

# Adjuvant chemotherapy and trastuzumab for human epidermal growth receptor 2 positive early invasive breast cancer among older women in England: a population-based cohort study using routine data.

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NO CONFLICT OF INTEREST  
TO DECLARE



# Background

- Older patients, aged 70 years and over, account for a substantial proportion of women with breast cancer.
  - Clinical guidance on recommended treatment for older patients with breast cancer is often ambiguous, particularly in the context of comorbidities.
  - Randomised trials on which guidance is based largely under-represent patients aged 70 and over.
- Age is a well-documented risk factor for receipt of non-standard treatment.
  - Differences in rate of access to treatments for older patients
  - Impacts on subsequent poorer outcomes



# Background

- Adjuvant chemotherapy is a well-established treatment for early breast cancer.
- Meta-analysis of RCTs demonstrated strong efficacy of trastuzumab for HER2+
  - ❖ HR 0.66 for Overall Survival (Moja *et al* 2012)
  - ❖ 6 adjuvant RCTs; 2 neo-adjuvant setting
- Guidelines recommend adjuvant trastuzumab & chemotherapy for HER2+ early invasive breast cancer.
  - ❖ decisions based on balance between the risks and benefits, particularly in people with comorbidities



Trastuzumab containing regimens for early breast cancer (Review)

Moja L, Tagliabue L, Balduzzi S, Parmelli E, Pistotti V, Guarneri V, D'Amico R

## Adjuvant trastuzumab

## SIOG/EUSOMA, 2012

Healthy patients with HER2-positive breast cancer and without cardiac disease should be offered trastuzumab in combination with chemotherapy.



# Study Aim

- Investigate the use of adjuvant chemotherapy & trastuzumab
  - among women aged 50+ years
  - with HER2+ early invasive breast cancer
  - in England
- Assess geographical variation in use
  - by age



# Data source

- Patient-level data from National Cancer Registration & Analysis Service (NCRAS):



Cancer Outcomes and Services Dataset (COSD)



Patient & tumour characteristics



Hospital Episode Statistics (HES)



Surgery & comorbidity details



Systemic Anti-Cancer Therapy (SACT) dataset



Chemotherapy & trastuzumab details



# Patient cohort

- ✓ Women aged 50+ years
- ✓ Diagnosed with EIBC
- ✓ January 2014 to December 2017

- 10% of women diagnosed with EIBC had HER2+ tumours
- 74% had surgery within 6m of diagnosis, with no neoadjuvant chemo/trastuzumab

- ✓ HER2 positive tumours
- ✓ Surgery within 6m of diagnosis
- ✓ No neoadjuvant chemo/trastuzumab\*

