# Why is co-morbidity important for cancer patients?

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# 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.

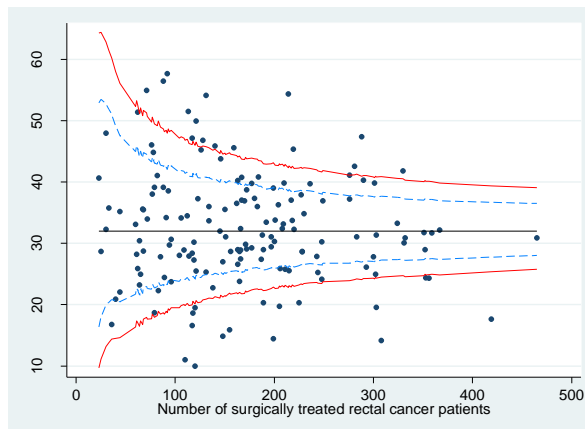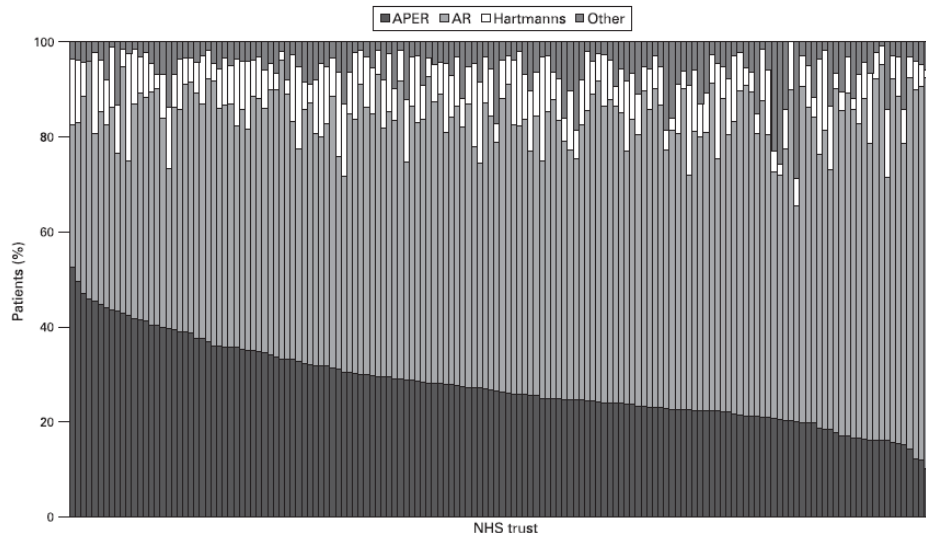# Why is co-morbidity important for cancer patients?

- 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?

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# 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?

# When to record?

- Prospective Recording
  – Presence or absence?
  – Moderate or severe?
  – Type of co-morbidity present?
  – ACE-27
  – Other scale e.g. ASA?

- Derive retrospectively
  – HES – favours admitted care
  – Accuracy/completeness of coding
  – Less timely

