

Is lack of surgery amongst older postmenopausal women in the UK explained by co-morbidity?

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Background

Poor survival of older cancer patients in the UK

5 year relative survival for women aged 80+:

61% in the UK vs. 74% in Norway & Sweden

Møller et al (2010), Int. J. Cancer: 127, 2630–2638

Estimated 15,000 preventable deaths amongst cancer patients aged 75+ in the UK if mortality rates matched lowest in Europe and US

Moran & Møller (2009), NCIN Conference

Poor survival linked with lack of surgery

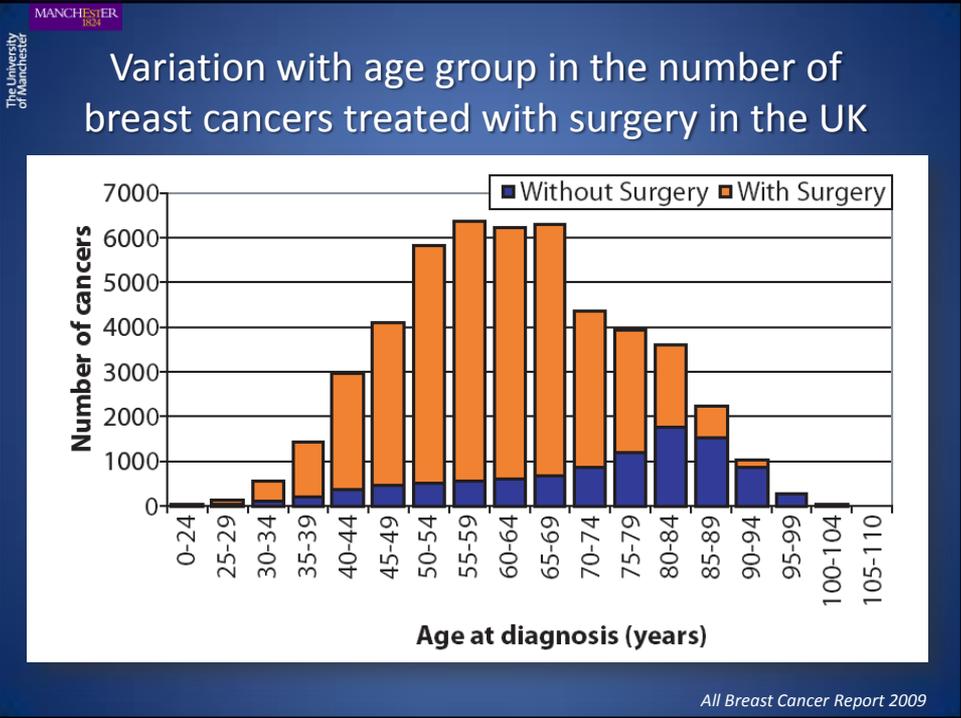
Amongst women aged 70+, those having surgery had relative survival rates 2-3 times higher than those that did not

Wishart et al (2010), Annals of Oncology 21: 291–296

Older women less likely to get surgery

56% of women aged 80+ did not get surgery for early stage breast cancer vs <20%, 56-79 year olds

Lavelle et al (2007), British J. Cancer: 96(8):1197-1203



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‘The only acceptable criteria for not giving (older cancer patients) a clinically appropriate and cost effective treatment should be poor patient health or a patient themselves making a choice not to receive further treatment.’ *DH (2007) 6.32 p89*

Cancer Reform Strategy
NHS

Previous studies – Co-morbidity

United Kingdom

Small prospective cohort (n = 76)

Women aged 65+ years diagnosed early stage breast cancer in Greater Manchester in 2002-3

Data on co-morbidity collected from case notes using Charlson index

Odds of women aged 80+ years not having surgery were over 44 times that of 65-79 year olds

Lavelle et al (2007), British J. Surgery; 94(10):1208-1215

United States

Larger scale studies using administrative databases

Base co-morbidity measure on ICD codes

Some studies found co morbidity explains some of the variation in breast cancer surgery by age

Naeim et al (2006), Critical Rev Onc-Hem: 59(3):234-242

However, older age continues to predict not getting surgery

Giordano et al (2005), J of Clin Onc: 23(4):783-791, Hillner et al (1996), Breast Cancer Research & Treatment; 40; 75-86

