



Breast cancer

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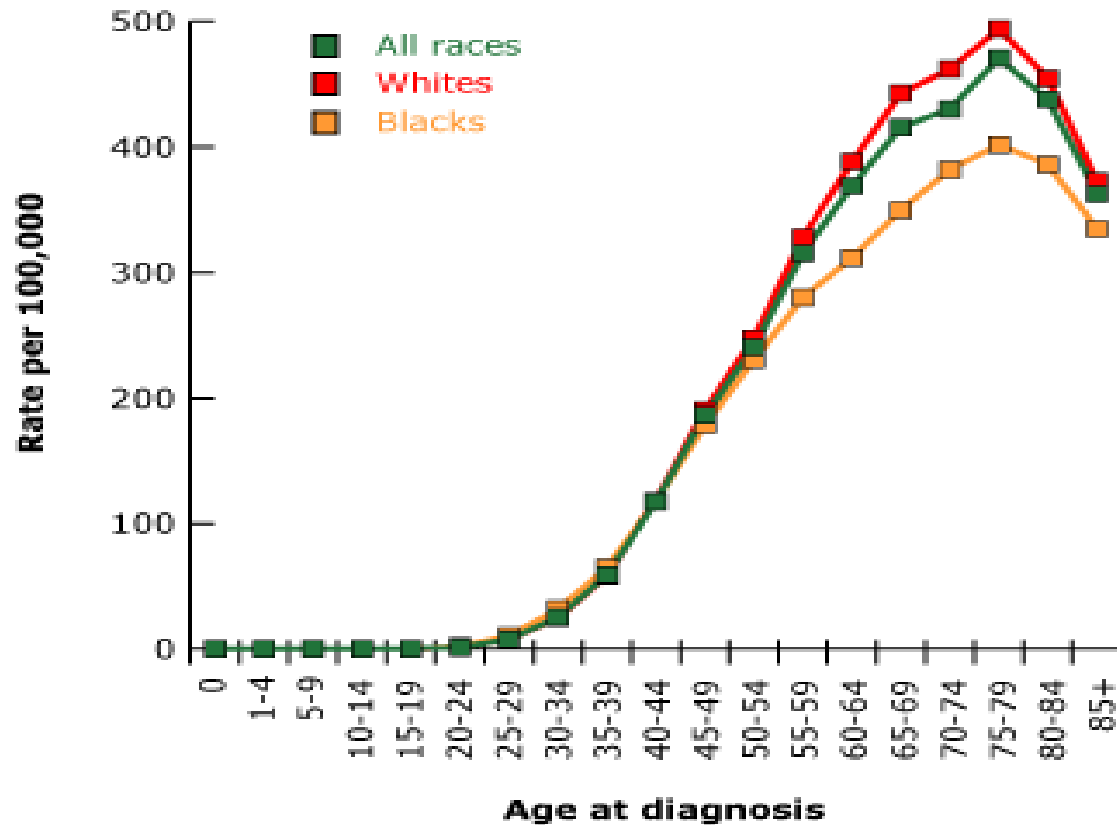
Comenius University

National Cancer Institute, Bratislava, Slovakia

Risk factors

- **Hormonal factors** (estrogen exposition)
- **Age** and sex
- **Benign lesions of breast**
- **Genetic factors**
(family history, young age, BRCA1 and BRCA2)
- Radiation exposure (frequent mammography)
- Race and ethnicity
- Life-style and dietary factors
(weight, physical activity, smoking, alcohol, fatty meals, red meat)

Age-specific SEER incidence, rates of female breast cancer per 100,000, 2000–2003



Data from: http://seer.cancer.gov/csr/1975_2003/results_merged/sect_04_breast.pdf.

