



Development of a booklet for the use of mobile X-ray equipment in Intensive Care Units.

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1. Introduction

Radiation is the emission and propagation of energy through matter or space by electromagnetic disturbances with dual behavior, wave and particle¹. Ionizing radiation is the radiation capable of causing ionization of matter, that is, when passing through it gives energy by excitation or ionization of electrons. The effects caused by radiation depend on the quantity and quality of the incident radiation. Charged particles, such as alpha, beta, protons and others are considered direct ionizing due to their potential to produce ionizations when energy losing. In the indirect ionizing radiation, for example, x-rays (RX) and gamma rays, energy is transmitted to matter through the interaction of the photon, which does not contain an electrical charge, with its electrons².

Technological advances and studies in this area have allowed the use of X-rays in medicine since they are ionizing radiation with enough energy to pass through opaque bodies without generating of radioactive material. Radiographs play an important role in medicine: in the search and closure of a diagnosis, in the early discovery of diseases and in the definition of an adequate treatment for everyone. RX delivers fast, sharp images at an affordable price. In hospital institutions, the professional staff in intensive care units (ICU), surgical and hemodynamics rooms are often exposed to ionizing radiation from mobile X-ray equipment. Its use is established in item 4.27 of Ordinance 453 of the Health Surveillance Secretariat of the Ministry of Health, 1998, so that when a patient is clinically unstable or unable to be referred to the appropriate sector, the X-ray must be performed in bed³.

The nursing team daily works very close to the patient. According to Dr. Wanda Horta, nursing is “the science and art of assisting the human being (individual, family and community) in meeting their basic needs”. Thus, nursing assumes an increasingly decisive role in identifying the population's needs and essential care, as well as in promoting and protecting health in its various dimensions. Nursing takes on a guiding role in the care process and therefore needs constant updating and training⁴.

The objective of this study was to develop a low-cost booklet for training in the use of mobile X-ray equipment in Intensive Care Units and in bed patients. Educational materials can be used during the health learning and training process, since organized information and the presence of illustrations contribute to a better understanding of the guidelines.

2. Methodology

A field research study using an electronic questionnaire to search the level of knowledge of nursing professionals working in Intensive Care Units about radiation, protection barriers, safety and myths about the subject.

The group of professionals under study was composed of nurses, nursing technicians and nursing assistants who work or have worked in the ICU and who routinely assist in the radiography procedure in bed with mobile equipment. The questionnaire was made available electronically. The analysis was performed after reaching the minimum number of 50 participants within one month of applying the questionnaire, and then the data were tabulated and evaluated.

There were 82 accesses to the questionnaire, as well as to the acceptance of the Free and Informed Consent Term. Of these, 75 responded that they belong to the nursing team that works or has worked in the ICU. Of the 75, three responded that they did not use the radiography exam in bed in the ICU of operation. Thus, 72 participants continued with the questionnaire.

3. Results and discussions

After analyzing the data obtained, the booklet was organized and structured with 15 pages, in four colors, with large and simple font, presenting standardized figures and illustrations and can be available in print or digital format.

The topics covered were:

1. Definition of radiation, with a brief explanation of ionizing and non-ionizing radiation;
2. Summary of the three main nuclear accidents to clarify any doubts about the effects of radiation;
3. Explanation about mobile RX equipment and scattered or secondary radiation;
4. Safe distance to protect both professionals and other patients and family members who may be in the environment at the time of the exam;
5. Approach to the biological effects of radiation;
6. Guidance on when it is possible to request the X-ray exam in bed, as well as the clinical condition that the patient must present for such request and the need to protect the other patients who share the environment;
7. The role of nursing from the request to the procedure;
8. Means of individual protection;
9. Sources of information on the topic and references.

4. Conclusions

The present work provided the consolidation of a booklet, built based on information obtained from the professionals consulted and that will certainly contribute a lot, if widely published, to the knowledge and training of the nursing staff regarding the use of X-ray in the ICU.

References

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