Abstract No: 408 *Health Sciences*

Estimation of radiation dose received by a nurse working in a Nuclear Medicine unit at a selected private hospital, Sri Lanka

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Physicians, nuclear medicine technologists, nurses who work in nuclear medicine units are exposed to ionizing radiation. This study was carried out to measure the radiation dose to the body of a nurse who was administrating ^{99m}Tc-labeled radiopharmaceuticals at a Nuclear Medicine Department of a selected private hospital. The radiation dose was measured by using an electronic pocket dosimeter (EPD) during a three month period and the annual equivalent dose to the body was estimated. The aim of the study was to determine if the equivalent dose is within the recommended dose limits of the ICRP.

In addition to her routinely used thermoluminescent dosimeter (TLD), an electronic pocket dosimeter that has the ability of measuring the real time radiation dose was worn on the chest area by the nurse and the radiation doses were recorded on a daily basis. The recorded radiation dose varied according to factors such as the number of procedures, type of procedure and the age of the patient and cooperation of the patient. 449 of ^{99m}Tc procedures were performed during the study period.

The radiation doses recorded for three months were used to estimate the annual radiation dose. Using the typical yearly workload the annual radiation dose was calculated and it ranged from 1.01 mSv to 1.52 mSv. According to the routinely used TLD readings, the mean annual radiation dose was calculated as 1.25 mSv and is almost similar to the estimated dose in the study. These results were well below the value of 20 mSv/year of the ICRP recommended dose limit.

Although doses received in the study were well below the dose needed to result deterministic effects, there is a risk of occurrence of stochastic effects. Therefore it is necessary to encourage the staff to minimize radiation dose by using appropriate protective measures whenever necessary.