Genetic factors

- BRCA1, BRCA2 – tumor suppressor genes
- 50 – 85% risk of breast cancer and 15 - 40% risk of ovarian cancer
- High importance on preventive medicine
 - Breast cancer screening starting at 25 years
- Surgical interventions – prophylactic procedures

Histological subtypes

- Invasive **ductal** 50-80%
- Invasive **lobular** 5-10 %
- Mucinous
- Medullary
- Papillary
- Tubular

Histological subtypes
based on molecular
profiling:



- Basal like ca Er-,Pr-, HER 2-
- Luminal A Er+, G 1-2, HER 2-
- Luminal B Er+, G 2-3, HER 2-
- HER 2-neu positive
- Normal breast –like
- Claudin low

Clinical subtypes of BC

- **Triple-negative** (15-25%)

not present: estrogen receptors
progesterone receptors
HER-2 overexpression

- **Hormonal dependent carcinoma** (50-60%)

positive estrogen and /or progesterone receptors

- **HER-2 positive** (< 20%) - Her-2 overexporession

„Clinical“ staging of BC

- **Early stage (TNM stage I,II) :**

primary tumor up to 5 cm ± mts in axillary LNs

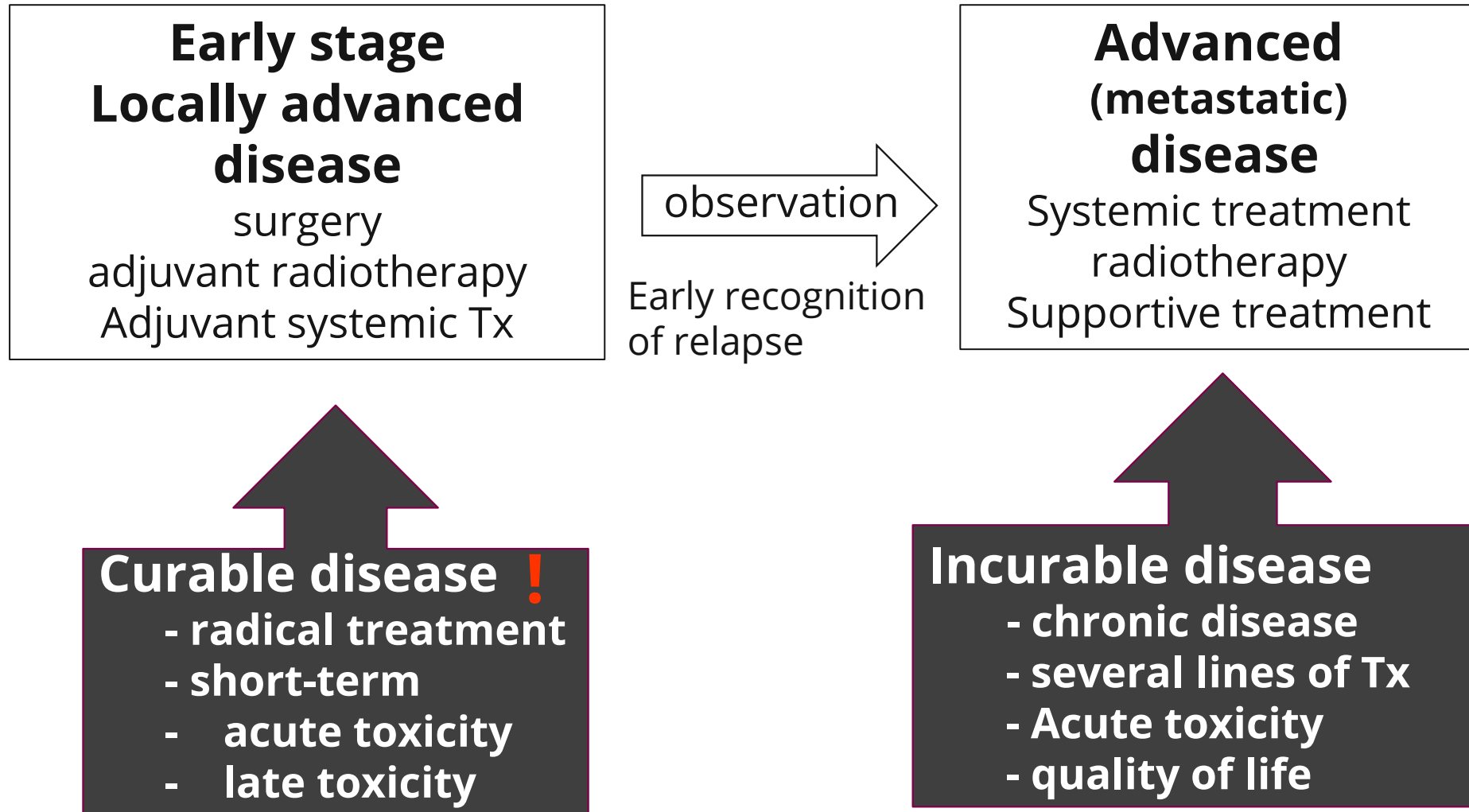
- **locally advanced (TNM stage III):**

primary tumor > 5cm,

infiltrative growth into chest wall, skin, mamma
metastases in supraclavicular or chest LNs ,....

