

# Why is co-morbidity important for cancer patients?

Di Riley

Associate Director

Clinical Outcomes Programme

# Co-morbidity in cancer

- Definition:-

Co-morbidity is a disease or illness affecting a cancer patient in addition to but not as a result of their index (current) cancer.

# Why is co-morbidity important for cancer patients?

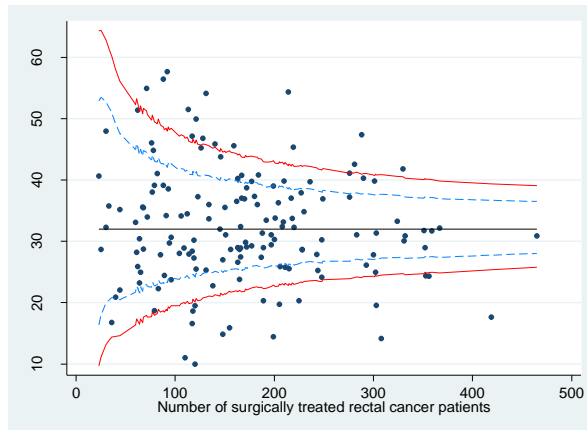
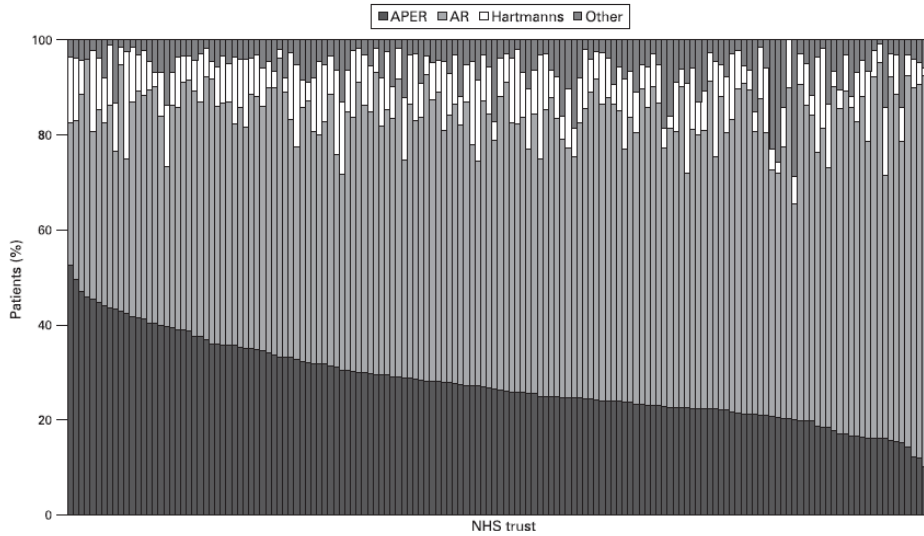
- Highlighted in the CRS
  - Important but variably collected
- Clinical decision making
- Risk adjusted outcomes analyses

# What influences cancer decision making?

- Tumour factors
- Individual factors
  - *Patient preferences*
  - *Performance status*
  - *Frailty*
  - *Fitness*
  - *[Age]*
  - **CO-MORBIDITY**
- To predict outcome - personal prognostograms?

# Unacceptable variation in abdominoperineal excision rates for rectal cancer: time to intervene?

E Morris,<sup>1,2</sup> P Quirke,<sup>2</sup> J D Thomas,<sup>1,2</sup> L Fairley,<sup>4</sup> B Cottier,<sup>3</sup> D Forman<sup>1,4</sup>



# What could co-morbidity information contribute?

- To adjust for casemix in comparative analyses
- To contribute to quality care assessment
- To understand treatment/morbidity/mortality and longer term complications
- To compare treatment selection

# Co-morbidity

- What elements are important?
- Condition present versus decompensation from condition?
- Individual conditions versus overall cumulative diseases burden ?
- Life history versus current active disease?
- At point of diagnosis?
- At recurrence?

