

 <p>NORTH CAROLINA RADIATION PROTECTION</p>	<p>North Carolina Department of Environment and Natural Resources Division of Environmental Health <b>RADIATION PROTECTION SECTION</b> <b>Radiology Compliance Branch</b></p>	<b>Page(s)</b>		
		<b>1</b>	<b>of</b>	<b>3</b>

## Standing Orders

Rule .603(a) (1) (G) of the *N.C. Regulations for Protection Against Radiation* states: "Individuals shall not be exposed to the useful beam except for healing arts purposes. Such exposures shall have been authorized by a licensed practitioner of the healing arts." This provision specifically prohibits deliberate exposure of an individual for training, demonstration or other non-healing arts purposes.

The following definitions apply.

- 'Physician' means an individual currently licensed to practice medicine in this state.
- 'Medical use' defines the intentional internal or external administration of radioactive material or radiation to patients or human research subjects under the supervision of an authorized user.
- 'Radiation' (ionizing radiation) defines gamma rays and X-rays, alpha and beta particles, high-speed electrons, protons, neutrons, and other nuclear particles and electromagnetic radiation. These particles consist of associated, interacting electric and magnetic waves.

Living cells are composed of atoms and molecules. If the structure of the atom and molecule is changed, the cell may be adversely affected. When cells are exposed to ionizing radiation, the structure of some of the atoms and molecules within the cells are changed.

The effects of ionizing radiation can be:

1. Cell death – The X-ray photon may strike a molecule in an area of a living cell causing cell death.
2. Toxic substances – The body is composed of a high percentage of water. The ionization of atoms and molecules results in the breaking of the hydrogen-oxygen bond. One compound resulting from this breaking of a hydrogen-oxygen bond is hydrogen peroxide, which is highly toxic to cells, resulting in cell death.
3. Mutated cells – Chromosomes, which form new cells, are changed by excessive radiation exposure. When a cell mutates due to excessive radiation, the life cycle or life span of the cell is changed.

Harmful effects due to excessive irradiation:

1. Erythema – Reddening of the skin, but affecting much deeper tissue.
2. Radio dermatitis – Dry flaky skin that is difficult to heal, leading to ulcerations that could become malignant or gangrenous.
3. Cataracts – Overexposure could result in clouding of the lens or surrounding membrane of the eye.
4. Cancer – The cause of most natural occurring cancers are still unknown, but it is known that with an increase in radiation exposure, there is an increase in cancer.

Under the umbrella of the Radiation Protection Section, the Radiology Compliance Branch takes a non-threshold approach to radiation safety. Radiation is necessary and needs to be handled with the appropriate precautions to maintain a safe level.

The U.S. Nuclear Regulatory Commission and State Bureaus of Radiological Health assume all radiation exposure carries some risk, which has led to regulations concerning the operation of X-ray machines. This includes the quality of the exposure as well as quantity of the exposure an individual may receive. The risk is assumed to increase as exposure to radiation increases. Diagnostic X-ray, as well as cancer therapy, benefits almost always out way the risks. Early diagnosis and treatments are saving lives every day; so again, necessary treatment should not be refused just because it may result in a radiation exposure. Unnecessary radiation and over exposures should be avoided at all costs.

The Radiology Compliance Branch in the Radiation Protection Section of the Division of Environmental Health recognizes that the delivery of quality health care requires expertise and assistance of many dedicated individuals in the allied health profession.

The branch does not restrict the physician from delegating administrative and technical or clinical tasks not involving the exercise of medical judgment. These clinical or technical tasks would involve those specially trained individuals instructed and directed by a licensed physician who accepts responsibility for the acts of such allied health personnel.

There are no items in this report that shall be construed as to prohibit a physician from instructing a technician, assistant or nurse to perform delegated tasks so long as the physician retains supervision and control of the technician, assistant or employee. There are also no items in this report that should be construed to relieve the supervising physician of the professional or legal responsibility for the care and treatment of those persons with whom the delegating physician has established a physician-patient relationship, or that shall enlarge or extend the applicable statutory law relating to the practice of medicine, or other rules and regulations previously stated.

Rule .603(a) (1) (G) of the *North Carolina Regulations for Protection Against Radiation* states: "Individuals shall not be exposed to the useful beam except for healing arts purposes. Such exposures shall have been authorized by a licensed practitioner of the healing arts."

The physician understanding the personal and medical history of his or her patient, after the performance of appropriate physical examination and the recording of physical findings, may established procedures for providing care by his personnel. This can only be done under the supervision of a physician who is directly supervising or overseeing the delivery of medical or health care to his patients.

Physician's orders—The instructions of a physician for the care of an individual patient per prescription should:

1. Provide accurate, detailed information regarding patient history, evaluations and treatment, any drugs or medications administered, prescribed or provided;
2. Specify what procedures/test is required, which may include a written description of the method to be used i.e., standing, flat or mention a specific exam protocol;
3. State any special circumstances and/or limitations; and
4. Document all of the above in writing, dated and signed by the physician.

The physician should be available for consultation, assistance and direction upon the delivery of prescribed X-ray services or in the advent of a medical emergency.

According to the state regulations regarding the administration of radiation: it is not within the scope of practice for a nurse to independently insert or write in a dosage, time, frequency or route on a prescription or in a medical order blank space. These are components of prescribing and should be determined by the prescriber, physician of record, or his designated stand-in physician. Additionally, it is not within the scope of practice for a nurse to fill in a blank prescription that has been pre-signed by a prescriber with regard to X-ray exams. The Rules, with regards to the administration of radiation, also states that a registered nurse or licensed practical nurse is not authorized to render medical diagnosis or to prescribe a medical plan of care.