- **Advanced (metastatic) disease (stage IV)**

BC management



Surgical outcomes

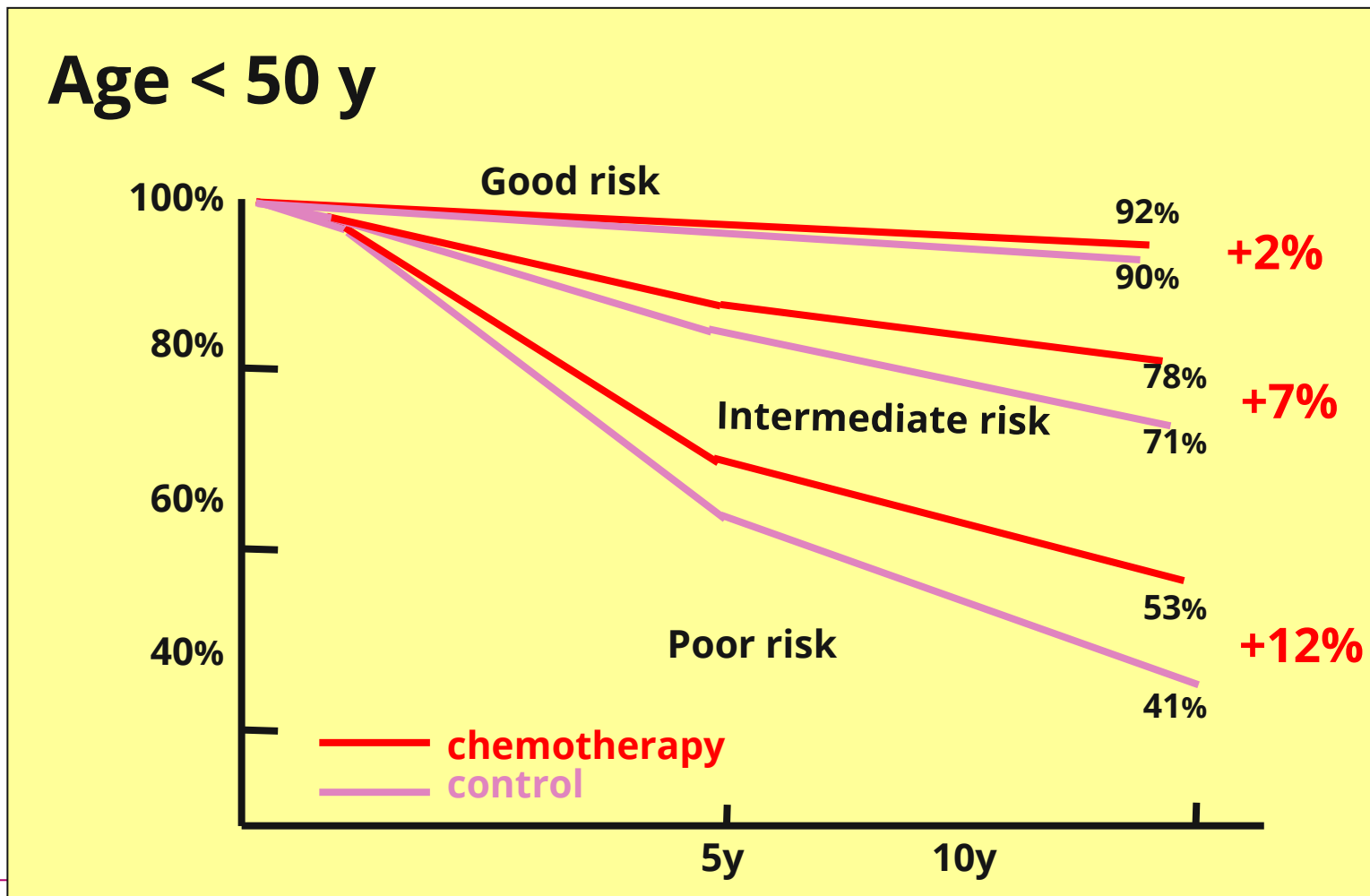
	10-year OS (w/o subsequent Tx)
LN-	70 - >90%
1-3 LN+	50-70%
4-10 LN+	20-50%
> 10 LN+	< 20%