# Main elements

- Selection for treatment
- Peri-treatment mortality and toxicity
- Impact on overall (population-based) survival / prognosis
- Late effects:
  - Predicting them
  - Identifying them
- Is it feasible to expect a single scale to answer all these questions?



- **Prospective Recording**
  - Presence or absence?
  - Moderate or severe?
  - Type of co-morbidity present?
  - ACE-27
  - Other scale?
- **Derive retrospectively**
  - HES – favours admitted care
  - Accuracy/completeness of coding
  - Less timely

# Questionnaire to Site-Specific Clinical Reference Group Chairs



## **In your speciality area, what are:**

- the indices/scores are in use?
- the most important ways in which co-morbidity affects treatment and/or outcomes?
- the major C-Ms which impact on treatment decisions and outcomes?
  
- Do you use 'frailty' as an indicator?
- Other comments

# Site-specific review



	Breast	Colo-rectal	Gynae	Haem	H&N	Lung	Sarcoma	Skin	UGI	TYA
PS	±	+++	+	+++	+	+++	±	++	+++	±
C-M	++	+++	++	+	++	+++	+	+	+++	±
Surgery	+	+++	+	-	++	+++	+	±	+++	±
Chemo	++	++	++	++	++	++	+	+	++	±
RT	++	+	+	±	+	++	±	-	±	±
Peri-op mortality	+	++	+	-	+	+++	+	-	+++	±
Tools	ASA	ASA Possu m	<i>UK Gosoc</i>	ACE27 ADL	ACE 27	No (lung function)	No	No	ASA	No
Overall survival	+	++	+	+	++	+	±	±	+	±
Late effects	+++	++	+	+++	+	+	+	+	+	+++

<b>Co-morbidity</b>	<b>Sites of most relevance</b>	<b>Key Measures</b>
<b>Cardiac</b>	<b>Lung, UGI, Colo-rectal</b>	<b>Echo, Exercise ECG, MUGA scan, Angiography</b>
<b>Respiratory</b>	<b>Lung, UGI, Colo-rectal</b>	<b>Lung Function (FEV<sub>1</sub>, etc.) Exercise testing Quantitative perfusion scan</b>
<b>Cerebro-vascular</b>	<b>Lung, UGI, Colo-rectal</b>	
<b>Dementia</b>	<b>All</b>	
<b>Renal</b>	<b>All</b>	<b>Creatinine &amp; clearance</b>
<b>Hepatic</b>	<b>All</b>	<b>LFTs</b>
<b>Weight loss/nutrition</b>	<b>UGI</b>	<b>BMI; Serum albumin</b>
<b>Obesity</b>	<b>Gynae</b>	<b>BMI</b>
<b>Previous surgery/RT/Chemo</b>	<b>Gynae, colo-rectal, urology</b>	
<b>'Frailty'</b>	<b>?All (except children &amp; TYAs)</b>	<b>Stair climb; 'Tray test' Subjective</b>

# Workshop Action Plan

- **Recommend collection of ACE-27 co-morbidity score is mandated for all adult cancer patients**
- Ensure that appropriate training is delivered
- Research different collection methodologies e.g. Patient questionnaires
- Identify where supplementary indices or information may be required
- Continue to retrospectively calculate co-morbidity scores from HES
- Consider establishing a Co-morbidity ‘CRG’

# Adult Co-morbidity Evaluation-27

prospectively recorded by MDT

- Chart-based comorbidity index for patients with cancer
- Developed through modification of the  
*Kaplan-Feinstein Comorbidity Index (KFI)*
- Modifications were made through discussions with clinical experts and a review of the literature
- Validated in study of 19,268 cancer patients treated at Barnes-Jewish Hospital, USA

