The Value of HES for Co-Morbidity Analysis

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Collaborators

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- Background to National Cancer Data Repository
- Charlson Calculations – Approaches and Issues
- Analysis Results

Background

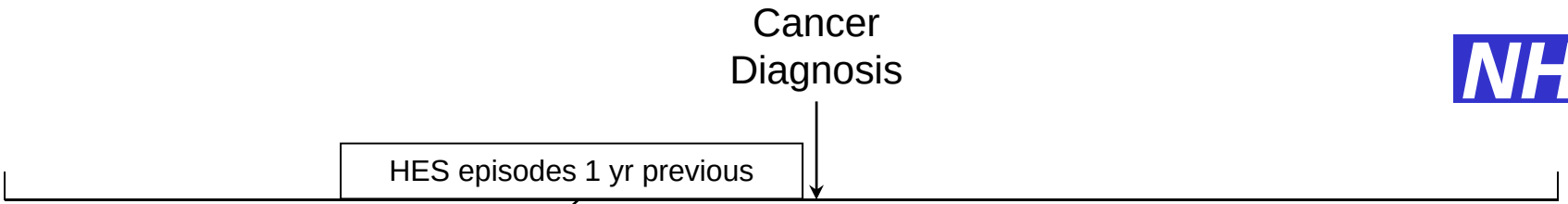
- National Cancer Data Repository has been in existence for ~2yrs
  - ONS Minimum Cancer Dataset (1971-2006 / 9239786 tumours)
  - Merged Registry Dataset (1990-2006 / 5286574 tumours)
    - Containing Additional tumour and treatment information
  - Inpatient Hospital Episode Statistics Data (1997-2007 / 33 million episodes / 4.9 million patients)
- Linkage rate of ~ 80% in latest years
- Additional datasets linked into NCDR
  - Colorectal Screening Data
  - General Practice Research Database
- Planned Linkages
  - Outpatient HES
  - NCASP data
  - Rapid HES

Background

- NCIN intended the NCDR to be used to monitor processes and outcomes of care
- Levels of co-morbidity influence care so important to quantify but limited information makes this difficult
- Charlson score developed to quantify co-morbidity from routine data
- Standard scoring system that is widely used

Methods to Calculate Charlson from NCDR

- HES Episodes – Diagnosis recorded in 14 DIAG Fields
- Time periods assessed prior to diagnosis
  - 1yr / 2yr / Anytime
- Charlson ICD10 codes looked up across all episodes in time period – Not codes for tumour of interest
- Matched ICD10 codes grouped into Charlson Groups
- For NCDR Charlson groups matched to avoid double counting - Severe Diabetes complications counted over Diabetes Complications
- Scores from each group summed to give a final score



HESID	DIAG_1	DIAG_2	DIAG_3	DIAG_4	DIAG_5
5494782	I211	T814	Y838	I802	
5494782					
5494782	D259	-			
5494782	K740	K528			
5494782	C679	-			
5494782					
5494782	D171	-			
5494782	H332	D569	Z853		
5494782	M720	-			

Charlson Group	Group Description	Score	Codes
1	Acute Myocardial Infarction	1	I21, I22, I25
2	Congestive Heart Failure	1	I09, I11, I13, I25, I42, I43, I50, P29
3	Peripheral Vascular Disease	1	I70, I71, I73, I77, I79, K55, Z95
4	Cerebral Vascular Accident	1	G45, G46, H34, I60-69
5	Dementia	1	F00-03, F05
6	Pulmonary Disease	1	I27, J40-47, J60-68, J70
7	Connective Tissue Disorder	1	M05-06, M31-36
8	Peptic Ulcer	1	K25-K28
9	Diabetes	1	E10-14
10	Diabetes Complications	2	E10-14
11	Paraplegia	2	G04, G11, G80-83
12	Renal Disease	2	I12-13, N03, N05, N18, N19, N25, Z49, Z94, Z99
13	Cancer	2	C00-76, C81-97
14	Metastatic Cancer	6	C77-80
15	Severe Liver Disease	3	I58, I85, I86, K71-72, K76
16	HIV	6	B20-22, B24
17	Liver Disease	2	B17-18, K70-71, K73-74, K76, Z94

