

Special Contribution

Current Radiation Nursing and Radiation Nursing Education in the U.S.A., and Recommendations for Japan

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Master's degrees in nursing are becoming popular and are in demand in the United States because of the new healthcare system structure. Nursing licensure and nursing education are very different in the US compared to Japan, and each license has its own unique educational requirement, testing and specific job description. Nurse practitioners (NPs) and clinical nurse specialists (CNSs) play critical roles in the healthcare system and have become essential members of the multidisciplinary team in recent years. The latest amendments to laws and regulations in the healthcare, from university educations to hospital orientations, have greatly revised and changed the roles of NPs and CNSs.

One example is the better understanding and knowledge of radiation and exposure prevention in medicine, which are essential in radiation oncology nursing and interventional radiology nursing. Despite increases in cases of chronic diseases, education for certain specialties has been terminated or modified to accommodate the new regulations. Moreover, occupational radiation exposure is one of the main focuses and concerns for healthcare professionals since the Fukushima nuclear plant disaster in 2011. However, education at universities and institutions is insufficient. This paper summarizes and compares Master's degree education for NPs and CNSs, their job requirements and certification requirements in radiation oncology and radiation nursing. As the complexity of patients is becoming more problematic, NPs and CNSs can add value to the workload and quality of patient care. Additionally, this paper makes recommendations to develop and improve Japan's Master's degrees in nursing.

Key words: American nursing system, oncology nursing, radiation nursing, nurse practitioner, clinical nurse specialist, interventional radiology

1. Nursing system in the U.S.A. What are Nurse Practitioners (NP) and Clinical Nurse Specialists (CNS)?

The nursing system in the U.S.A. is not very different

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from any other countries. However, as medicine and technology advance over time, the need for registered nurses (RN) has changed. Until recently, many hospitals have hired licensed practical nurses (LPNs) and RNs in any unit. Most LPNs work independently and some duties must work under the RN's supervision. However, laws, regulations, and the pay system have changed, thus requiring hospitals to employ RNs who can work independently under the scope of practice, with a four year college degree, and in leadership roles. Additionally,

the need for NPs and CNSs had been greater in the new healthcare systems.

NPs provide predominantly primary care to underserved outpatient settings, where they perform more 'medial' services (e.g., history and physicals, ordering studies/tests, and prescribing medications)¹. There are multiple specialties such as acute care, adult, family, gerontological, pediatric, psych/mental health, and midwifery. An NP's scope of practice and regulations vary from state to state. For example, NPs in the state of Georgia must work under physicians' supervision; whereas, in Washington, NPs can own clinics and work individually/independently. Each NP and CNS must know each state's regulations in order to fully comply with the scope of practice.

Traditionally, Master's degree programs in nursing have been offered on campus, requiring students to attend regular classes and complete clinical requirements in nearby clinics and institutions. However, in recent years, most of the Master's degree programs are provided either on campus, as a hybrid (combination of on campus and online) course, or online. The online programs require students to complete the classes online, but clinical requirements must be completed local to where students reside. Those programs are convenient for RNs who have been hoping to complete a Master's degree and have been unable to because of time and logistical restrictions.

While searching for Master's degree programs in the radiation nursing field, I was unable to find a specific program for radiation nursing because most of the NP programs are geared toward primary care NPs, who are required to learn how to assess all patients' systems. It is therefore hard to target nursing education to just one field. However, some NP and CNS programs in the U.S. include radiation nursing.

One example is Duke University in North Carolina which offers an oncology NP program. The curriculum includes three specific oncology courses integrated within the NP major and radiation oncology clinical hours². Although cancer diagnosis, treatment, and deaths are increasing, oncology NP programs have been suspended or terminated in many universities due to federal regulation changes which increase primary NPs rather than specialty nurses.

CNSs are the clinical experts in a specialized area of nursing practice and in the delivery of evidence-based nursing interventions³. CNSs play a pivotal role in developing educational materials, participating in quality improvement initiatives, and developing policies and procedures. In addition, CNSs are considered the expansion of nursing care compared to NPs whose responsibilities are similar to physicians. Many hospitals employ CNSs as nurse educators, administrators, and

researchers to improve the quality of patient care, cost effectiveness, and policies and procedures which comply with laws and regulations.

