

Substantially lower lung cancer incidence with TARGIT-IORT (targeted intraoperative radiotherapy) compared with whole breast radiotherapy in the TARGIT-A randomised trial for breast cancer: 25-year update

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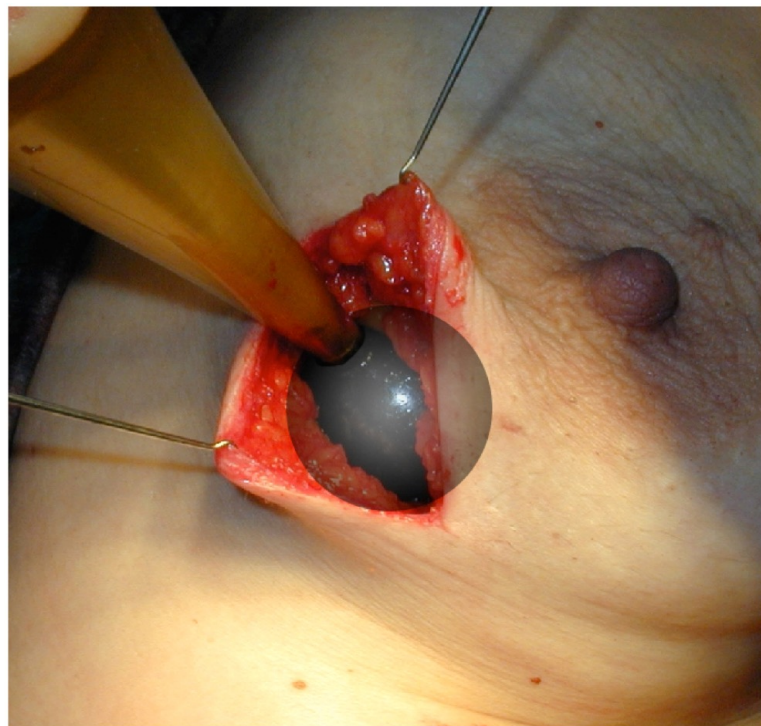
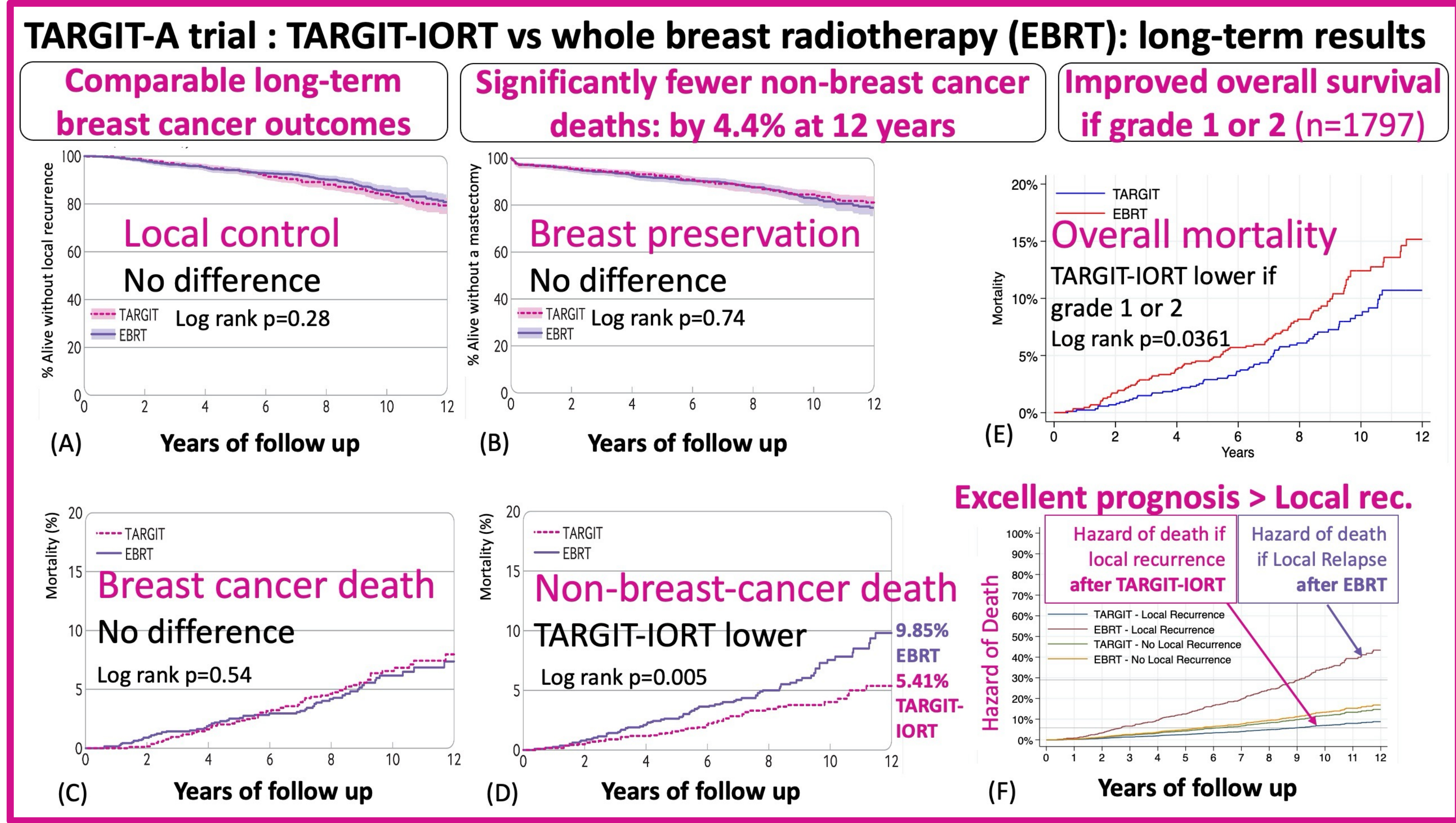
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Background External beam whole breast radiotherapy (EBRT) given after breast conserving surgery inevitably leads to carcinogenic irradiation of nearby vital organs such as the lungs. **TARGIT-A randomised trial (recruited from 2000-2012) found that TARGIT-IORT during the initial lumpectomy is as effective as EBRT in controlling breast cancer.**