# ACE-27

Cogent comorbid ailment	Grade 3 Severe Decompensation	Grade 2 Moderate Decompensation	Grade 1 Mild Decompensation
<b>Cardiovascular System</b>			
Myocardial Infarct	<ul style="list-style-type: none"> <li>MI ≤ 6 months</li> </ul>	<ul style="list-style-type: none"> <li>MI &gt; 6 months ago</li> </ul>	<ul style="list-style-type: none"> <li>Old MI by ECG only, age undetermined</li> </ul>
Angina / Coronary Artery Disease	<ul style="list-style-type: none"> <li>Unstable angina</li> </ul>	<ul style="list-style-type: none"> <li>Chronic exertional angina</li> <li>Recent (≤ 6 months) Coronary Artery Bypass Graft (CABG) or Percutaneous Transluminal Coronary Angioplasty (PTCA)</li> <li>Recent (≤ 6 months) coronary stent</li> </ul>	<ul style="list-style-type: none"> <li>ECG or stress test evidence or catheterization evidence of coronary disease without symptoms</li> <li>Angina pectoris not requiring hospitalization</li> <li>CABG or PTCA (&gt;6 mos.)</li> <li>Coronary stent (&gt;6 mos.)</li> </ul>
Congestive Heart Failure (CHF)	<ul style="list-style-type: none"> <li>Hospitalized for CHF within past 6 months</li> <li>Ejection fraction &lt; 20%</li> </ul>	<ul style="list-style-type: none"> <li>Hospitalized for CHF &gt;6 months prior</li> <li>CHF with dyspnea which limits activities</li> </ul>	<ul style="list-style-type: none"> <li>CHF with dyspnea which has responded to treatment</li> <li>Exertional dyspnea</li> <li>Paroxysmal Nocturnal Dyspnea (PND)</li> </ul>
Arrhythmias	<ul style="list-style-type: none"> <li>Ventricular arrhythmia ≤ 6 months</li> </ul>	<ul style="list-style-type: none"> <li>Ventricular arrhythmia &gt; 6 months ago</li> <li>Chronic atrial fibrillation or flutter</li> <li>Pacemaker</li> </ul>	<ul style="list-style-type: none"> <li>Sick Sinus Syndrome</li> </ul>
Hypertension	<ul style="list-style-type: none"> <li>DBP ≥ 130 mm Hg</li> <li>Severe malignant papilledema or other eye changes</li> <li>Encephalopathy</li> </ul>	<ul style="list-style-type: none"> <li>DBP 115-129 mm Hg</li> <li>Secondary cardiovascular symptoms: vertigo, epistaxis, headaches</li> </ul>	<ul style="list-style-type: none"> <li>DBP 90-114 mm Hg</li> <li>DBP &lt; 90 mm Hg while taking antihypertensive medications</li> </ul>
Venous Disease	<ul style="list-style-type: none"> <li>Recent PE (≤ 6 mos.)</li> <li>Use of venous filter for PE's</li> </ul>	<ul style="list-style-type: none"> <li>DVT controlled with Coumadin or heparin</li> <li>Old PE &gt; 6 months</li> </ul>	<ul style="list-style-type: none"> <li>Old DVT no longer treated with Coumadin or Heparin</li> </ul>
Peripheral Arterial Disease	<ul style="list-style-type: none"> <li>Bypass or amputation for gangrene or arterial insufficiency &lt; 6 months ago</li> <li>Untreated thoracic or abdominal aneurysm (≥ 6 cm)</li> </ul>	<ul style="list-style-type: none"> <li>Bypass or amputation for gangrene or arterial insufficiency &gt; 6 months</li> <li>Chronic insufficiency</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent claudication</li> <li>Untreated thoracic or abdominal aneurysm (&lt; 6 cm)</li> <li>s/p abdominal or thoracic aortic aneurysm repair</li> </ul>

