

Mean glandular dose is considered the best indicator of cancer risk to a patient undergoing mammographic studies. Evaluation of this dose is an important consideration in the estimation of risk, the comparison of equipment, and the assessment of equipment performance. This information is also needed to verify compliance with guidelines and regulations. Tables are available which provide mean glandular dose based upon knowledge of the HVL and compression thickness. Although mean glandular dose can not be measured directly, it can be calculated from entrance skin doses, depth dose characteristics of the beam, and compression thickness. We have initiated a quantitative study to measure entrance and exit skin doses received by patients undergoing mammography at a large medical center. Collimator, entrance, exit, and film doses were measured on over 100 patients with TLD chips calibrated for appropriate mammographic spectra and beam qualities. Other data such as compression thickness, projection, target/filter combination, kVp, mA, and HVL were also collected. In addition, depth dose curves for a typical Mo/Mo beam were measured with a water phantom and a precision ionization chamber. A statistical model has been developed relating target/filter combination, HVL, mAs and compression thickness to mean glandular dose.

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