Aim

- To investigate the extent to which age-associated differences in breast cancer surgery rates, amongst women aged ≥ 65 years in the UK, can be accounted for by co-morbidity as measured in administrative data

Study data

- Women with invasive breast cancer aged ≥ 65 years
- Northern & Yorkshire and West Midlands cancer registry regions
- Diagnosed **April 1997 to end March 2005**
- Linked cancer registry and Hospital Episodes Statistics (HES) data extract

Variable	Category	n	Percent
Age group	65-69	5,769	25.0%
	70-74	5,650	24.5%
	75-79	5,205	22.6%
	80-84	3,566	15.5%
	85+	2,848	12.4%
Diagnosis period	1997-9	7,377	32.0%
	2000-2	8,685	37.7%
	2003-5	6,976	30.3%
Registry	NYCRIS	12,669	55.0%
	WMCIU	10,369	45.0%
Ethnicity	White	19,043	82.7%
	Non-white	275	1.2%
	Missing	3,720	16.1%
Deprivation (IMD quintile)	1 st (affluent)	3,309	14.4%
	2 nd	4,528	19.7%
	3 rd	4,643	20.1%
	4 th	4,974	21.6%
	5 th (deprived)	5,556	24.1%
	Missing	28	0.1%
Total		23,038	100%

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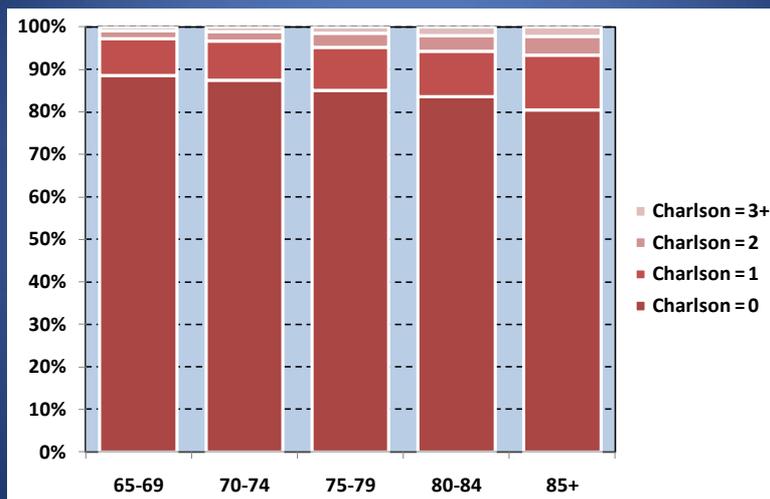
Variable	Category	n	Percent
Stage	I	6,036	26.2%
	II	9,035	39.2%
	III	1,974	8.6%
	IV	1,415	6.1%
	Missing	4,578	19.9%
Grade	Well diff.	3,492	15.2%
	Mod. diff.	9,125	39.6%
	Poorly diff.	5,464	23.7%
	Missing	4,957	21.5%
Co-morbidity (Charlson Score)	0	19,749	85.7%
	1	2,310	10.0%
	2	650	2.8%
	3	214	0.9%
	4	66	0.3%
	5	21	0.1%
	6	23	0.1%
	7	5	0.02%
Total		23,038	100%