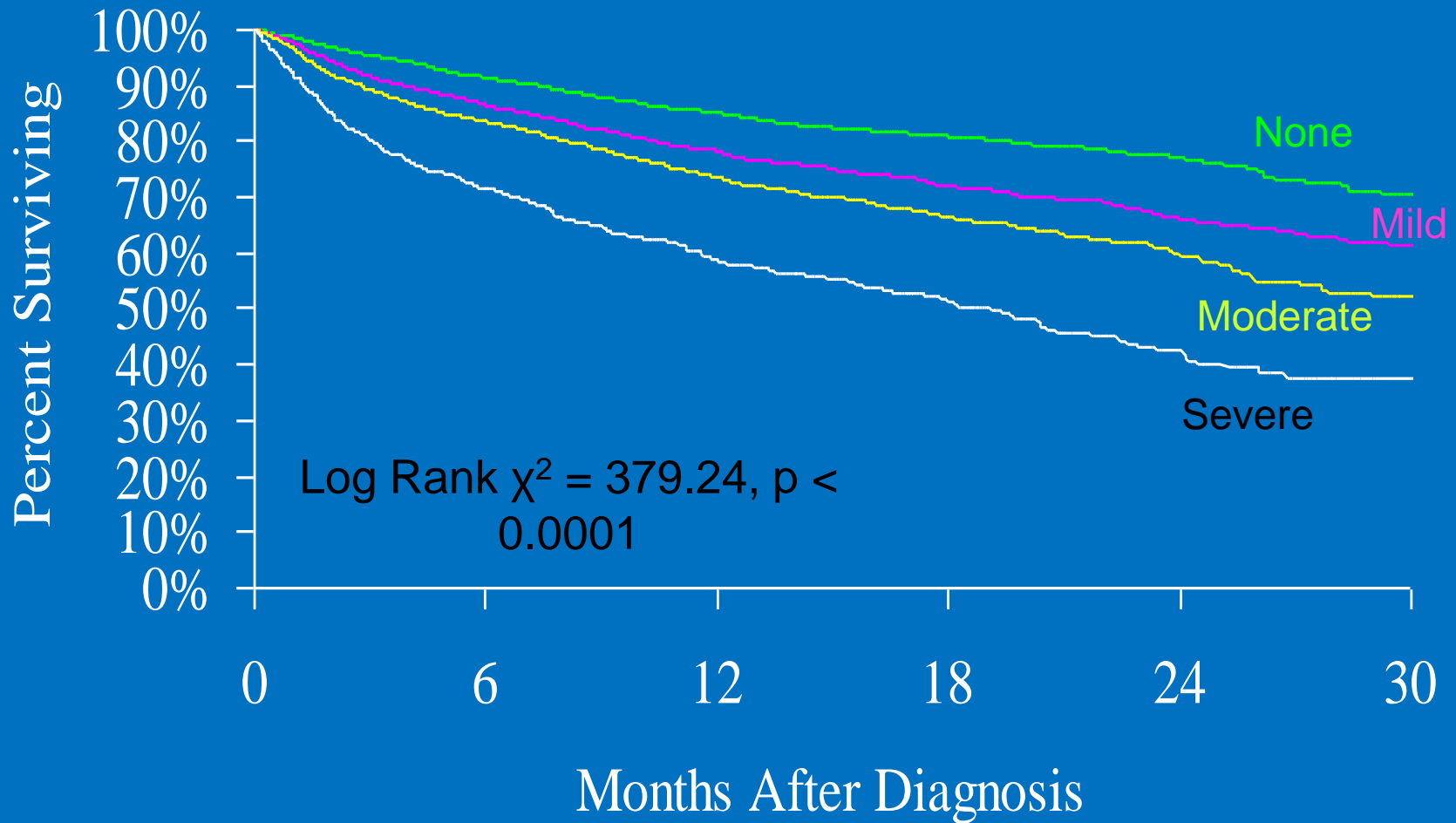
<http://cancercomorbidity.wustl.edu/ElectronicACE27.aspx>

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# Prognostic Impact of Comorbidity



## Charlson Score

derived retrospectively by analysts  
based on information in notes coded  
by clinical coders