2. Oncology Nursing

In the U.S., there are many associations and societies related to oncology nursing, where nurses can attend/participate in conferences, seminars, and presentations locally and nationally. Oncology Nursing Society (ONS) is one of the major oncology nursing societies, with currently 37,000 members, and holds national conferences every year in various cities. Through ONS, Oncology Nursing Certification Cooperation (ONCC) provides certifications to oncology nurses. There are several different types of certifications available: OCN (oncology certified nurse), AOCN (advanced oncology certified nurse), AOCNP (advanced oncology certified nurse practitioner), and AOCNS (advanced oncology certified nurse clinical specialist). To qualify to take those certification exams, there are several requirements: an active RN license, with 1,000 hours of clinical practice, and 30+ hours of oncology continuing education. In recent years, an Individual Learning Need Assessment (ILNA) was developed so that existing certified nurses could take the assessment immediately after the initial certification and learn the area they wished to become a well rounded oncology nurse. For advanced certification, nurses are required to take oncology continuing education or graduate level oncology courses. Most continuing education programs are available online so that nurses can choose to take the class they are interested in. The certification examination consists of 230 questions and may take up to 3 hours to complete. AOCN for advanced oncology nurses was initially developed in 1995. The test blueprint describes that candidates are required to learn screening, prevention, early detection, genetic risk, treatment planning, cancer treatment, oncologic emergencies, psychosocial issues, end of life care, and professional practice⁴.

3. Radiation Oncology Nursing

In recent years, many NPs and CNSs are hired by radiation oncology departments in hospitals or clinics. NPs can perform consultations (history and physicals), manage treatment-related symptoms while patients are receiving active therapy, evaluate responses to treatment, and assess for treatment-related late effects or cancer recurrences in follow ups⁵. The survey conducted by Dr. Marilyn Haas at the fall 2005 ONS conference, "Advanced Practice Nursing in Radiation Oncology" was published in *Seminars in Oncology Nursing* in 2006. The survey sample was 28 "radiation oncology NPs through

the ONS's RT special interest group, Nurse Practitioner special interest group, and fellow NP colleagues⁵." The results of the survey demonstrated the importance of NP and CNS roles in radiation oncology and that "oncology APNs should be utilized in all aspects of cancer care⁵."

On March 2015, Dr. Haas via e-mail interview stated that even though the survey was completed 10 years ago, the NPs' responsibilities remain the same. When I sent an email to the ONS Special Interest Group (SIG) Radiation group in search of the current NPs' responsibility around the country, I received very few responses. One response came from the Clark Center for Radiation Oncology at Francis H. Burr Proton Therapy Center, Massachusetts General Hospital, Massachusetts, which employs eight NPs who all work with collaborating physicians on various services. The role is very helpful for symptom management of patients with acute treatment-related toxicities such as ordering hydration to prevent hospital admission. In addition, some of the NPs see follow up patients to open the capacity of the physician clinics.

Few practices employ CNSs at this time; however, the job listings indicate the kind of skills needed to work as an oncology CNS who focuses mainly on quality improvement, improving patient outcomes, and developing and implementing education materials and projects.

The ONS and Oncology Nursing Certification Corporation (ONCC) developed the Radiation Oncology Certificate several years ago. "Radiation oncology requires you to possess a highly specialized knowledge base. In this program, you'll learn how radiobiology is used to treat various forms of cancer, and recognize the risk factors and nursing interventions for the common side effects of treatment⁷." It is available to all RNs who are interested in radiation oncology through ONS, and renewal is every four years. The certificate course covers the principles of radiobiology, indication and patient management, identifying interventions for radiation therapy side effects, the emotional and psychological impact of radiation therapy, and the professional role and development of the radiation oncology nurse⁶.

4. Interventional Radiology Nursing

Interventional radiology (IR) nurses in the U.S. are responsible for "providing ongoing education to the patient and to the family members. A big part of getting the patient ready is alleviating anxiety. Ensuring that the patient and the family members understand the procedure and the plan of care by encouraging them to ask questions before signing the procedural consent. Checking patients' medications, vital signs, NPO (nothing by mouth) status, laboratory results and history to ensure that it is safe to proceed with the planned procedure⁷."

Some of the benefits of having NPs in IR are wellness and health maintenance; shortening the length of stay in an in-patient setting, because NPs can perform many minor procedures (PICC, ports, dialysis catheter insertion and removal, paracentesis and thoracentesis); writing labs/exam orders and prescriptions; and keeping patients moving throughout the stay in the hospital⁸. Depending on the insurance pay, most of the time utilizing NPs is cost effective for the patients and the practice. According to guidelines for non-physician practitioners in IR written in Seminars in Interventional Radiology, NPs can "perform histories, physical examinations, and participate with the interventionalist/interventional radiologist in forming a clinical assessment⁹". Moreover, NPs practices are considered "sufficient in the eyes of Medicare, other regulatory agencies and local hospitals¹⁰". There are many restrictions for midlevel providers in interventional radiology; however, NPs' and CNSs are capable of performing tests and procedures with adequate hands on training and education.