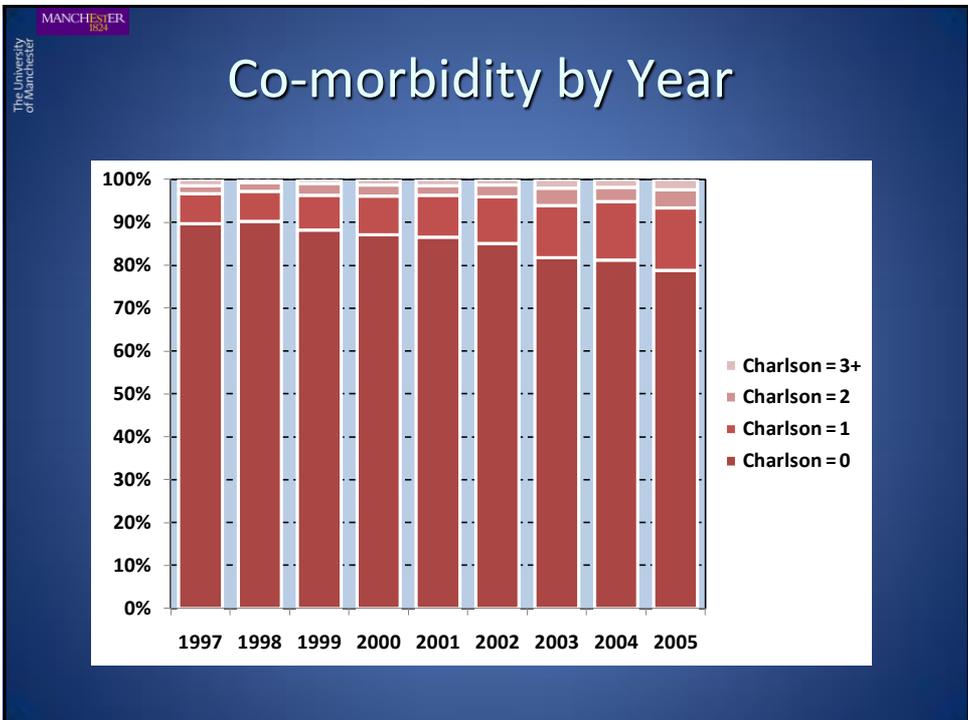
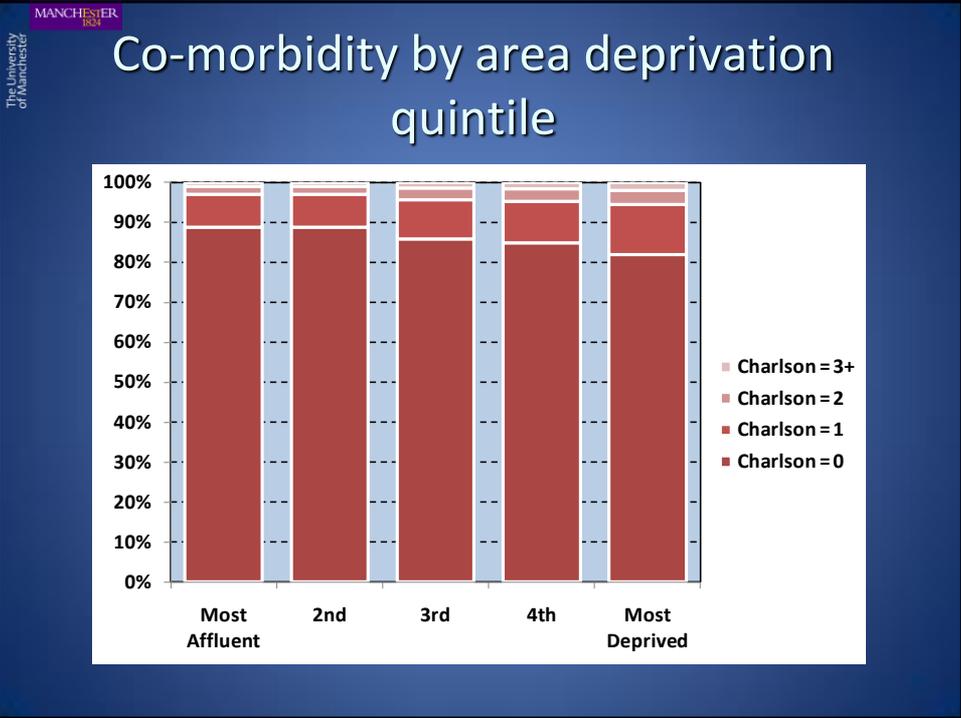
Study group

- Co-morbidity measure derived from linked HES dataset
- Charlson score includes 19 weighted clinical elements
- HES diagnostic codes in **1 year prior to diagnosis**
- 'Cancer' element drawn from cancer registration data

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Co-morbidity by age





Primary Surgery

- Women classified as receiving treatment with surgery if they had mastectomy or breast conserving surgery **within 6 months of diagnosis**
- Operation data from HES – diagnosis dates from registries
- 83% had surgery within 3 months