N = 6,780

Aged 50-69 years at diagnosis

N = 4,630

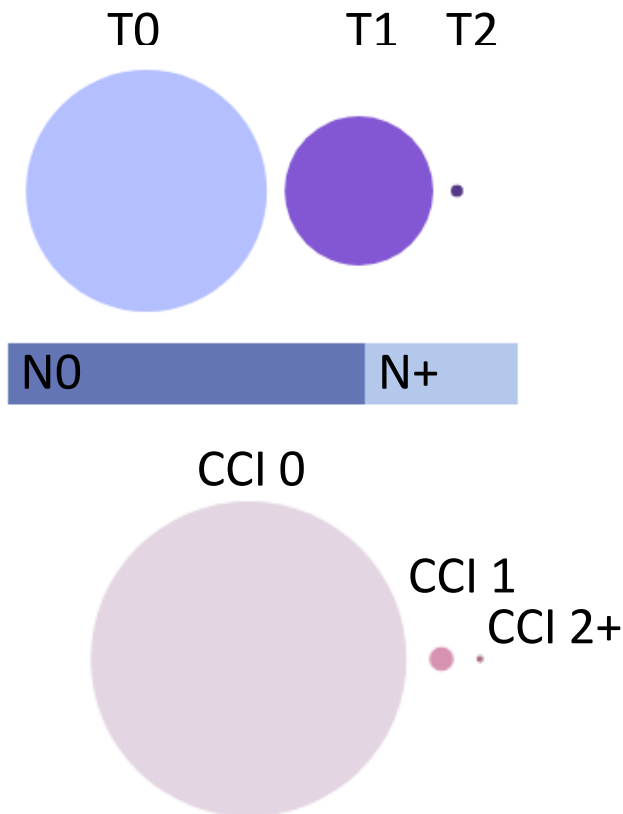
Aged 70+ years at diagnosis

N = 2,150

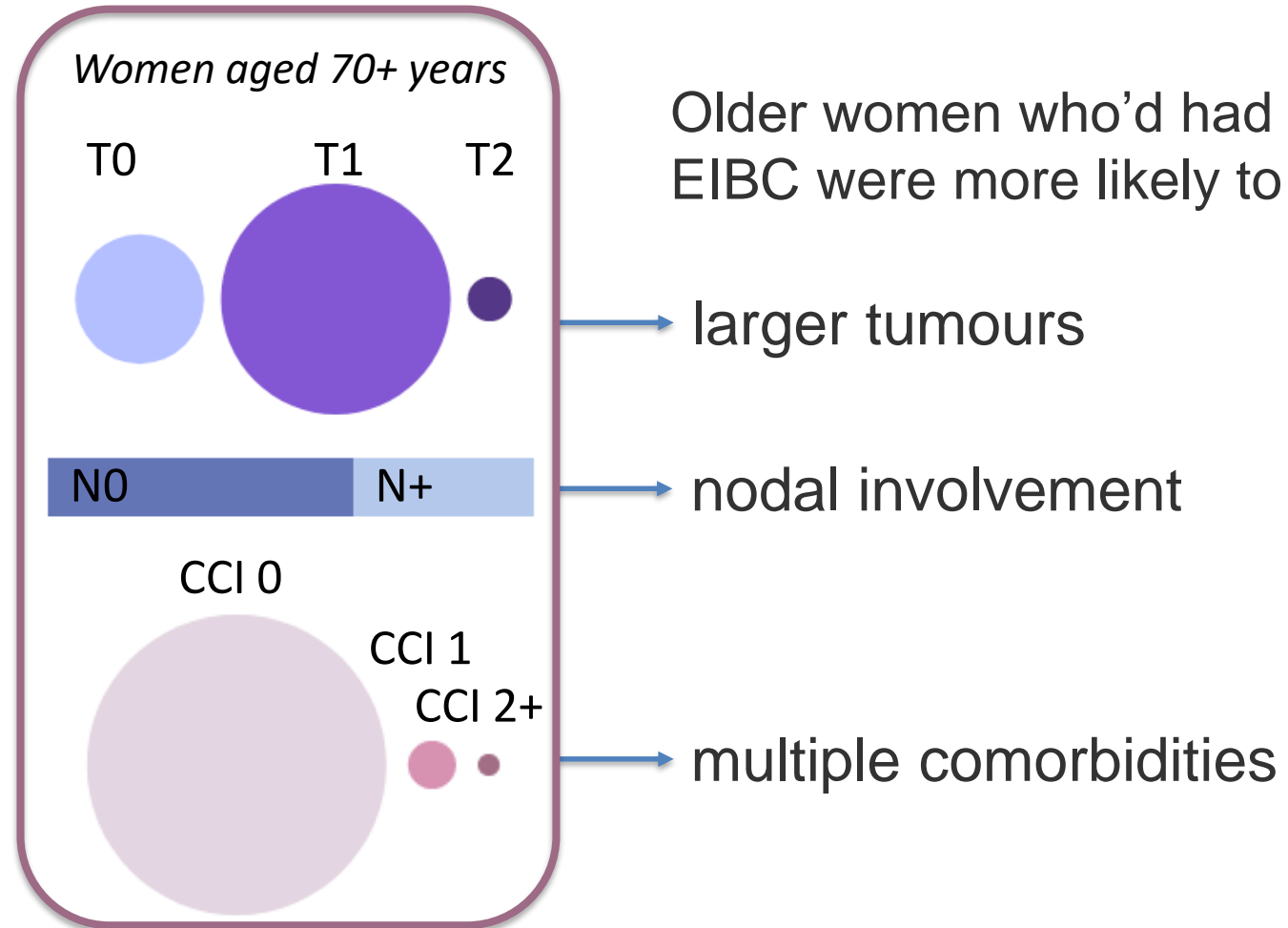
\* With full details on patient & tumour characteristics.