I interviewed Dr. Mark Rheume, President of Summit Radiology Services in North Georgia, whose primary focus is diagnostic and interventional radiology. Dr. Rheume's practice consists of 12 physicians and no non-physician providers at this time. However, Dr. Rheume considers hiring NPs/physicians assistants (PAs) to allow him to focus on major cases. One of the reasons there are no midlevel providers at Dr. Rheume's practice is that laws and regulations require a tremendous amount of paper work and involve extensive processes to complete the process. Once he tried to employ a PA; however, it took more than six months to finalize the employment process. If the process was easier and quicker in many ways, Dr. Rheume's practice could have hired several PAs and NPs by now.

5. Occupational exposure to radiation

As the diagnostic technology has advanced over the past 20 years, the amount of scans and radiation exposure has increased worldwide. Occupational exposure to radiation is monitored by several different institutions, such as OSHA (Occupational Safety & Health Administration), EPA (Environmental Protective Agency), FDA (the Food and Drug Administration), U.S. NRC (the U.S. Nuclear Regulatory Commission), and each state government. Many scholarly articles have been written by Japanese researchers and researchers outside of the U.S. because the insurance payer system in Japan allows patients to have scans as needed. Although in the U.S., X-rays and CT scans are common tests ordered by physicians, many health insurance plans limit patients receiving the tests. Many insurance plans require prior authorization for scans and tests to verify the medical necessity. As

an oncology nurse, I have seen many cases in which cancer patients are only able to have a limited number of CT scans, even though the scans help to identify the progression or remission of diseases. Compared to Japan, the cost of scans in the U.S. is consistently higher, which leads to insurance companies not giving authorizations unless they are absolutely necessary.

In the most common cases, the personnel working in radiation oncology and interventional radiology departments wear a film badge to monitor their radiation exposure. Additionally, hospital or institution wide education is required every year. Educating the appropriate personnel is a key component to avoiding unnecessary occupational radiation exposure, which includes basic radiation safety, universal precautions and principles of ALARA (as low as reasonably achievable to attain the desired diagnostic, therapeutic, or other goal). Since most of the hospitals and institutions do not have sufficient funds to educate all of the personnel, the availability of educational materials, such as reading materials, videos, or online interactive modules, and a radiation safety officer, who can answer any questions or concerns, are important. Moreover, most nurses are monitored under the hospital policy, which means hospitals are responsible for reporting each state regulation.

6. Suggestions/recommendations for Japan

In 2008, the APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee published the Consensus Model for APRN Regulation, and which has four key points and associated recommendations based on its LACE model: Licensure, Accreditation, Credentialing and Education. The report states that the essential elements are (1) licensure is the granting of authority to practice; (2) accreditation is the formal review and approval by a recognized agency of educational degree or certification programs in nursing or nursing-related programs; (3) certification is the formal recognition of the knowledge, skills, and experience demonstrated by the achievement of standards Identified by the profession; and (4) education is the formal preparation of APRNs in graduate degree-granting or post-graduate certificate programs¹¹.

Although each state has its own laws and regulations of the APRN scope of practice, having the standard of APRN practice nationwide is one of the most important tasks for many organizations within the current healthcare system. Knowing that nursing shortages continue in Japan and the U.S., several recommendations to improve patient care/safety and develop a specialty in radiation nursing are suggested. First, educational programs have to be developed at the university level or frequent professional

seminars must be provided by nursing associations. Many continuing education programs and classes are available online in the U.S., which means that most nurses can learn at their convenience. As the Internet is becoming available to almost anyone and anywhere in the world, more classes and programs should be available and easily accessible. Second, it is important to fund hospital wide education programs or nursing association offered programs. Attending nursing conferences have been a tremendous experience for me, allowing me to network with nurses all around the country, attend research presentations, and learn how others are improving nursing care. Third, APNs should be prepared with hands on approach. Any institution or organization may provide a six-month intense preceptorship to all new employees. For example, those interested in pursuing nursing in radiation should have opportunities to follow and learn from physicians, physicists, dosimetrists, and radiation therapists. Fourth, institution and organizations should compensate, value, and support the certification/licensure for currently employed nurses to increase the retention rate. Finally, continuing education or testing requirements should be set to maintain individual certification/licensure.

Disclosure

The author declares that she has no conflict of interest.

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