Acute Myocardial Infarction	1
Liver Disease	2
Final Score	3

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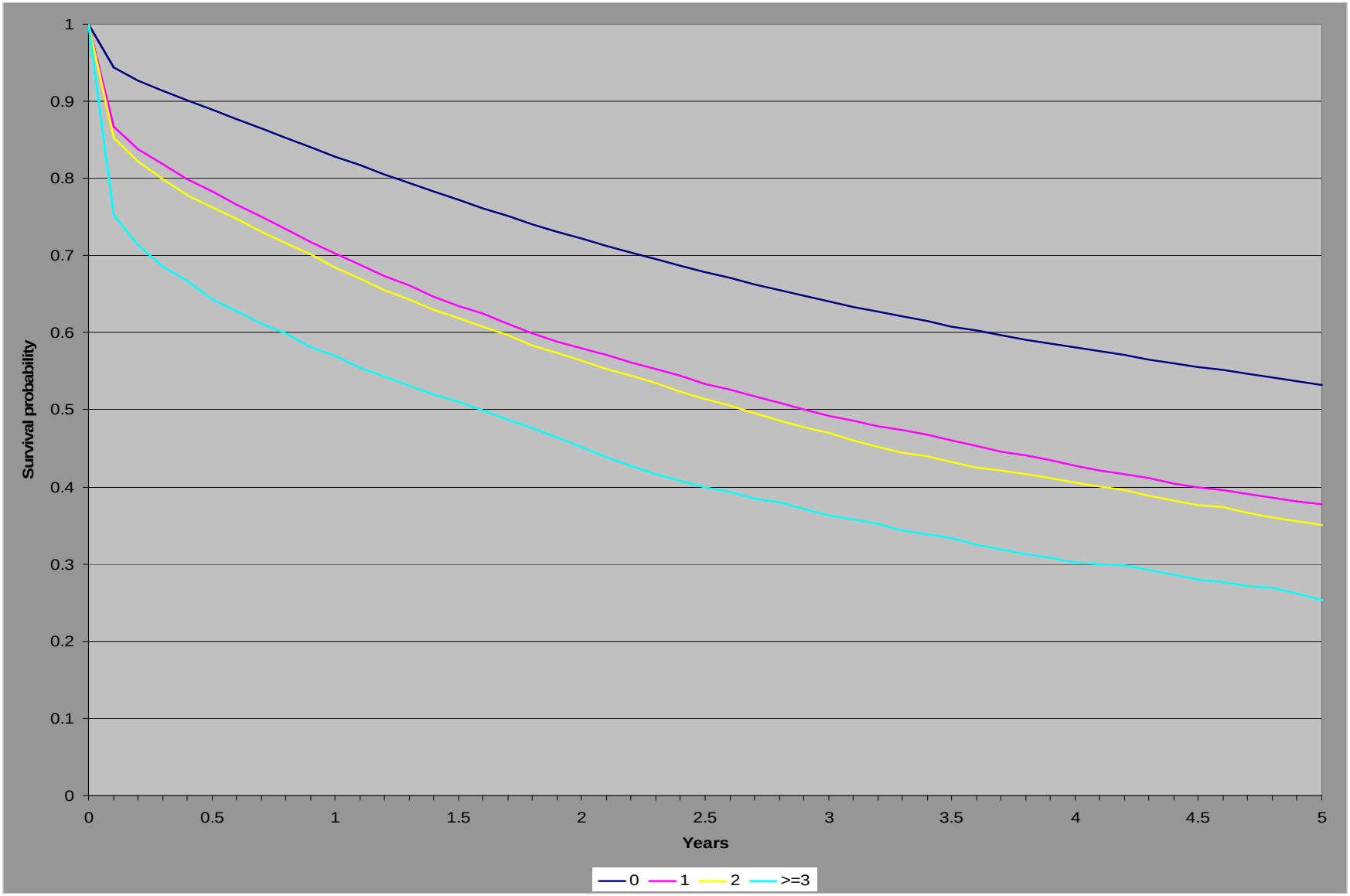
Complications

- Score is very dependent on date of cancer diagnosis
  - Differences in registration processes between registries
- Cancer diagnosis is often first in-patient episode
  - Only including episodes prior to diagnosis may miss co-morbidity codes
- Coding of Cancers differ in Registry/HES Meaning cancers can be counted twice
  - e.g. an individuals colorectal tumour could be coded as C18 in registry and C19 in HES, this could lead to
- Suspected cancer diagnosis coded in HES
  - 100% over-reporting of cancer diagnosis in HES
- Cancers and Metastatic Cancer make up main proportion of scores
  - Should any cancer information be used in the calculation of the score for cancer purposes.
  - Would it be better to use definitive data on multiple tumours/mets