# Adult Co-morbidity Evaluation-27

## prospectively recorded by MDT

# ACE-27

- 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
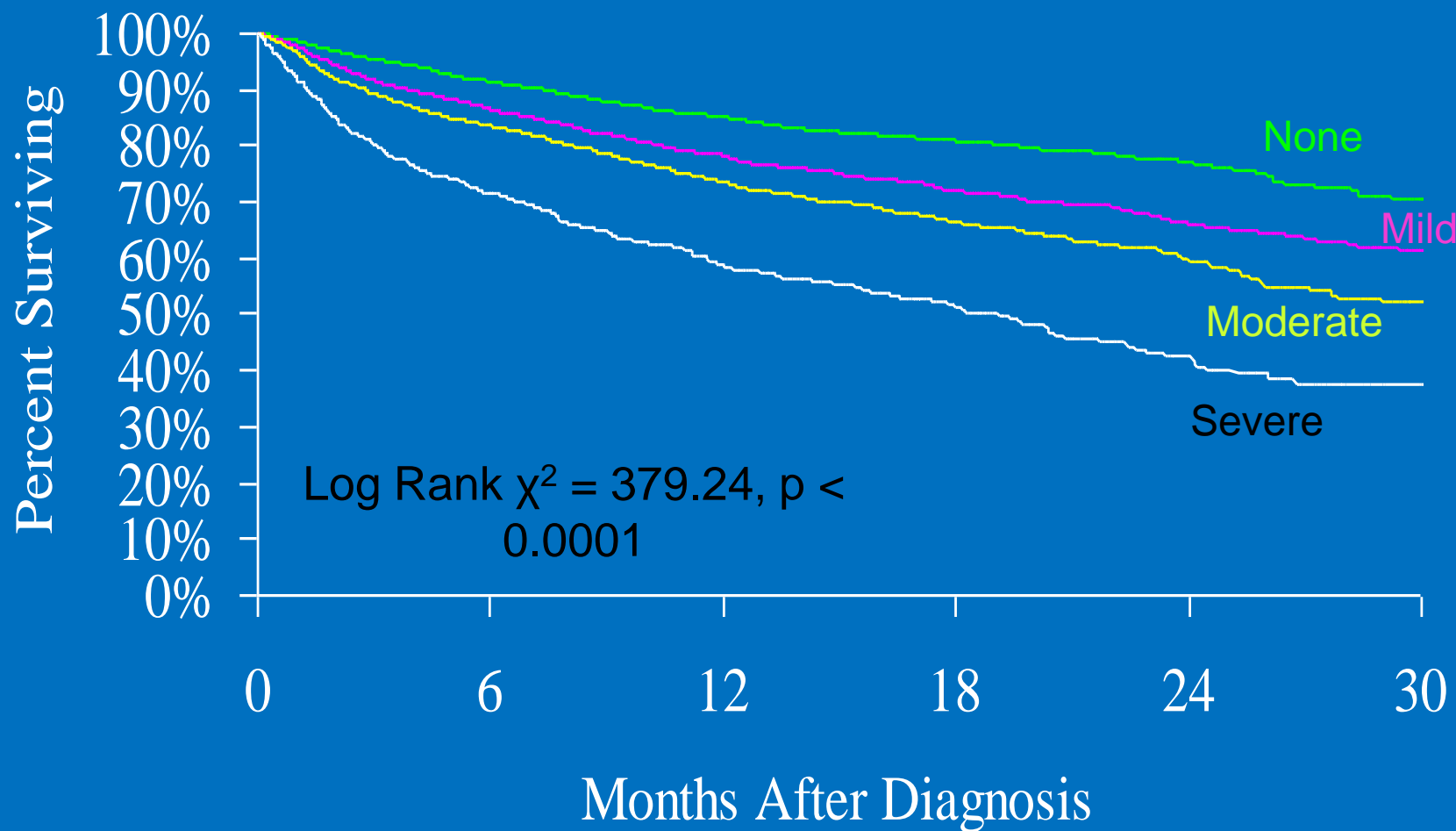
# ACE-27



| Cogent comorbid ailment | Grade 3 Severe Decompensation | Grade 2 Moderate Decompensation | Grade 1 Mild Decompensation |
|---|---|---|---|
| **Cardiovascular System** | | | |
| Myocardial Infarct | ▪ MI ≤ 6 months | ▪ MI > 6 months ago | ▪ Old MI by ECG only, age undetermined |
| Angina / Coronary Artery Disease | ▪ Unstable angina | ▪ Chronic exertional angina<br>▪ Recent (≤ 6 months) Coronary Artery Bypass Graft (CABG) or Percutaneous Transluminal Coronary Angioplasty (PTCA)<br>▪ Recent (≤ 6 months) coronary stent | ▪ ECG or stress test evidence or catheterization evidence of coronary disease without symptoms<br>▪ Angina pectoris not requiring hospitalization<br>▪ CABG or PTCA (>6 mos.)<br>▪ Coronary stent (>6 mos.) |
| Congestive Heart Failure (CHF) | ▪ Hospitalized for CHF within past 6 months<br>▪ Ejection fraction < 20% | ▪ Hospitalized for CHF >6 months prior<br>▪ CHF with dyspnea which limits activities | ▪ CHF with dyspnea which has responded to treatment<br>▪ Exertional dyspnea<br>▪ Paroxysmal Nocturnal Dyspnea (PND) |
| Arrhythmias | ▪ Ventricular arrhythmia ≤ 6 months | ▪ Ventricular arrhythmia > 6 months ago<br>▪ Chronic atrial fibrillation or flutter<br>▪ Pacemaker | ▪ Sick Sinus Syndrome |
| Hypertension | ▪ DBP≥130 mm Hg<br>▪ Severe malignant papilledema or other eye changes<br>▪ Encephalopathy | ▪ DBP 115-129 mm Hg<br>▪ Secondary cardiovascular symptoms: vertigo, epistaxis, headaches | ▪ DBP 90-114 mm Hg<br>▪ DBP <90 mm Hg while taking antihypertensive medications |
| Venous Disease | ▪ Recent PE (≤ 6 mos.)<br>▪ Use of venous filter for PE's | ▪ DVT controlled with Coumadin or heparin<br>▪ Old PE > 6 months | ▪ Old DVT no longer treated with Coumadin or Heparin |
| Peripheral Arterial Disease | ▪ Bypass or amputation for gangrene or arterial insufficiency < 6 months ago<br>▪ Untreated thoracic or abdominal aneurysm (≥6 cm) | ▪ Bypass or amputation for gangrene or arterial insufficiency > 6 months<br>▪ Chronic insufficiency | ▪ Intermittent claudication<br>▪ Untreated thoracic or abdominal aneurysm (< 6 cm)<br>▪ s/p abdominal or thoracic aortic aneurysm repair |