# Cancer Diagnosis

HES episodes 1 yr previous

time →

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	-			

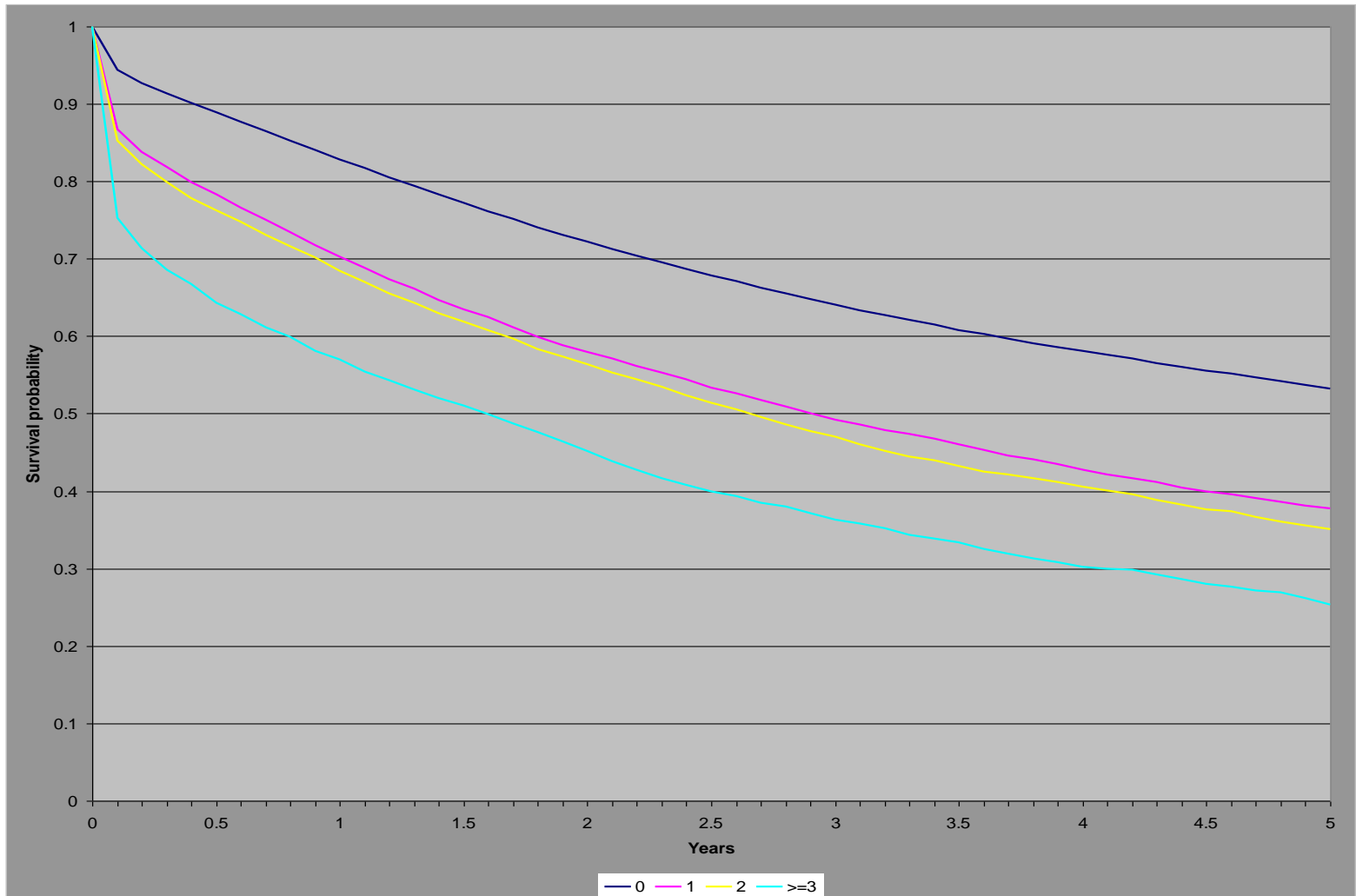
Charlson Group	Group Description	Score	Codes
1	Acute Myocardial Infarction	1	I21, I22, I25
2	Congestive Heart Failure	1	I09, I11, I13, I25, I42, I43, I50, P29
3	Peripheral Vascular Disease	1	I70, I71, I73, I77, I79, K55, Z95
4	Cerebral Vascular Accident	1	G45, G46, H34, I60-69
5	Dementia	1	F00-03, F05
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

# 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

# Colorectal survival 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
- Work with DH/CfH on national co-morbidity project
  - SSCRGs to define pertinent conditions

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NCIN



national cancer  
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*Thank you*

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