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Oncologic Outcomes of Hypofractionated vs. Conventionally fractionated Radiotherapy in Breast Cancer Patients with an indication for Regional Nodal Irradiation: A Cancer Registry Study

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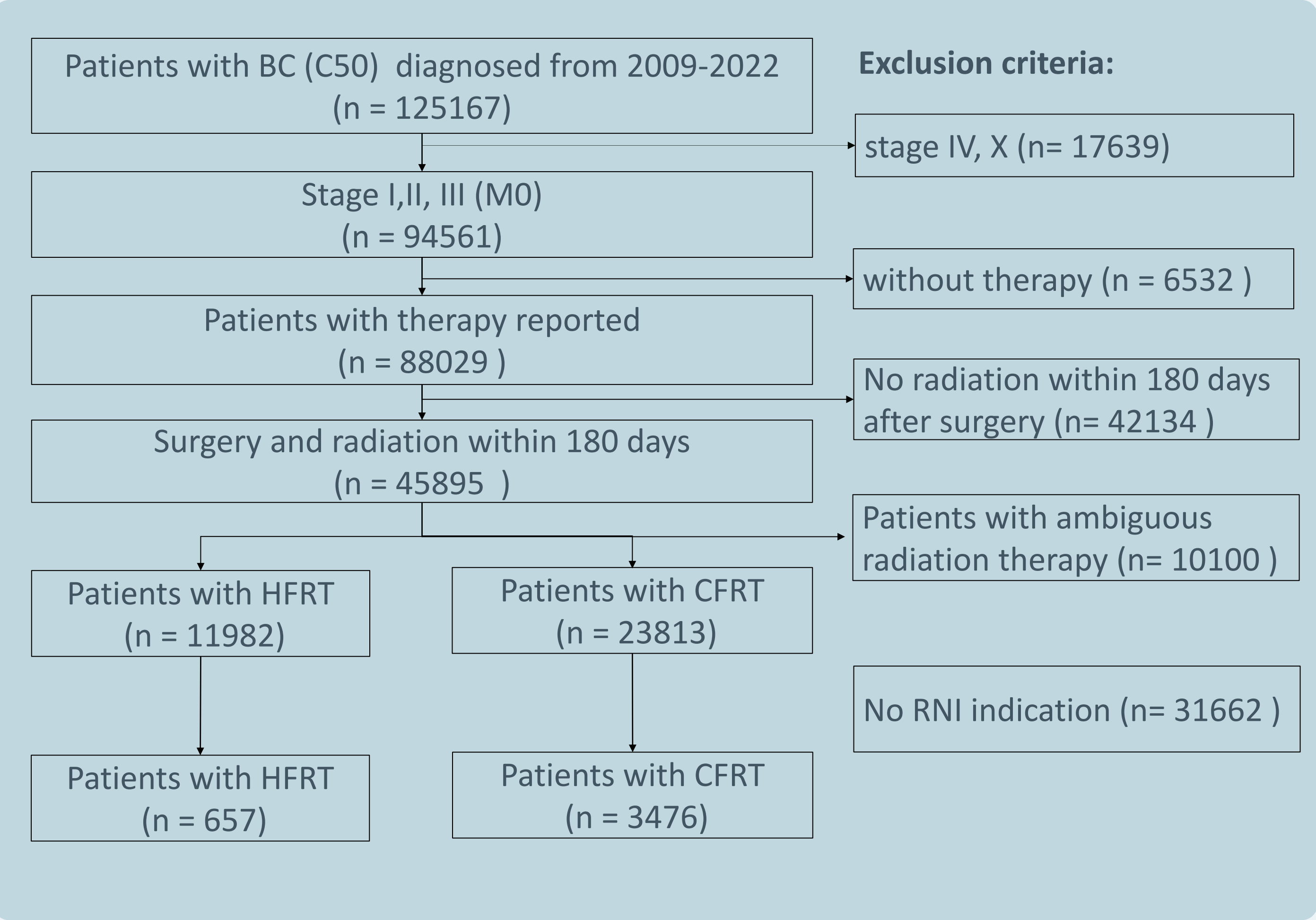
Background

