Comorbidity is a critical factor in informing outcomes in gynaecological cancer

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Background

- Comorbidity has often been associated with less aggressive treatment and poor cancer outcomes
- Comorbidity generally increases with advancing age
- We investigated the effect of age, comorbidity and other prognostic factors on treatment and survival in gynaecological cancer

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Data

- Invasive gynaecological cancers (ICD10 C51-C58) diagnosed 1998-2004 in the English National Cancer Data Repository
- Charlson comorbidity determined from linked Hospital Episode Statistics records
- Comorbid cases selected as those with a comorbid condition at any time up to date of diagnosis of gynaecolgical cancer

Data (contd.)

- 101,118 cases
- 12,272 (12.1%) had a comorbidity
- Cases by site
  - 17,222 (17.0%) C53 (Cervix)
  - 33,438 (33.1%) C54 (Endometrium)
  - 40,004 (39.6%) C56 (Ovary)
  - 10,512 (10.3%) Other gynaecological
- Cases by stage
  - 18,167 (18.0%) Stage 1
  - 5,066 (5.0%) Stage 2
  - 7,316 (7.2%) Stage 3
  - 11,549 (11.4%) Stage 4
  - 59,020 (58.4%) Stage 6 (unknown)

Methods/investigations

- Kaplan Meier and Cox survival analysis
- Does comorbidity influence survival and, if so, by how much?
- What is the relative importance of comorbidity and other demographic and prognostic factors in influencing survival?
- What is the importance of comorbidity in influencing treatment choice?

Five year % overall survival (95% CI)

	Comorbidity	
Cancer site	No	Yes
All gynaecological	55.0 (54.6,55.3)	34.7 (33.8,35.6) *(63.1%)†*
Cervix	66.3 (65.5,67.0)	32.8 (30.3,35.2) *(49.5%)†*
Endometrium	70.2 (69.7,70.2)	52.0 (50.3,53.6) *(74.1%)†*
Ovary	37.9 (37.4,38.4)	22.7 (21.5,24.0) *(60.0%)†*

†Survival of comormbid cases as a percentage of non-comorbid

Cox proportional hazards survival for all gynaecolgical cancers (adjusted for stage and grade)

Factor	Hazard Ratio
Age *(per year)*	1.044 *(P<0.001)*
Comorbidity	1.450 *(P<0.001)*
Deprivation Q2†	1.050 *(P=0.001)*
Deprivation Q3	1.110 *(P<0.001)*
Deprivation Q4	1.190 *(P<0.001)*
Deprivation Q5	1.189 *(P<0.001)*

†IMD2004 income domain quintile – HR compared to with Q1(most affluent)

Cox proportional hazards survival for all gynaecolgical cancers by site (adjusted for stage and grade): Stage 1-4 cases only

	Hazard ratio by site		
Factor	Cervix	Endometrium	Ovary
Age *(per year)*	1.03 ***	1.05 ***	1.03 ***
Comorbidity	1.52 ***	1.43 ***	1.34 ***
Deprivation Q2	1.04 *(NS)*	1.05 *(NS)*	1.03 *(NS)*
Deprivation Q3	1.11 *(NS)*	1.11 *	1.11 **
Deprivation Q4	1.16 *(NS)*	1.22 ***	1.18 ***
Deprivation Q5	1.19 **	1.29 ***	1.11 ***

*(NS)=Not significant, *=P<.05, **=P<.01, *** P<0.001*

Probability of surgical treatment for all gynaecological cancers (adjusted for stage and grade): Stage 1-4 cases only

Factor	Odds ratio
Age *(per year)*	0.984 *(P<0.001)*
Comorbidity	0.795 *(P<0.001)*
Deprivation Q2	0.965 *(P=0.373)*
Deprivation Q3	0.931 *(P=0.077)*
Deprivation Q4	0.826 *(P<0.001)*
Deprivation Q5	0.649 *(P<0.001)*

Probability of surgical treatment for all gynaecological cancers by site (adjusted for stage and grade): Stage 1-4 cases only

	Odds ratio by site		
Factor	Cervix	Endometrium	Ovary
Age *(per year)*	0.97 ***	0.99 ***	0.96 ***
Comorbidity	0.92 *(NS)*	0.65 ***	0.80 ***
Deprivation Q2	1.06 *(NS)*	1.06 *(NS)*	0.88 *
Deprivation Q3	1.09 *(NS)*	0.99 *(NS)*	0.88 *
Deprivation Q4	0.98 *(NS)*	0.98 *(NS)*	0.85 *
Deprivation Q5	0.72 **	0.76 **	0.86 *

*(NS)=Not significant, *=P<.05, **=P<.01, *** P<0.001*

Tentative conclusions

- Comorbidity has a major effect on survival in gynaecological cancer
  - Particularly for cancer of the cervix
- The effect of comorbidity on survival is equivalent to a ten year age increase
  - a 17 year age increase for cervical cancer
- Comorbidity reduces the likelihood of surgical treatment for gynaecological cancer by 20% overall
  - by 35% for endometrial cancer
  - but no effect for cervical cancer

Conclusions (contd.)

- Better and more complete data on comorbidity at the time of treatment decision is needed

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