Routes to Diagnosis Results

UKACR and NCIN Joint Conference

17th -18th June 2010

Lucy Elliss-Brookes

Associate Director, Commissioning and Cancer Intelligence

Avon, Somerset & Wiltshire Cancer Service

Routes to Diagnosis

- Background
  - People involved
  - Rationale
  - Project questions
  - Project approach, scope and methodology
- Selected results
- Discussion
- Next steps

People involved

- Project Manager: Lucy Elliss-Brookes, NCIN
- Analytical lead: Alexander Ives, SWPHO
- Clinical Adviser: Professor Sir Mike Richards

- NCIN: Chris Carrigan, Sean McPhail
- South West Public Health Observatory: Matt Greenslade, Andy Pring, Carlos Rocha, Tariq Malik, Dr Julia Verne,, Matt Iles
- Cancer Research UK: Sara Hiom
- University of Bristol: Dr Willie Hamilton
- NatCanSat: Helen Forbes

Rationale for project

- Simple questions
  - How do people come to get diagnosed with cancer?
  - Are late diagnoses arising in cases where patients have not gone through the screening or suspected cancer route?
- National Awareness and Early Diagnosis Initiative (NAEDI)
- Better understand the different routes to diagnosis through urgent referral, screening and other pathways
- Use existing data

Project questions

1. Is it possible to define the routes to diagnosis for patients diagnosed with cancer?
2. Can we work backwards through the cancer journey and ascertain the sequence of events that take people to a diagnosis, through inpatients, outpatients, A&E and screening?
3. Are there differences for age, sex, ethnicity, deprivation and geographical area?
4. Does route to diagnosis impact on the clinical outcome?

Project approach, scope and methodology

- Starting point date of cancer registration (data for 2007)
- All malignant tumours (C00 to C97) and some in situ (D05 & D06)
- Follow the patient journey backwards through the data
- Hospital Episodes Statistics data for 2006 and 2007 (inpatient and outpatient)
- Include cancer waiting times and screen detected flags
- Following the patient not the tumour
- Set of rules defined to identify sequence of events
- Combine into simple groupings to enable analysis
- Pilot approach for England using South West data

Eight Routes to Diagnosis

- **GP/Outpatient referral**: includes routine and urgent referrals
- **Two Week Wait**: urgent GP referrals with a suspicion of cancer
- **Emergency presentation**: emergency route via A&E, emergency GP or consultant outpatient referral, emergency transfer etc
- **Other outpatient**: elective route starting with an outpatient appointment that is a self, consultant, other or unknown referral
- **Screen detected:** breast or cervical
- **Inpatient elective**: where no earlier information found
- **DCO**: diagnosis by death certificate only
- **Unknown**: no data available from HES, CWT or screening

Routes to Diagnosis	GP/OP referral	Two Week Wait	Emergency presentation	Other outpatient	Screen detected	Inpatient elective	DCO	Unknown	Total	Number of patients
Acute leukaemia	17%	3%	61%	12%	0%	4%	0%	4%	100%	380
Bladder	22%	36%	18%	13%	0%	6%	1%	5%	100%	1,167
Brain & CNS	18%	2%	49%	20%	0%	5%	0%	5%	100%	740
Breast	8%	40%	5%	5%	28%	2%	0%	13%	100%	5,646
Cervix	21%	17%	12%	8%	23%	3%	1%	15%	100%	308
Chronic leukaemia	26%	6%	45%	13%	0%	4%	1%	4%	100%	629
Colorectal	19%	29%	24%	12%	0%	8%	0%	7%	100%	4,515
Kidney	22%	26%	23%	16%	0%	5%	0%	8%	100%	928
Larynx	35%	34%	8%	14%	0%	5%	0%	3%	100%	216
Lung	15%	26%	38%	10%	0%	4%	1%	7%	100%	3,893
Melanoma	23%	39%	4%	8%	0%	5%	0%	22%	100%	1,686
Multiple myeloma	20%	14%	44%	13%	0%	4%	1%	5%	100%	606
Non-Hodgkin's lymphoma	25%	22%	25%	13%	0%	6%	1%	9%	100%	1,349
Oesophagus	15%	32%	21%	14%	0%	13%	0%	4%	100%	912
Oral	32%	27%	5%	14%	0%	4%	1%	17%	100%	458
Ovary	20%	29%	28%	11%	0%	3%	1%	8%	100%	853
Pancreas	13%	20%	45%	10%	0%	5%	1%	7%	100%	917
Prostate	26%	28%	11%	11%	0%	7%	0%	16%	100%	4,865
Stomach	14%	24%	31%	13%	0%	11%	1%	6%	100%	801
tbc (other)	21%	18%	34%	12%	0%	4%	1%	9%	100%	4,323
Testis	14%	47%	9%	15%	0%	4%	0%	11%	100%	259
Uterus	28%	36%	8%	12%	0%	5%	0%	12%	100%	918
Total	19%	28%	22%	11%	5%	5%	1%	10%	100%	36,369