TARGIT-IORT reduced pain, improved cosmetic outcome, quality of life, and reduce travel and cost.

- **Significantly fewer deaths from non-breast-cancer causes with TARGIT-IORT vs. whole breast radiotherapy (EBRT).**
- **TARGIT-IORT conferred an overall survival benefit in patients with grade 1 or 2 cancers: 12-year mortality reduction from 15% to 10.5%**

Previous results



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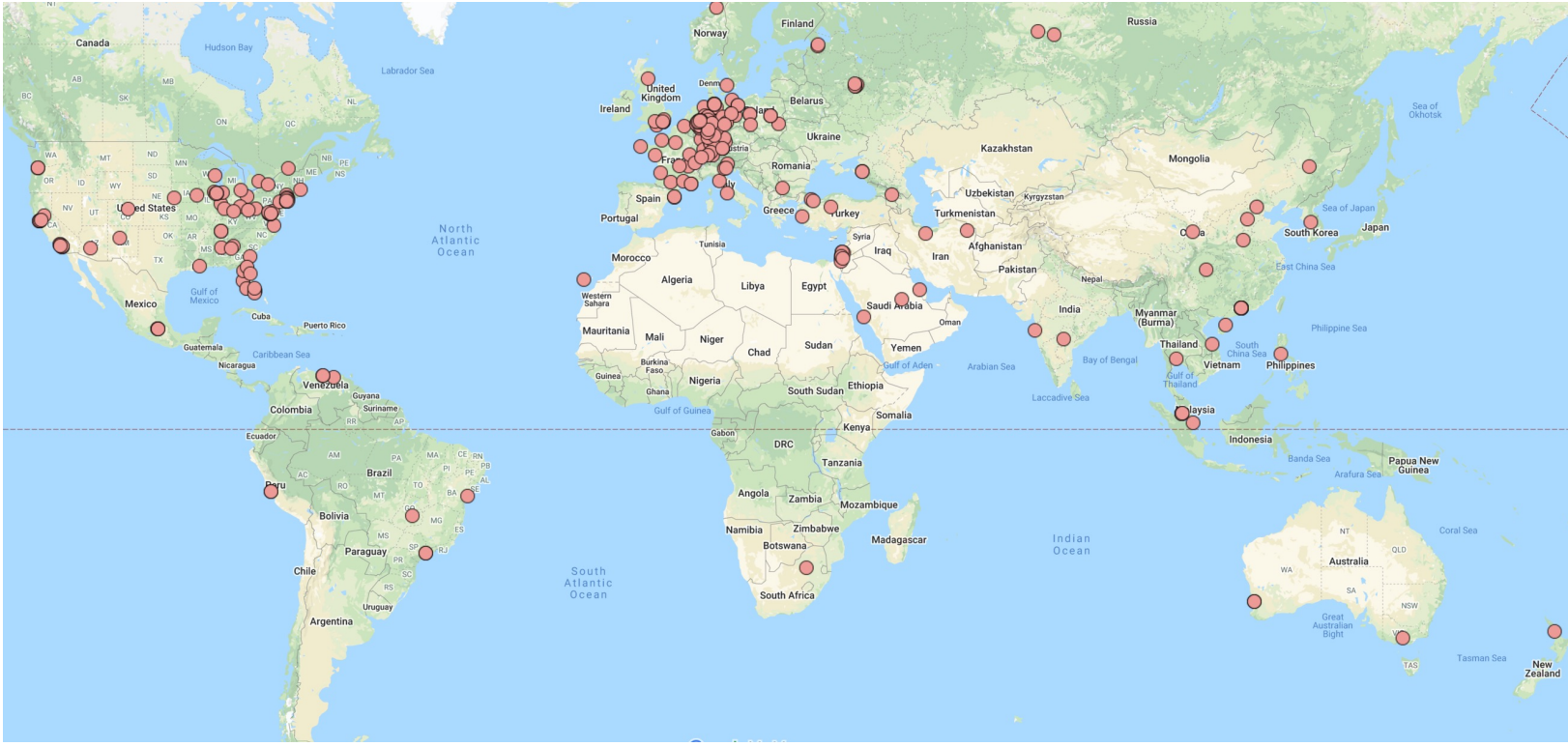
BMJ 2020