# Patient cohort

Women aged 50-69 years



Women aged 70+ years



Older women who'd had surgery for EIBC were more likely to have:

larger tumours

nodal involvement

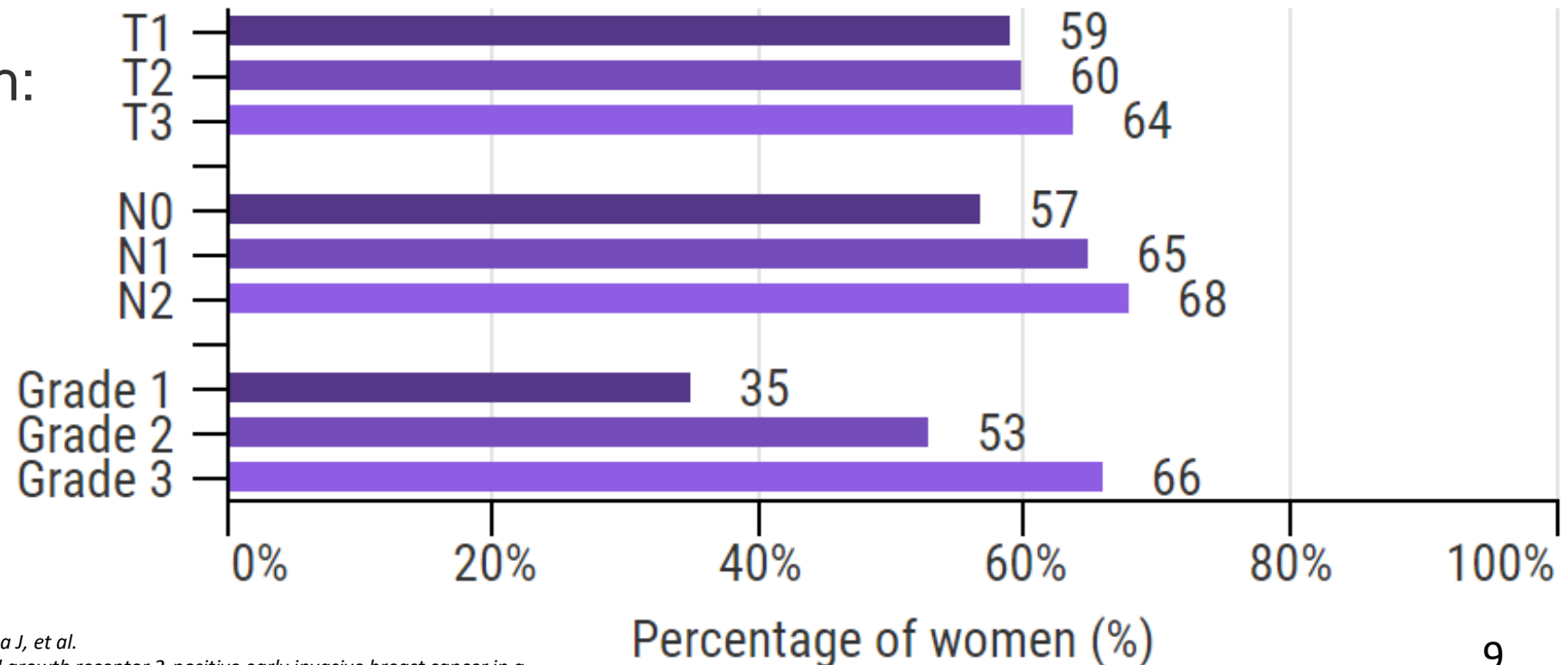
multiple comorbidities