Results

- 3,383,871Tumours in ONS Data post 1996
- 2,644, 157 Tumours match into HES post 1996
- 382,891 (14.5%) have Charlson Score 1yr previous to diagnosis (mean = 1.62)
- 433287 (16.3%) have Charlson Score 2yr previous to diagnosis (mean = 1.67)
- 519327 (19.6%) have Charlson Score any time previous to diagnosis (mean = 1.76)

Colorectal survival by Charlson Score



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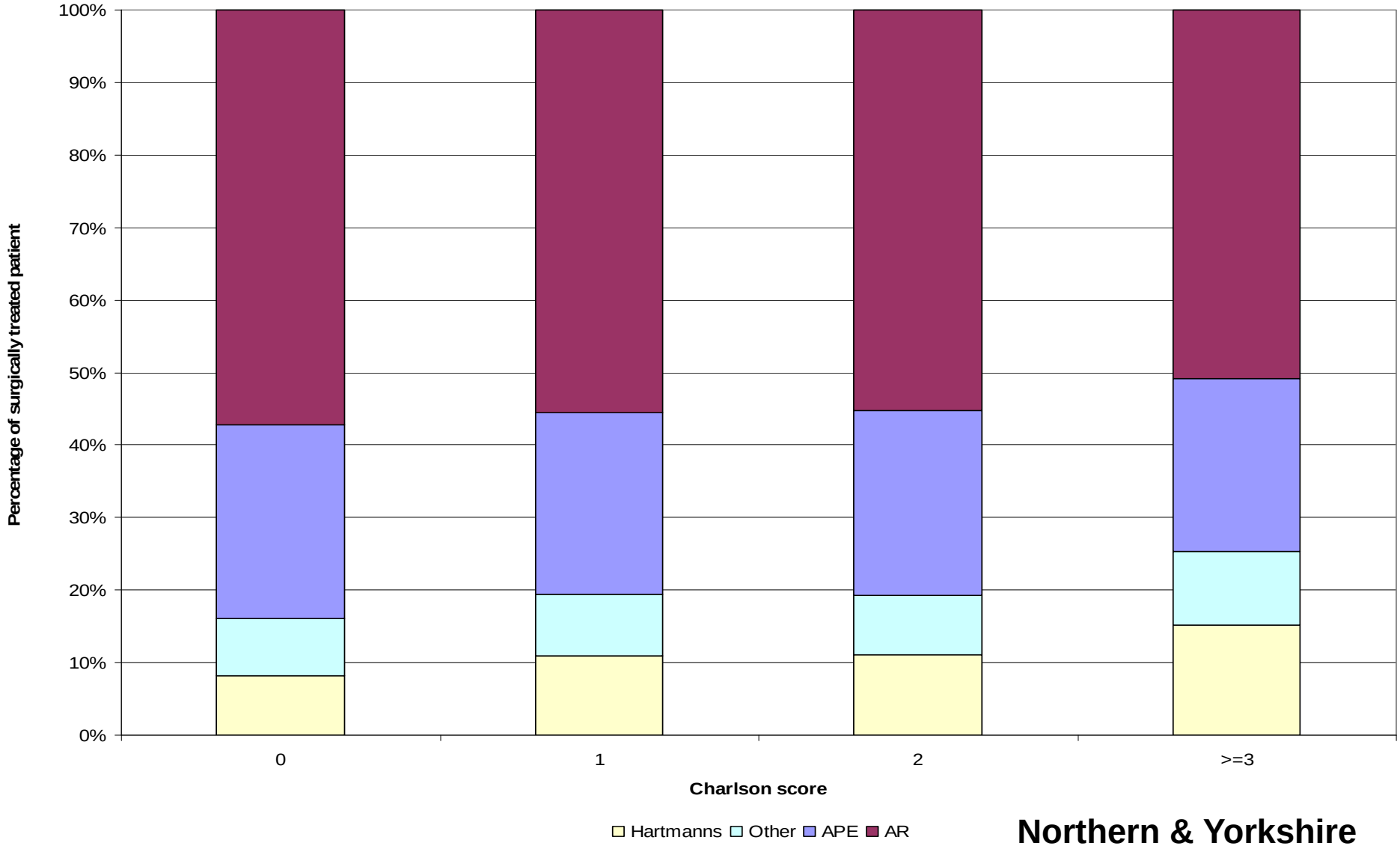
Rectal Tumours - Surgical Procedures by Charlson Score



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Conclusions

- NCDR has Charlson score available at individual tumour level
- Analysis needs to be undertaken to assess the best approach to calculating co-morbidity from data we have available
- We can change the way we calculate/sources of data used to calculate Charlson
- Other better indices available?