BJC 2021



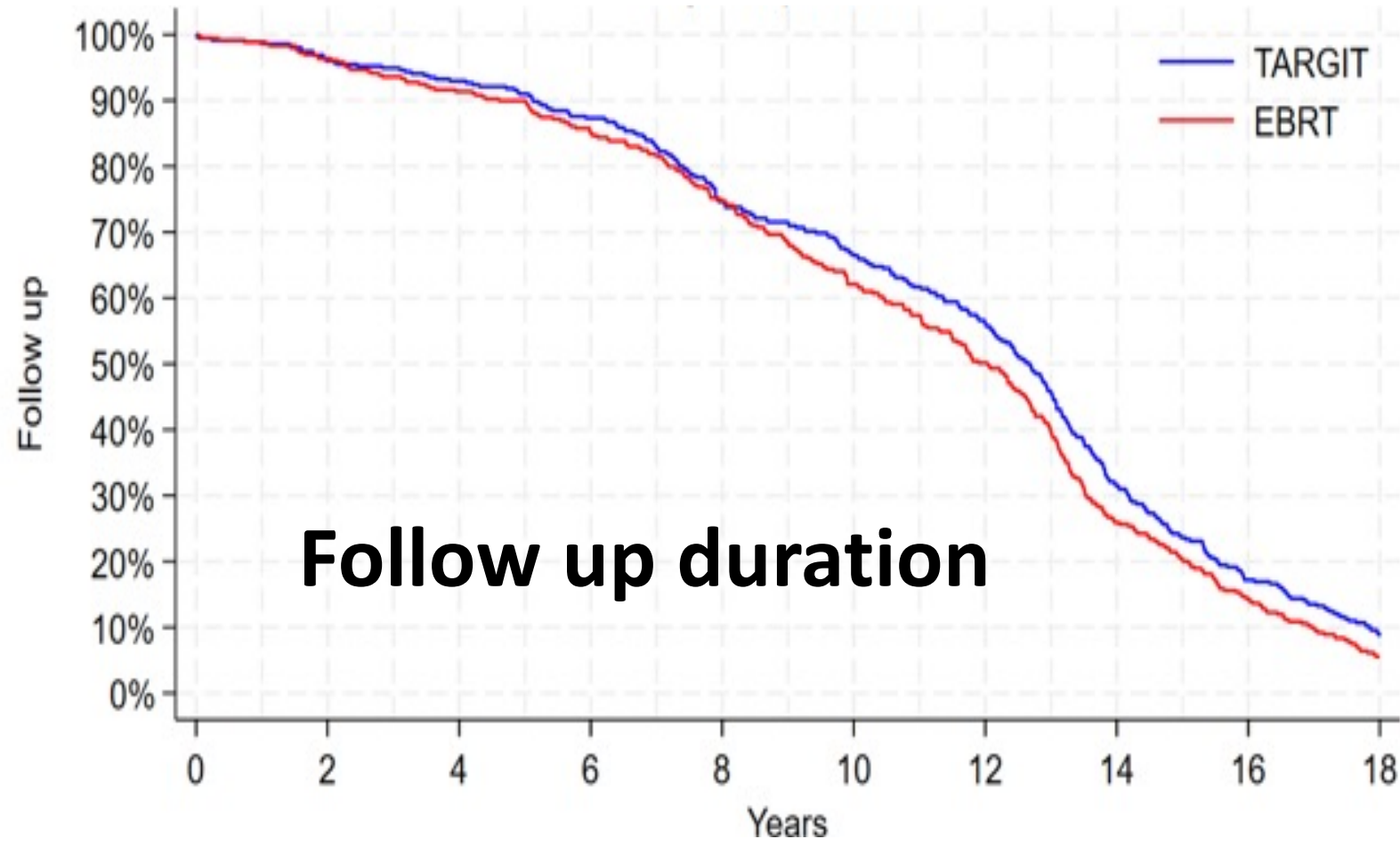
Over 50,000 breast cancer patients in 260 centres from 38 countries have been treated with TARGIT-IORT