# Factors associated with use

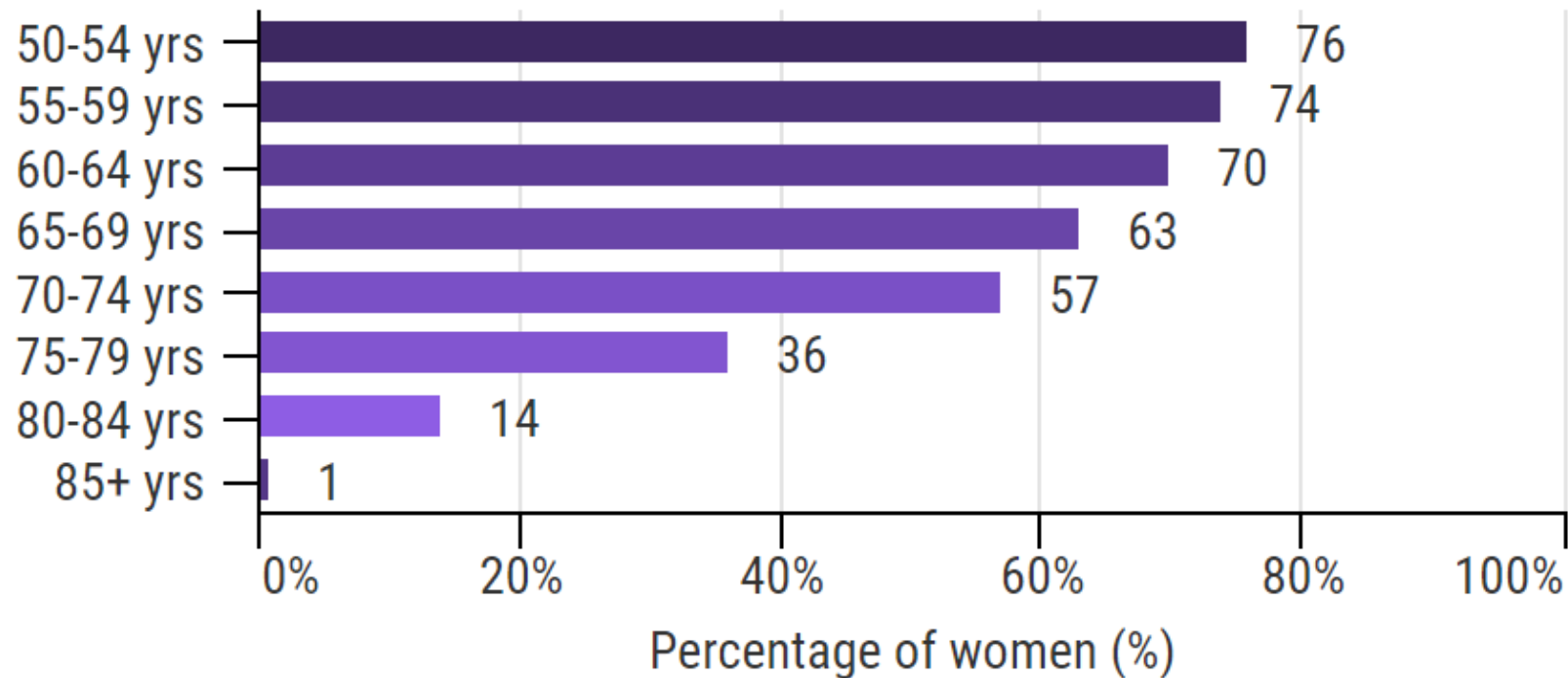
- Among 6,780 women having surgery for HER2+ EIBC, 60% received adjuvant chemotherapy + trastuzumab
- Use was highest among women with:





