Population-based outcomes and patterns of care for patients with stage I-III, HER2-negative breast cancer, by estrogen receptor expression levels: a high-resolution study

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1. Background

HER2-negative breast cancer (BC) encompasses a **wide range of estrogen receptor (ER) expression levels**

Outcomes **vary** across this spectrum

Tumors are classified as **ER-positive** if at least **1% of tumor cells express ER**

ER-low tumours (ER 1-9%) have been associated with outcomes as poor as those observed in triple-negative breast cancer (TNBC, ER 0%)

2. A high-resolution study

Real-world evidence is crucial for informing **clinical decision-making** because it is based on data from an **unselected patient population**

High-resolution, population-based studies allow the collection of unbiased, **detailed pathological and clinical data** not routinely abstracted by cancer registries

Few population-based studies have systematically assessed outcomes across the continuum of ER expression, **while accounting for treatment details and tumor characteristics**

3. Population coverage



Veneto
587,389 (24%)

Friuli Venezia-Giulia
619,497 (100%)

4. Methods

Patient-level data on:

- **stage**, **ER levels**, **grade** from pathology reports
- **surgery**, **chemotherapy** (CT), and **endocrine therapy** (ET) from population-based prescription repositories and claims

Stratification by ER level expression: 0% (TNBC), 1-9% (ER-low), 10-49%, and ≥50%

Cancer-specific survival by ER category, up to **five** years after diagnosis, using **validated cause of death data**

5. Results

10,155 women diagnosed during **2014-2021**, and followed up until **31 December 2024**

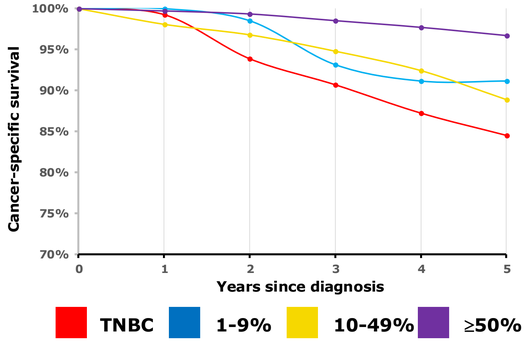
78% of women ≥ 50 years

59% of women with **stage I BC**

ER %	No (%)	ET (%)		CT (%)	
		Yes	No	Yes	No
0	884 (8.7)	7	93	79	21
1-9	69 (0.7)	29	71	78	22
10-49	159 (1.6)	84	16	52	42
≥50%	9043 (89)	89	11	31	69

Survival (%)	0	1-9	10-49	≥50%
1 y	99	100	98	100
2 y	94	98	97	99
3 y	91	93	95	98
4 y	87	91	93	97
5 y	84	91	89	95

6. Results



7. Highlights

One of the **largest** population-based studies to date

Patients with **TNBC** or **ER-low** BC showed similarly **poor short-term outcomes**

Over the **longer term**, survival in the **TNBC** group **declined steadily**, whereas **trajectories for the other subgroups**, including ER-low, were **less steep**

The **7% difference in five-year cancer-specific survival between TNBC and ER-low** BC may suggest a **modest benefit associated with ET**

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