Variable	Category	No. with surgery	Percent
Age group	65-69	4,983	86.4%
	70-74	4,564	80.8%
	75-79	3,826	73.5%
	80-84	2,161	60.6%
	85+	970	34.1%

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	85+	970	34.1%
Diagnosis period	1997-9	4,970	67.4%
	2000-2	6,298	72.5%
	2003-5	5,236	75.1%

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Diagnosis period	1997-9	4,970	67.4%
	2000-2	6,298	72.5%
	2003-5	5,236	75.1%
Registry	NYCRIS	8,910	70.3%
	WMCIU	7,594	73.2%
Ethnicity	White	13,826	72.6%
	Non-white	213	77.5%
	Missing	2,465	66.3%
Deprivation	1 (affluent)	2,492	75.3%
	2	3,422	75.6%
	3	3,302	71.1%
	4	3,510	70.6%
	5 (deprived)	3,762	67.7%
Total		16,504	71.6%

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- 83% had surgery within 3 months

Variable	Category	No. with surgery	Percent
Stage	I	5,351	88.7%
	II	7,896	87.4%
	III	1,352	68.5%
	IV	235	16.6%
	Missing	1,670	36.5%
Grade	Well diff.	2,955	84.6%
	Mod. diff.	7,619	83.5%
	Poorly diff.	4,653	85.2%
	Missing	1,277	25.8%

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	Poorly diff.	4,653	85.2%
	Missing	1,277	25.8%
Co-morbidity	0	14,494	73.4%
	1	1,529	66.2%
	2+	481	4.9%
Total		16,504	71.6%

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Factors associated with receiving primary surgical treatment

Variable	Category	Unadjusted Odds Ratio	95% CI
Age group	65-69	(ref)	-
	70-74	0.66	0.60-0.73
	75-79	0.44	0.40-0.48
	80-84	0.24	0.22-0.27
	85+	0.08	0.07-0.09

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	75-79	0.44	0.40-0.48
	80-84	0.24	0.22-0.27
	85+	0.08	0.07-0.09
Co-morbidity	0	(ref)	-
	1	0.71	0.65-0.78
	2+	0.35	0.31-0.40

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Co-morbidity	0	(ref)	-
	1	0.71	0.65-0.78
	2+	0.35	0.31-0.40
Registry	NYCRIS	(ref)	-
	WMCIU	1.15	1.09-1.22
Diagnosis period	1997-9	(ref)	-
	2000-2	1.28	1.19-1.37
	2003-5	1.46	1.35-1.57
Deprivation	1 st (affluent)	(ref)	-
	2 nd	1.01	0.91-1.13
	3 rd	0.81	0.73-0.89
	4 th	0.79	0.71-0.87
	5 th (deprived)	0.69	0.62-0.76
Stage	I	(ref)	-
	II	0.89	0.80-0.98
	III	0.28	0.25-0.32
	IV	0.03	0.02-0.03
	Missing	0.07	0.07-0.08

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	75-79	0.44	0.40-0.48	0.56	0.50-0.63
	80-84	0.24	0.22-0.27	0.32	0.28-0.36
	85+	0.08	0.07-0.09	0.13	0.11-0.14
Co-morbidity	0	(ref)	-	(ref)	-
	1	0.71	0.65-0.78	0.75	0.67-0.84
	2+	0.35	0.31-0.40	0.40	0.34-0.48
Registry	NYCRIS	(ref)	-	(ref)	-
	WMCIU	1.15	1.09-1.22	1.70	1.58-1.84
Diagnosis period	1997-9	(ref)	-	(ref)	-
	2000-2	1.28	1.19-1.37	1.17	1.08-1.28
	2003-5	1.46	1.35-1.57	1.29	1.17-1.41
Deprivation	1 st (affluent)	(ref)	-	(ref)	-
	2 nd	1.01	0.91-1.13	1.11	0.96-1.27
	3 rd	0.81	0.73-0.89	0.97	0.85-1.11
	4 th	0.79	0.71-0.87	1.03	0.90-1.17
	5 th (deprived)	0.69	0.62-0.76	0.83	0.73-0.95
Stage	I	(ref)	-	(ref)	-
	II	0.89	0.80-0.98	1.01	0.91-1.13
	III	0.28	0.25-0.32	0.34	0.30-0.39
	IV	0.03	0.02-0.03	0.02	0.02-0.03
	Missing	0.07	0.07-0.08	0.10	0.09-0.11