The most important prognostic factor = metastases in axillary lymph nodes

Postoperative management

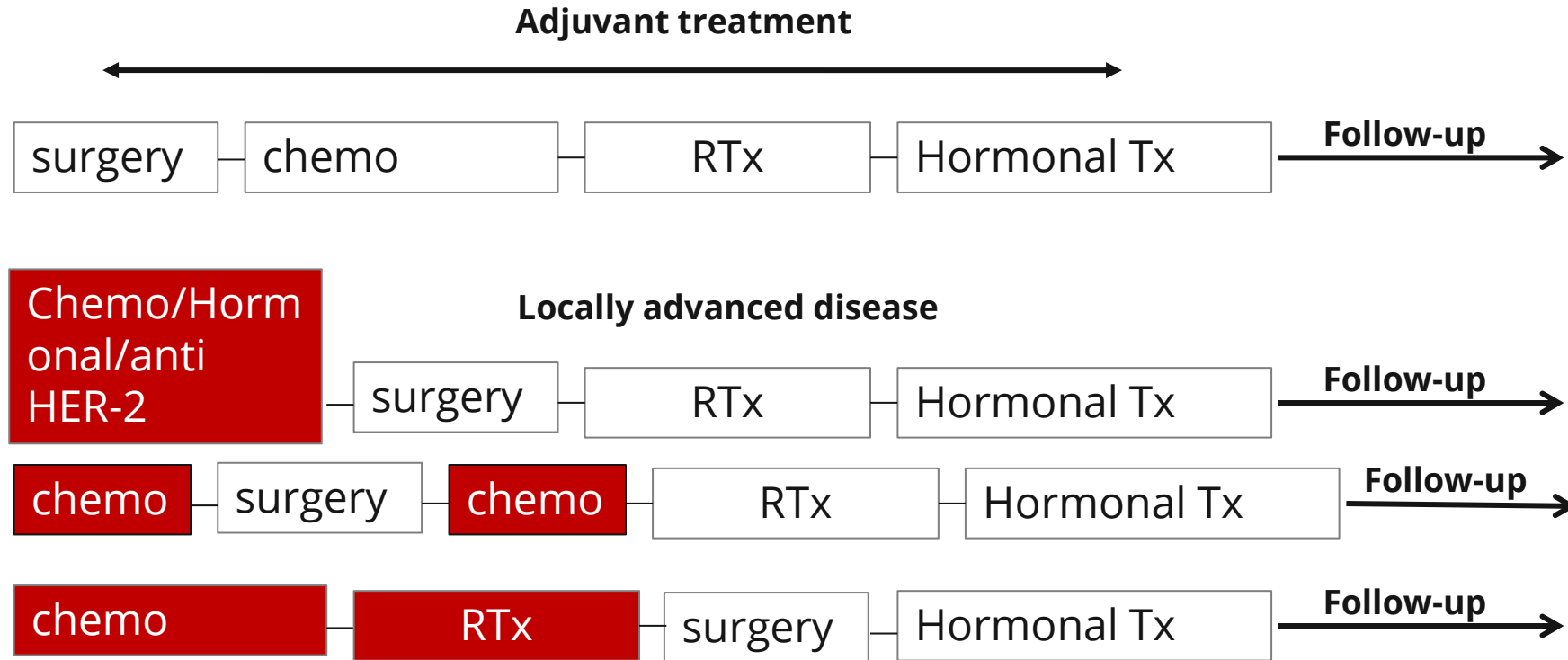
- Radiotherapy to breast or chest wall
- Radiotherapy to axilla
- Systemic treatment
- Chemotherapy
- Hormonal therapy
- Anti HER-2 treatment

