

The INTRABEAM® Photon Radiotherapy System for the adjuvant treatment of early breast cancer: a systematic review and economic evaluation

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Plain English summary

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Breast cancer is the most common cancer in women in England. In early-stage breast cancer, the tumour has not spread beyond the breast or armpit lymph glands on the same side as the affected breast. Initial treatment may be breast-conserving surgery (BCS) (removal of the tumour but keeping an intact breast) or mastectomy (total removal of the breast). After BCS, a 3-week course of whole-breast external beam radiotherapy (WB-EBRT) reduces the risk of breast cancer returning in the affected breast (local recurrence). A new radiotherapy approach is single-treatment radiotherapy delivered using the INTRABEAM® Photon Radiotherapy System (Carl Zeiss, Oberkochen, Germany). We used standard systematic methods to identify all the current evidence comparing WB-EBRT with INTRABEAM and one study, the TARGeted Intraoperative radioTherapy-A trial, was included. Local recurrence was slightly higher following INTRABEAM than after WB-EBRT providing that INTRABEAM was given at the same time as BCS, but the likelihood of dying from breast cancer was similar with both treatments. INTRABEAM patients more frequently experienced fluid pockets that were drained more than three times, but radiation therapy toxicity was less frequent than with WB-EBRT. In our economic model, INTRABEAM was less expensive but also less effective than WB-EBRT. The results from the model changed, showing INTRABEAM to be cost-effective compared with WB-EBRT, when different estimates for treatment effects (e.g. local recurrence, probability of death from breast cancer) were tested. The longer-term effects of INTRABEAM are not known and further research on this is needed.

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