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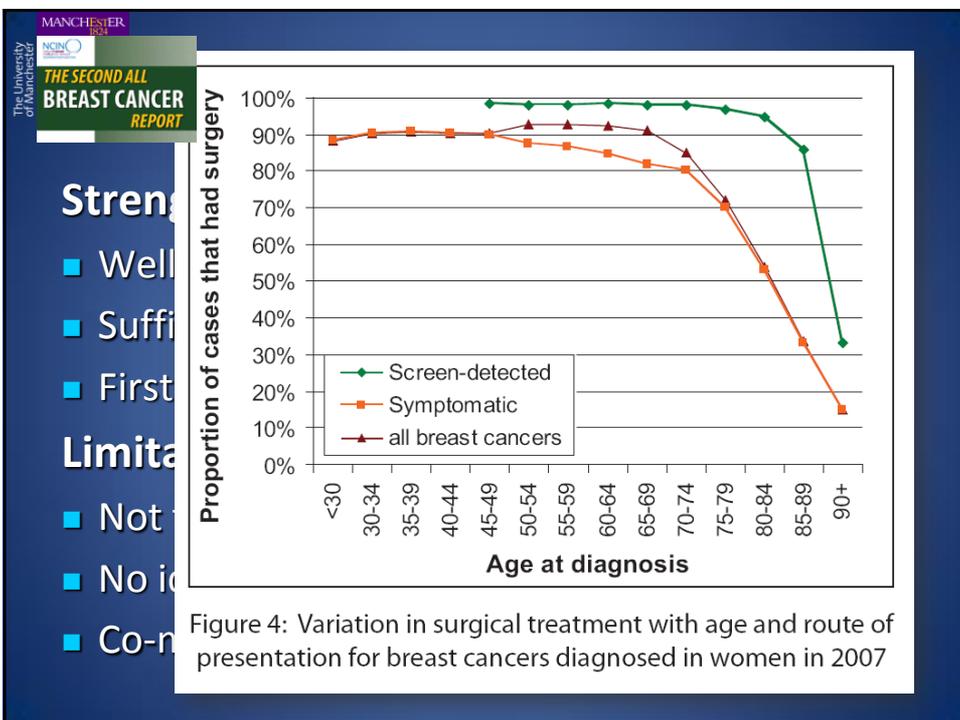
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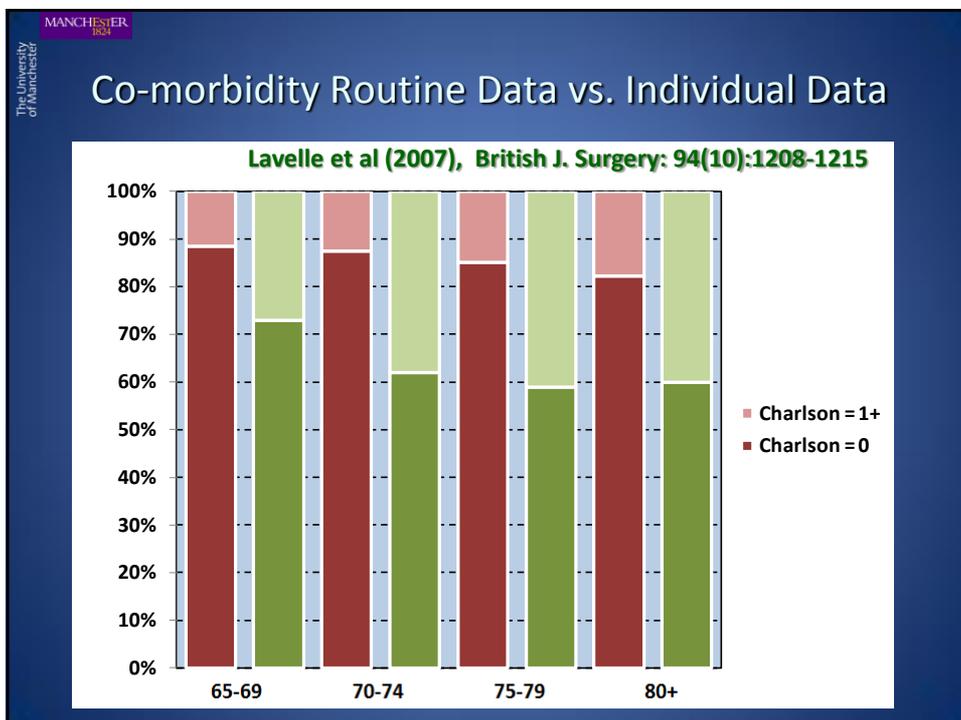
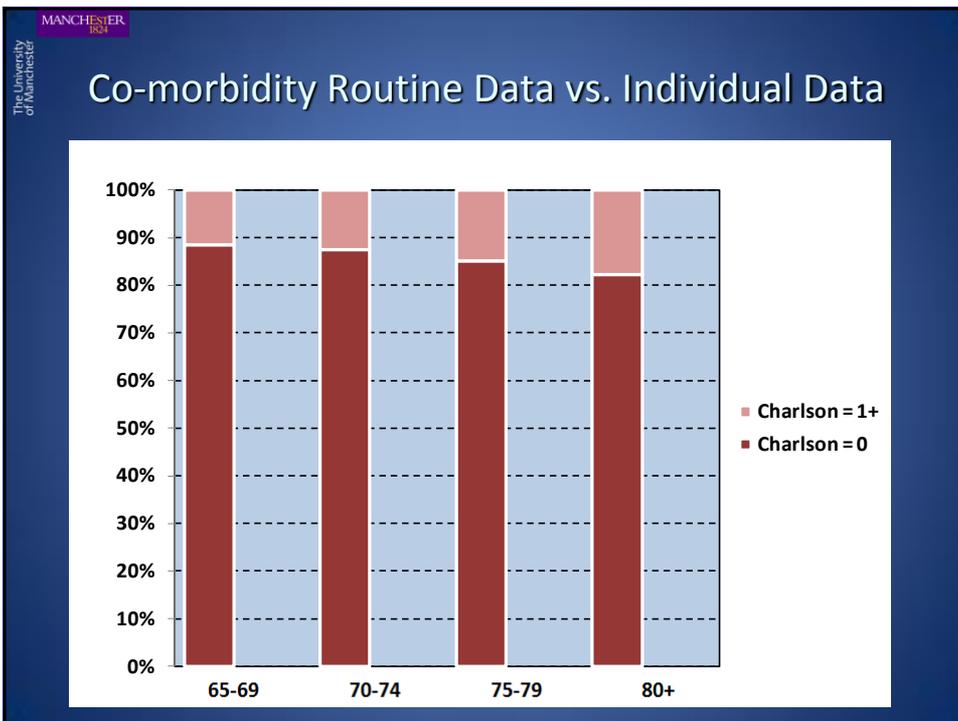
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Co-morbidity	0	(ref)	-	(ref)	-
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Deprivation	1 st (affluent)	(ref)	-	(ref)	-
	2 nd	1.01	0.91-1.13	1.11	0.96-1.27
	3 rd	0.81	0.73-0.89	0.97	0.85-1.11
	4 th	0.79	0.71-0.87	1.03	0.90-1.17
	5 th (deprived)	0.69	0.62-0.76	0.83	0.73-0.95
Stage	I	(ref)	-	(ref)	-
	II	0.89	0.80-0.98	1.01	0.91-1.13
	III	0.28	0.25-0.32	0.34	0.30-0.39
	IV	0.03	0.02-0.03	0.02	0.02-0.03
	Missing	0.07	0.07-0.08	0.10	0.09-0.11

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Co-morbidity	0	(ref)	-	(ref)	-
	1	0.71	0.65-0.78	0.75	0.67-0.84
	2+	0.35	0.31-0.40	0.40	0.34-0.48





Conclusions

- Co-morbidity, as measured by administrative data, is associated with reduced likelihood of primary surgery in women with invasive breast cancer
- However, older age continues to predict not getting surgery

Next steps

- Better measures of co-morbidity are needed
- Assessment of broader measures of health e.g. Functional health status
- Evaluating the determinants of patient choice in the elderly
- Supporting decision-making with evidence-based tools