NCIN national cancer intelligence network

All cancer Routes to Diagnosis: by cancer type

All malignant registrations
South West 2007
excluding C44 and multiples

SOUTH WEST PUBLIC HEALTH OBSERVATORY

NCRI National Cancer Research Institute

Breast cancer	GP/ OP referral	Two Week Wait	Emergency presentation	Other outpatient	Screen detected	Inpatient elective	DCO	Unknown	Total	Number of patients
15-19	0%	0%	0%	100%	0%	0%	0%	0%	100%	1
20-24	0%	0%	0%	0%	0%	0%	0%	100%	100%	1
25-29	27%	47%	0%	0%	0%	0%	0%	27%	100%	15
30-34	20%	43%	0%	4%	0%	4%	0%	30%	100%	56
35-39	14%	50%	3%	7%	0%	1%	0%	25%	100%	169
40-44	11%	53%	3%	8%	1%	1%	0%	23%	100%	318
45-49	12%	55%	2%	7%	6%	1%	0%	18%	100%	432
50-54	7%	27%	1%	4%	47%	1%	0%	13%	100%	545
55-59	6%	25%	1%	4%	50%	1%	0%	11%	100%	628
60-64	5%	25%	2%	5%	51%	2%	0%	10%	100%	772
65-69	4%	23%	3%	4%	57%	1%	0%	7%	100%	715
70-74	9%	45%	5%	5%	25%	1%	0%	10%	100%	480
75-79	7%	56%	7%	4%	9%	4%	0%	13%	100%	587
80-84	9%	56%	9%	6%	3%	3%	1%	13%	100%	433
85+	8%	54%	20%	2%	0%	2%	2%	13%	100%	494
Total	8%	40%	5%	5%	28%	2%	0%	13%	100%	5,646

NCIN national cancer intelligence network

Breast Routes to Diagnosis: by age band

All malignant registrations
South West 2007
excluding C44 and multiples

Using information to improve quality & choice

SOUTH WEST PUBLIC HEALTH OBSERVATORY

NCRI National Cancer Research Institute

Lung Routes to Diagnosis: by deprivation quintile

All malignant registrations, South West 2007, excluding C44 and multiples

Lung cancer	GP/ OP referral	Two Week Wait	Emergency presentation	Other outpatient	Screen detected	Inpatient elective	DCO	Unknown	Total	Number of patients
5 (least deprived)	17%	24%	37%	10%	0%	4%	1%	7%	100%	631
4	16%	26%	37%	10%	0%	4%	1%	7%	100%	872
3	14%	26%	38%	11%	0%	3%	1%	7%	100%	1,041
2	14%	27%	40%	9%	0%	3%	1%	6%	100%	917
1 (most deprived)	13%	25%	41%	10%	0%	4%	1%	6%	100%	432
Total	15%	26%	38%	10%	0%	4%	1%	7%	100%	3,893