- Hypofractionated radiotherapy (HFRT) is the standard of care for whole-breast and chest wall irradiation while conventionally fractionated radiotherapy (CFRT) is still commonly used for regional nodal irradiation (RNI)
- The HypoG-01 trial recently showed improved 5-year breast cancer specific survival (BCSS) and overall survival (OS) for HFRT in patients receiving RNI while the DBCG Skagen 1-trial showed impaired BCSS with HFRT
- This study analyzes real-world data from the Baden-Württemberg Cancer Registry (BWCR), Germany, to compare the oncologic outcomes of HFRT and CFRT in patients with indication for RNI but without neoadjuvant systemic therapy

Methods

- We identified patients diagnosed between 2009 and 2022 with pT1-3, pN0-3 breast cancer after up-front surgery and an indication for RNI according to the German AGO guidelines from the BWCR
- OS and BCSS were assessed using Kaplan-Meier statistics and multivariate Cox regression models (adjusted for pT stage, pN stage, age, use of chemotherapy, type of surgery (breast conserving vs. mastectomy), and tumor subtype)
- Patients were grouped into HFRT and CFRT according to total dose and duration of treatment

Fig. 1: Consort Diagram



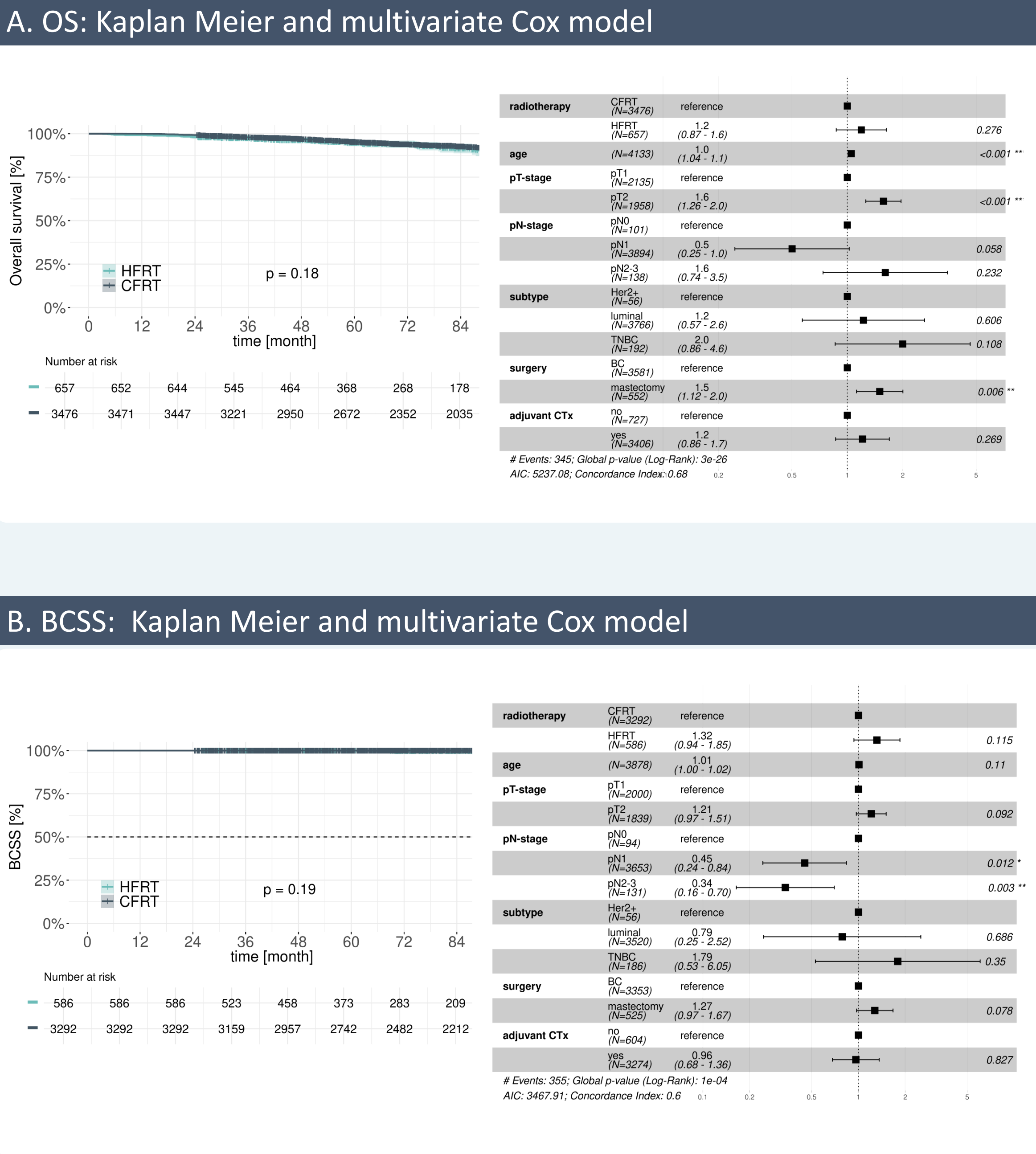
Results

Table 1: Patient characteristics				
	Overall	HFRT	CFRT	P - value
Total – no. (%)	4133	657 (15.9)	3476 (84.1)	
Age – mean (SD)	57.1 (10.2)	59.9 (9.4)	56.6 (10.2)	<0.001
pT-stage – no. (%)				<0.001
▪ T1	2135 (52.2)	411 (63.2)	1724 (50.1)	
▪ T2	1958 (47.8)	239 (36.8)	1719 (49.9)	
pN-stage – no. (%)				<0.001
▪ N0	101 (2.4)	20 (3.0)	81 (2.3)	
▪ N1	3894 (94.2)	625 (95.1)	3269 (94.0)	
▪ N2-N3	138 (3.3)	12 (1.8)	126 (3.6)	
Subtype – no. (%)				0.021
▪ Her2+	56 (1.4)	3 (0.5)	53 (1.6)	
▪ TNBC	192 (4.8)	23 (3.5)	169 (5.0)	
