has already tested positively for dangerous levels of radon:
    A. The home should be abandoned
    B. A mitigation system might be necessary
    C. A mitigation system should be installed and radon tests conducted every two years thereafter
    D. The occupants of the home should be tested for evidence of lung disease

28. Information about radon can be obtained from the:
    A. A primary care provider
    B. Ohio Department of Health
    C. Building contractor
    D. Occupational Safety and Health Administration (OSHA)

Evaluation

		YES	NO
1.	Were you able to achieve the following objectives?		
	a. Discuss the impact of radon on the public health.	__ Yes	__ No
2	Was this independent study an effective method of learning?	__ Yes	__ No

If no, please comment:

3. How long did it take you to complete the study, the post-test, and the evaluation form? _____

4. What other topics would you like to see addressed in an independent study?