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

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# Prognostic Impact of Comorbidity



Log Rank $\chi^2$ = 379.24, p < 0.0001

Percent Surviving

Months After Diagnosis

None
Mild
Moderate
Severe

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# 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 | - | | | |

| Acute Myocardial Infarction | 1 |
|---|---|
| Liver Disease | 2 |
| Final Score | 3 |

| 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 |

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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

# Colorectal survival by Charlson Score
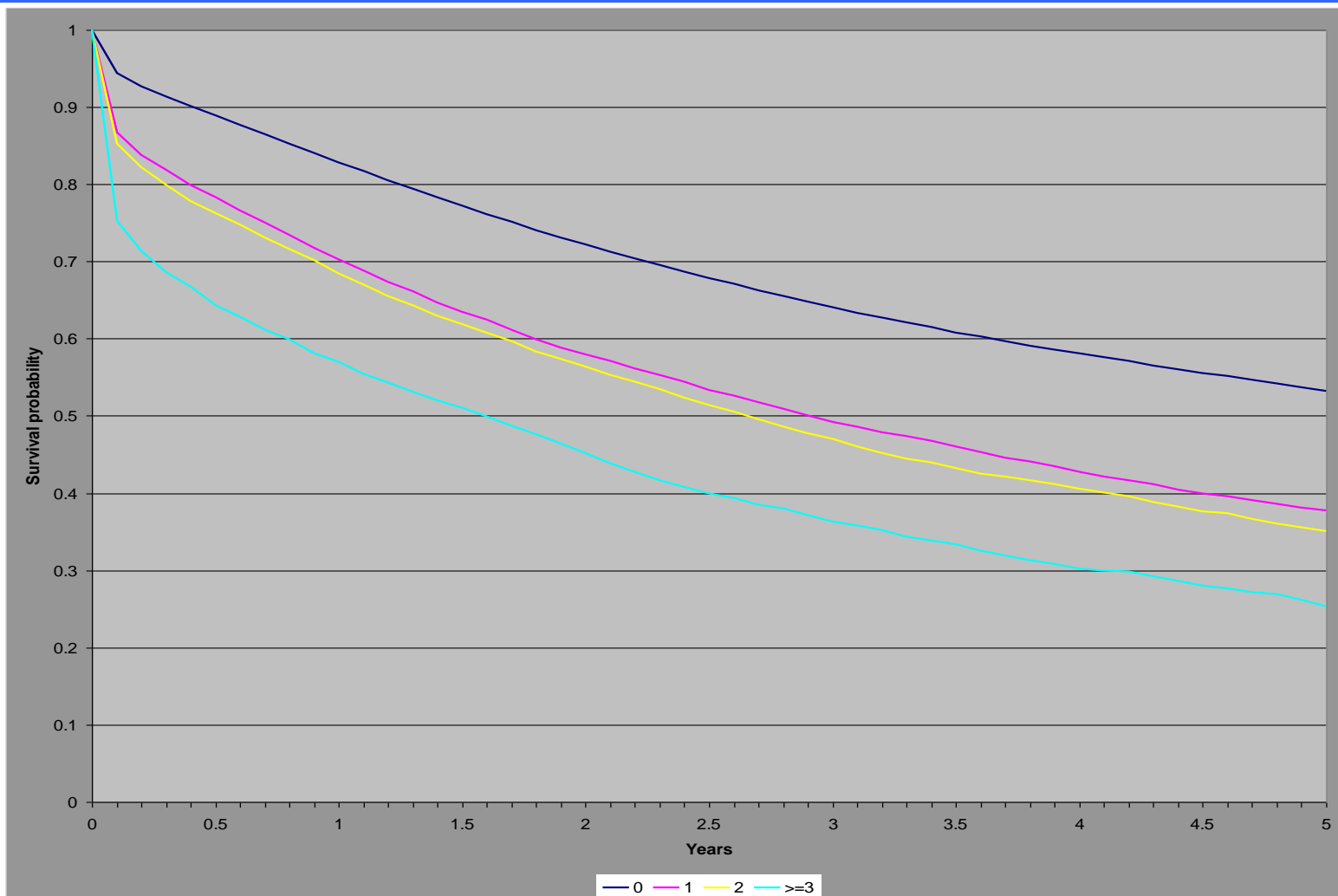
# Conclusions

- 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

# 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'

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*Thank you*

www.ncin.org.uk