# Factors associated with use

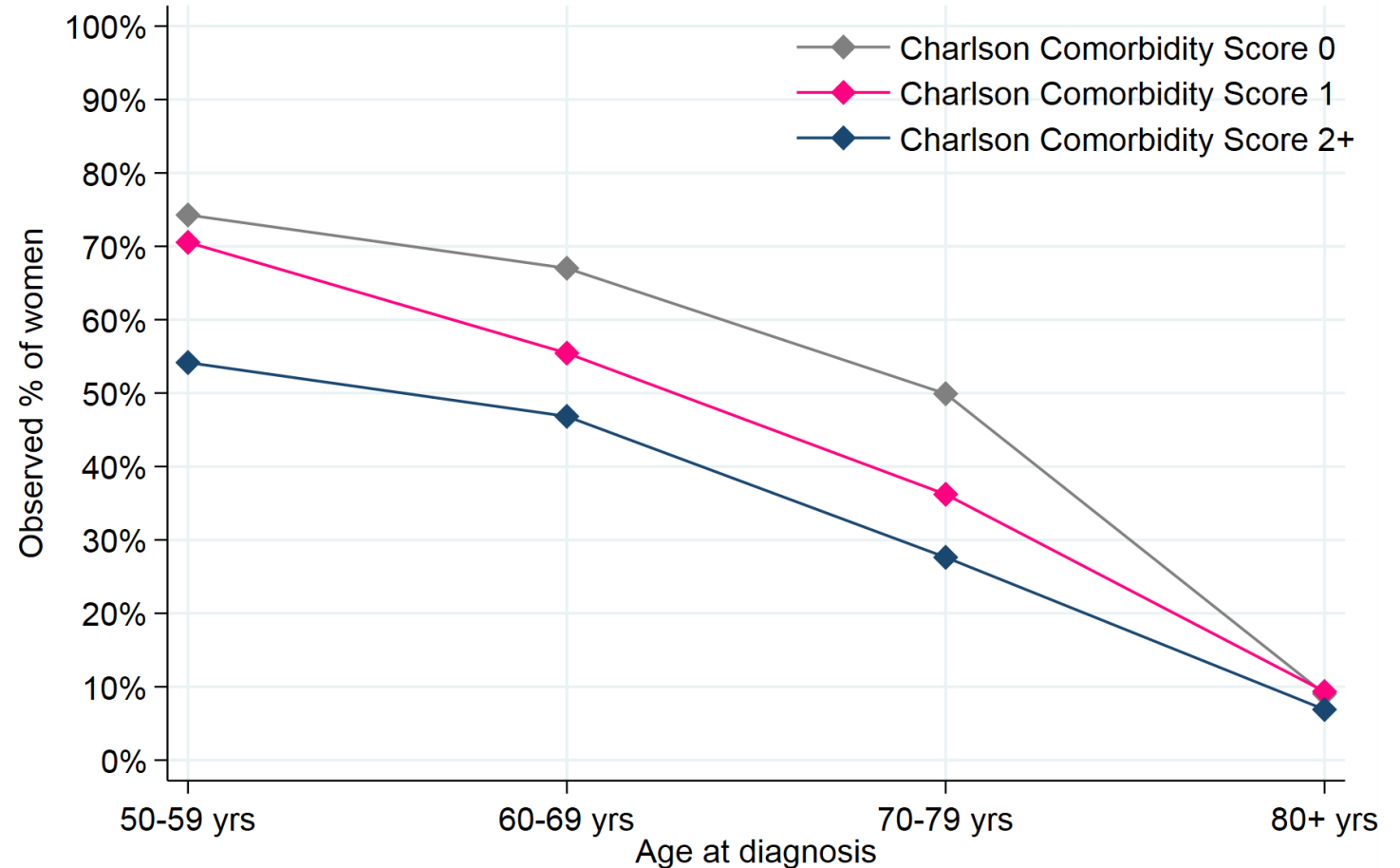
- Among 6,780 women having surgery for EIBC, 60% received adjuvant chemotherapy + trastuzumab
- Use decreased as age at diagnosis increased