Survival

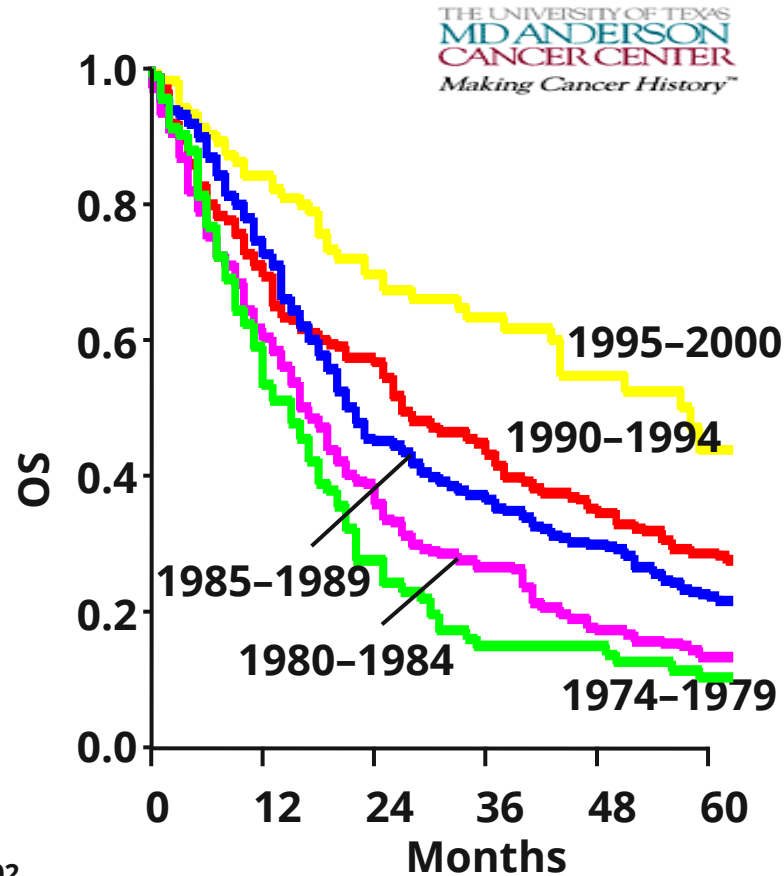


EBCTCG, 1996

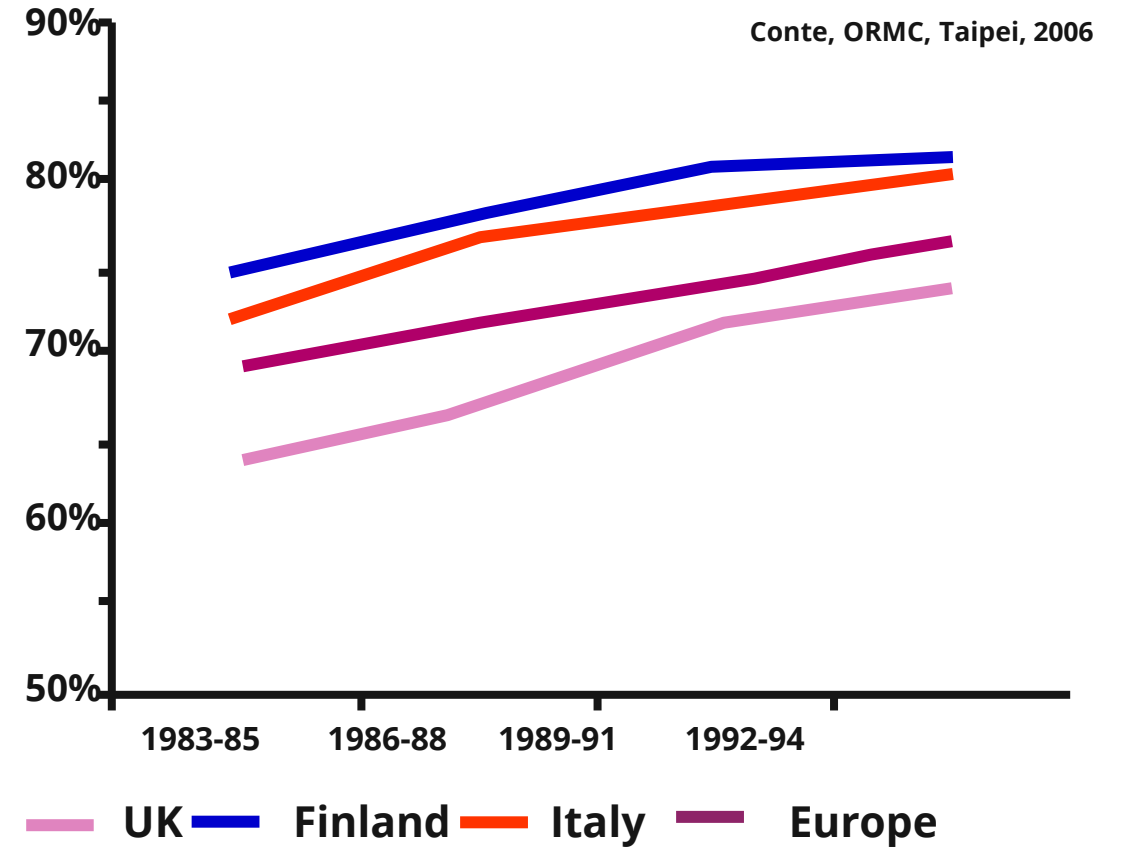
Treatment sequence



Metastatic BC survival - historical and geographical landmarks



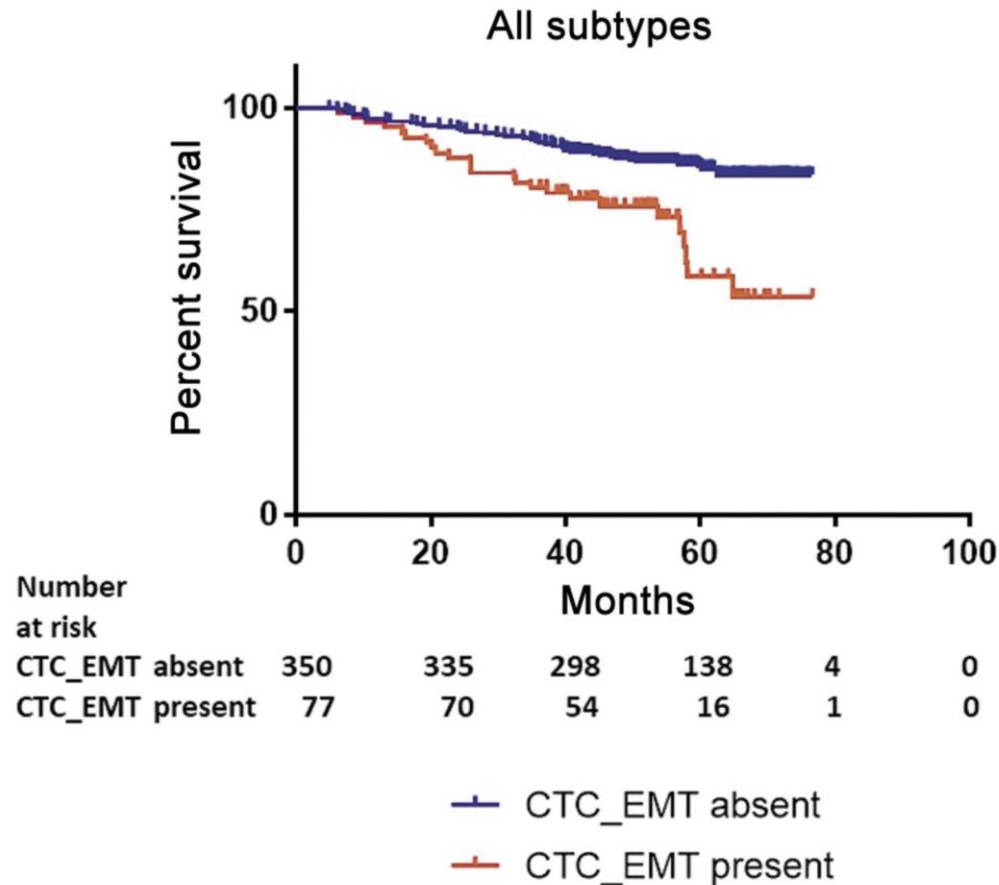
Giordano, et al. Proc ASCO 2002



Translational research unit

- Established 2010
- The only one of its kind in Slovakia
- Focus:
 - Germ cell tumors
 - **Breast cancer**
 - CTCs
- Tissue and blood biobank

Circulating tumor cells in BC – prognostic implications



Disease-free survival
 Hazard ratio=0.42, 95%CI=0.22-0.78, p=0.0003.

Mego M et al. Anticancer Res. 2019

Thank you