

QUANTIFICATION OF RISK BENEFIT IN INTERVENTIONAL RADIOLOGY

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The increased use of interventional radiological procedures brings with it an increased risk of cancer induction due to the possible high radiation levels used. These radiation levels can be very high and have been cause for considerable concern. Nevertheless, the risk due to ionizing radiation in the procedure must be balanced against any viable alternatives, and should take into account the individual risks and benefits of each alternative. The purpose of this study is to quantify this risk benefit in terms of QALY (Quality Adjusted Life Years) of a procedure and its alternatives, including the risk due to the radiation. Uterine Fibroid Embolisation was chosen as a model study with data collected both on the outcomes of procedures in terms of complications and quality of life in the long term, but also on radiation dose delivered to the patient. Analysis was done using modelling software (TreeAge Pro), which was used to calculate QALY data. Dosimetry data was obtained from Galway University Hospitals. Risk was then calculated using The BEIR VII LNT model of dose response for low LET radiation. For the example it was found that the radiological technique has distinct advantages over hysterectomy and myomectomy, in terms of QALYs. The increased risk due to radiation from the procedure is small compared to the overall benefit to the patient. Probability of stochastic effects based on the average dose per procedure carry an attributable risk of 0.4%, or a relative risk of 1.09%. In this study it was found that the risks of ionizing radiation are small compared to the other risks associated with the procedure and with other medical and surgical alternatives. The method described here can readily be adapted to other interventional procedures.

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