# Factors associated with use

- Use decreased as age at diagnosis increased, even where no comorbidity



# Factors associated with use

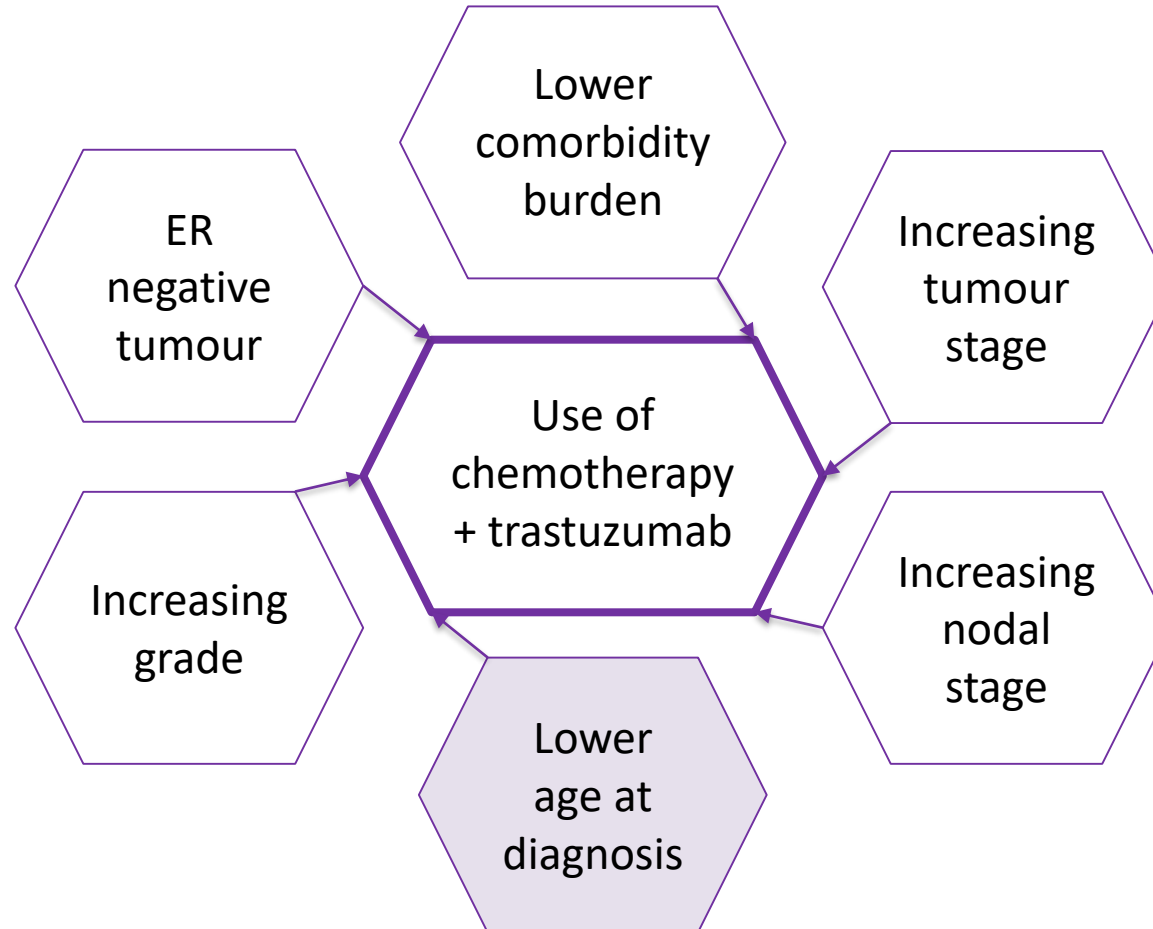
- Lower use as age at diagnosis increased, even after accounting for tumour characteristics & comorbidity

<10%
10-19%
20-29%
30-39%
40-49%
50-59%
60-69%
70-79%
80-89%

Age at diagnosis    T stage		ER positive			ER negative		
		Charlson Comorbidity Index			Charlson Comorbidity Index		
		0	1	2+	0	1	2+
80+ yrs	T1						
	T2						
	T3						
70-79 yrs	T1						
	T2						
	T3						
60-69 yrs	T1						
	T2						
50-59 yrs	T1						
60-69 yrs	T3						
50-59 yrs	T2						
	T3						



# Factors independently associated with use



Results based on a multi-level logistic regression model including age at diagnosis, tumour stage, nodal stage, ER status, tumour grade, social deprivation, and number of comorbidities.



# Findings

- Use varied by geographical region, up to age 79 years
- Low use for all regions among women aged 85+ years

Figure: Predicted use of adjuvant chemotherapy and trastuzumab, from a multilevel mixed-effects logistic regression model, by age at diagnosis within English geographical regions.