▪ Luminal	3766 (93.8)	624 (96.0)	3142 (93.4)	
Surgery – no. (%)				0.685
▪ Breast conserving	3581 (86.6)	573 (87.2)	3008 (86.5)	
▪ Mastectomy	552 (13.4)	84 (12.8)	468 (13.5)	
Adjuvant CTx – no. (%)				<0.001
▪ yes	3406 (82.4)	440 (73.1)	2926 (84.2)	
▪ no	727 (17.6)	177 (26.9)	550 (15.8)	

A total of 4133 patients with a median follow-up of 88.9 months were included (Fig.1):

- 52.2% (2135 of 4133) with pT1 stage, 47.8% (1958 of 4133) with pT2, and 0% (0 of 4133) with pT3;
- 2.4% (101 of 4133) with pN0 stage, 94.2% (3894 of 4133) with pN1 stage, and 3.3% (138 of 4133) with pN2/3 stage
- A total of 93.8% (3766 of 4133) had HR+/HER2- tumors, 4.8% (192 of 4133) triple-negative tumors, and 1.4% (56 of 4133) HER2+ tumors.
- Use of HFRT vs. CFRT was 15.9% (657) vs. 84.1% (3476)
- Patients receiving HFRT were significantly older (mean age 59.9 years vs. 56.6 years, p<0.001) and had more favorable tumor characteristics:
 - pN2/3 1.8% vs. 3.6%
 - TNBC 3.5% vs. 5.0%
- Chemotherapy was less frequently administered in patients treated with HFRT (73.1% vs. 84.2%; p<0.001)
- Multivariate Cox regression analysis revealed no significant influence for the use of HFRT on
 - OS (HR 1.2, 95% CI 0.87 to 1.6 for HFRT vs. CFRT) (Fig.2A)
 - BCSS (HR 1.32, 95% CI 0.94 to 1.85). (Fig.2B)

Fig. 2: Overall Survival and BCSS.



Conclusion

- This data suggests that HFRT does not result in impaired OS or BCSS for patients with an indication for nodal irradiation after up-front surgery. This supports the routine use of HFRT for RNI
- The study highlights the potential of using real-world data from modern state-run cancer registries to bridge the gap between clinical trials and everyday oncology practice, offering valuable insights for clinicians in real-world treatment decisions

Conflict of interest : No conflict of interest