Material and methods

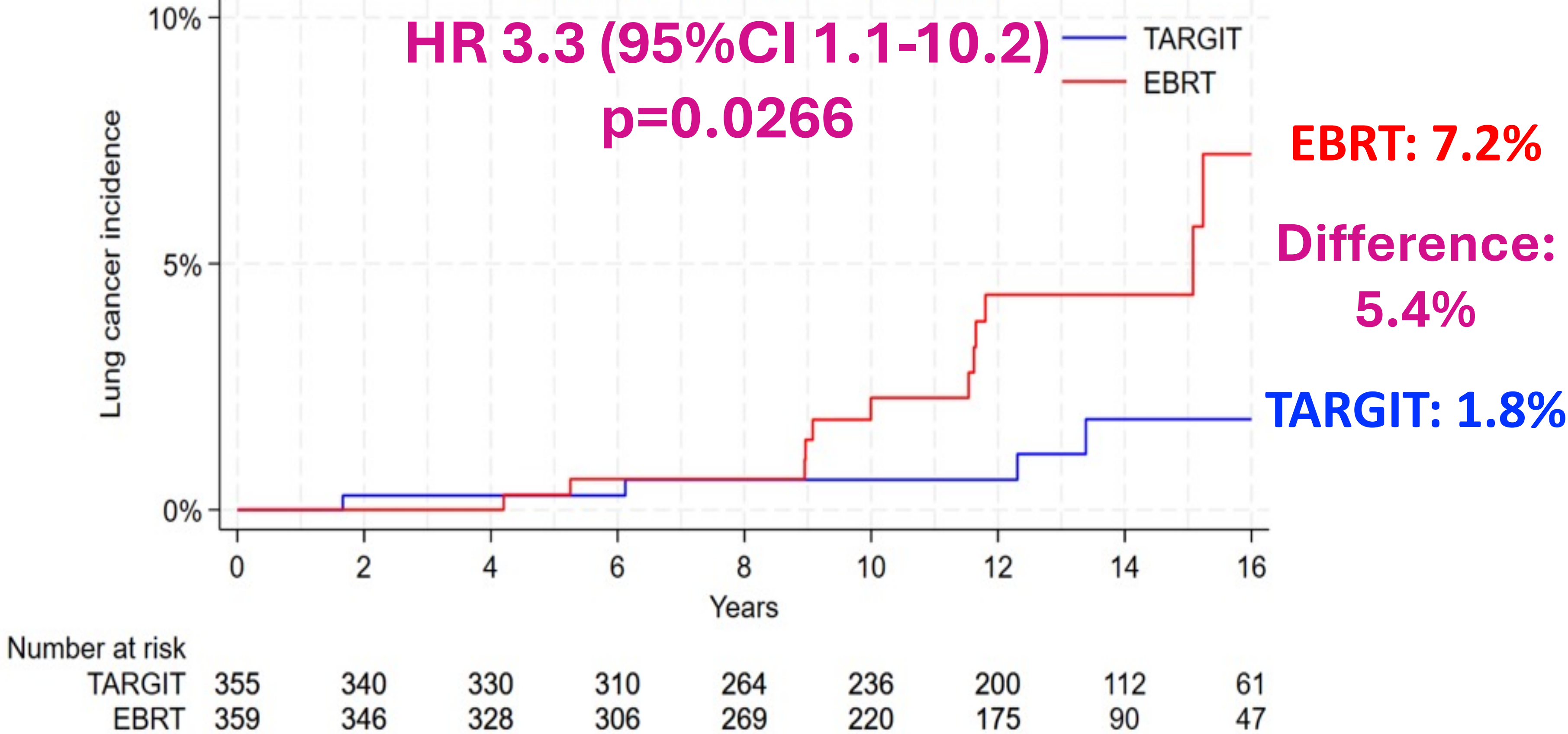
- We collected long term data about health status and new cancer diagnoses of UK patients from the TARGIT-A randomised trial, using direct patient contact, & NHS Digital data.
- We compared lung cancer incidence between patients randomised to TARGIT-IORT vs EBRT.

N.B. The duration of follow-up for patients receiving EBRT was slightly shorter vs TARGIT-IORT (p=0.0399). In other words, some cases of lung cancer in the EBRT group may have been missed, so the benefit of targeted intraoperative radiotherapy may have been underestimated.



New Results

16-year Lung Cancer Incidence: TARGIT-IORT vs EBRT



Headline results

- Significantly more lung cancer with EBRT vs TARGIT-IORT
HR 3.3 (95%CI 1.1-10.2)., p=0.0266
- 16-year incidence of lung cancer: EBRT: **7.2%** vs. TARGIT: **1.8%**
Reduction with TARGIT-IORT = 5.4% (95%CI 0.3 -10.5)

50,000 breast cancer patients could avoid getting lung cancer by taking TARGIT-IORT

*An estimated 920,000 breast cancer patients worldwide are suitable for TARGIT-IORT during lumpectomy, annually.

Using the 5.38% reduction in lung cancer risk that we have observed, if TARGIT-IORT were to be made accessible to these patients, then 49,496 (95%CI 5500-134320) of these patients would be spared the diagnosis of a lung cancer during their follow up.

Conclusions

- With very long-term follow data from of a large TARGIT-A randomised trial, we found a substantial increase in lung cancer incidence with EBRT vs TARGIT-IORT.
- It is a tragedy when women who outlive breast cancer then succumb to this frequently lethal radiation-induced lung cancer, which is avoidable by using TARGIT-IORT during lumpectomy instead of post-operative EBRT.
- These new data further mandate* full discussion about benefits of TARGIT-IORT vs. EBRT with patients, including reduction in lung cancer incidence, *before their surgery*, so they have a choice to take it during their initial surgical excision.

*Discussion about TARGIT-IORT as an option to EBRT is mandatory as per GMC guidance and the UK law (UK Supreme Court. Montgomery v Lanarkshire Health Board. 11 Mar 2015.

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