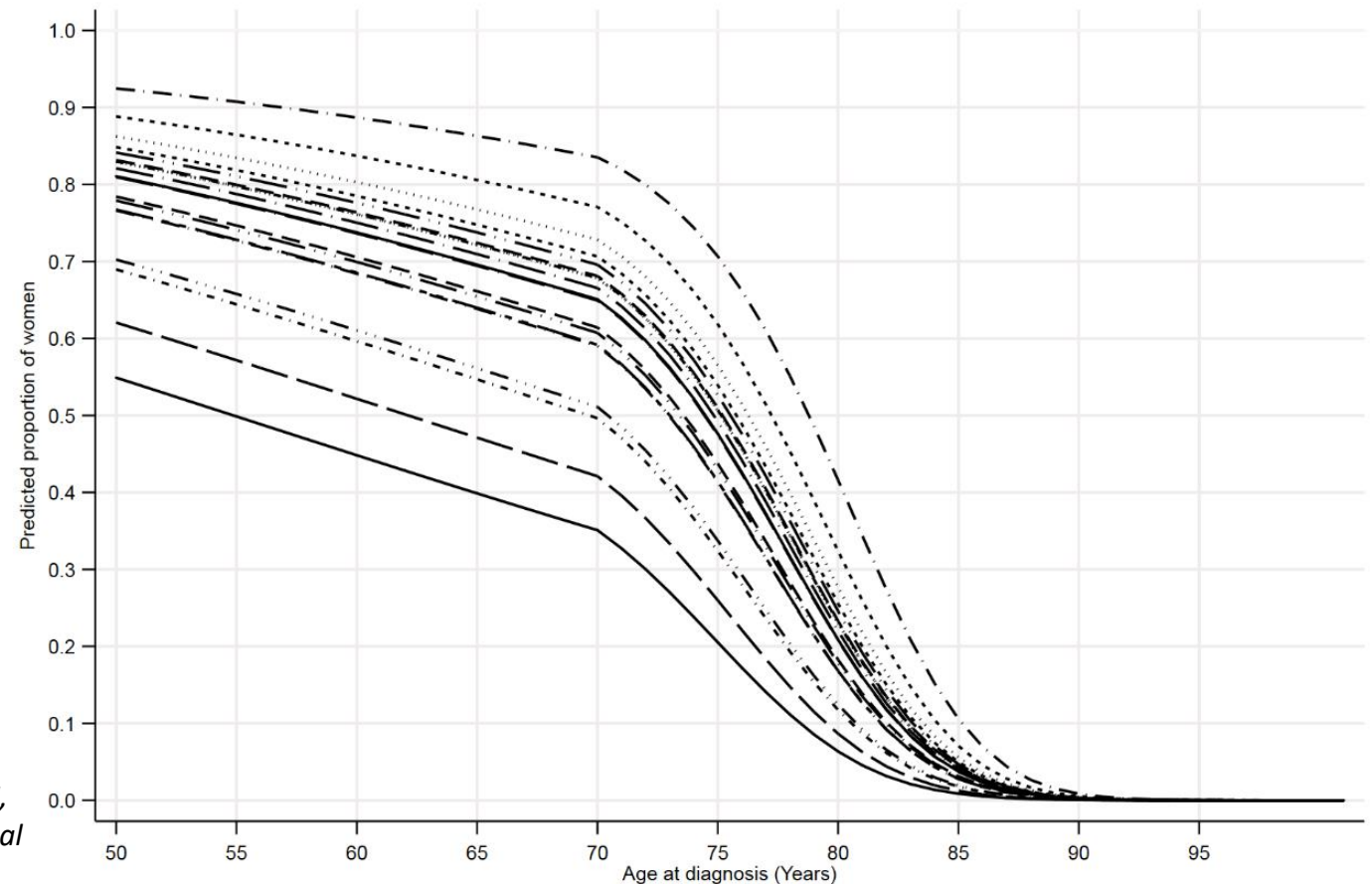


Figure from: Gannon MR, Dodwell D, Jauhari Y, Horgan K, Clements K, Medina J, et al. Initiation of adjuvant chemotherapy and trastuzumab for human epidermal growth receptor 2-positive early invasive breast cancer in a population-based cohort study of older women in England. *J Geriatr Oncol.* 2020;11(5):836–42.



# Conclusions

For women aged 50+ years with HER2+ early invasive breast cancer:

- Age was a dominant factor in use of adjuvant trastuzumab (plus chemo)
  - treatment was less frequent as age at diagnosis increased
  - independent of tumour characteristics or comorbidity burden
- Geographical variation among age groups where use was high overall





# Future Work

1. Compare the trial patient population with patients in routine practice
  - Identify underrepresented groups
2. Evaluate the effectiveness of trastuzumab in routine practice





# Thank you