Using information to improve quality & choice

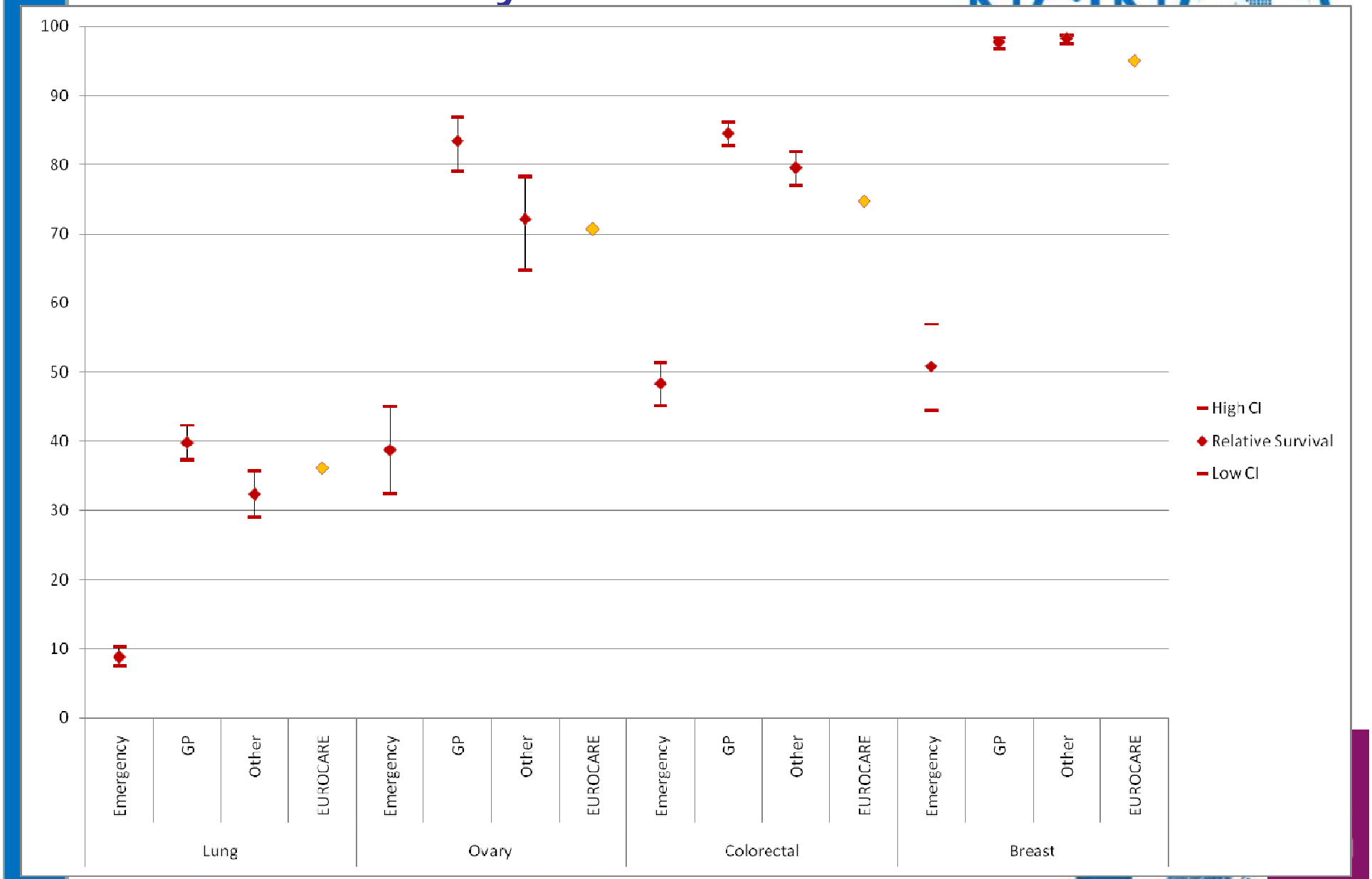
Relative one year survival: by cancer type

Malignant registrations, South West 2007, excluding multiples and DCOs

Cancer type	GP/OP referral (+TWW)		Emergency		Other route		EUROCARE
	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival
Acute leukaemia	39.7	(28.1 - 51)	39.4	(32.9 - 45.8)	40.4	(29 - 51.5)	
Bladder	78.3	(74.6 - 81.5)	34.0	(27.3 - 40.8)	79.2	(73.2 - 84)	85.3
Brain & CNS	68.4	(60.1 - 75.4)	34.0	(29.1 - 38.9)	60.6	(53.6 - 66.8)	39.1
Breast	97.7	(96.8 - 98.4)	50.8	(44.4 - 56.9)	98.2	(97.5 - 98.8)	95
Colorectal	**84.5**	**(82.7 - 86.2)**	**48.4**	**(45.2 - 51.5)**	**79.5**	**(76.9 - 81.9)**	**74.7**
Kidney	81.1	(76.8 - 84.7)	24.0	(18.4 - 30)	72.4	(66.1 - 77.7)	74.7
Lung	**39.8**	**(37.4 - 42.3)**	**8.9**	**7.6 - 10.3)**	**32.4**	**(29.1 - 35.7)**	**36.1**
Multiple myeloma	83.6	(76.8 - 88.5)	53.1	(46.5 - 59.2)	73.0	(63.7 - 80.3)	70.5
Non-Hodgkin's lymphoma	86.6	(83.2 - 89.3)	43.7	(38.1 - 49.1)	80.9	(76 - 84.9)	73.1
Oesophagus	43.8	(38.9 - 48.6)	22.4	(16.7 - 28.7)	45.5	(39.5 - 51.4)	36.3
Other	81.1	(79.8 - 82.4)	27.2	(25.2 - 29.2)	77.8	(76.1 - 79.5)	
Ovary	**83.4**	**(79.1 - 86.9)**	**38.8**	**(32.4 - 45.1)**	**72.1**	**(64.7 - 78.3)**	**70.7**
Pancreas	21.0	(16.6 - 25.9)	6.0	(4.1 - 8.6)	22.3	(16.8 - 28.4)	19.2
Prostate	98.0	(97 - 98.7)	48.2	(43.6 - 52.7)	98.3	(96.9 - 99.1)	92.2
Stomach	49.1	(43.1 - 54.8)	17.7	(13.3 - 22.8)	47.6	(41 - 54)	44.1

Using information to improve quality & choice

Relative one year survival



Using information to improve quality & choice

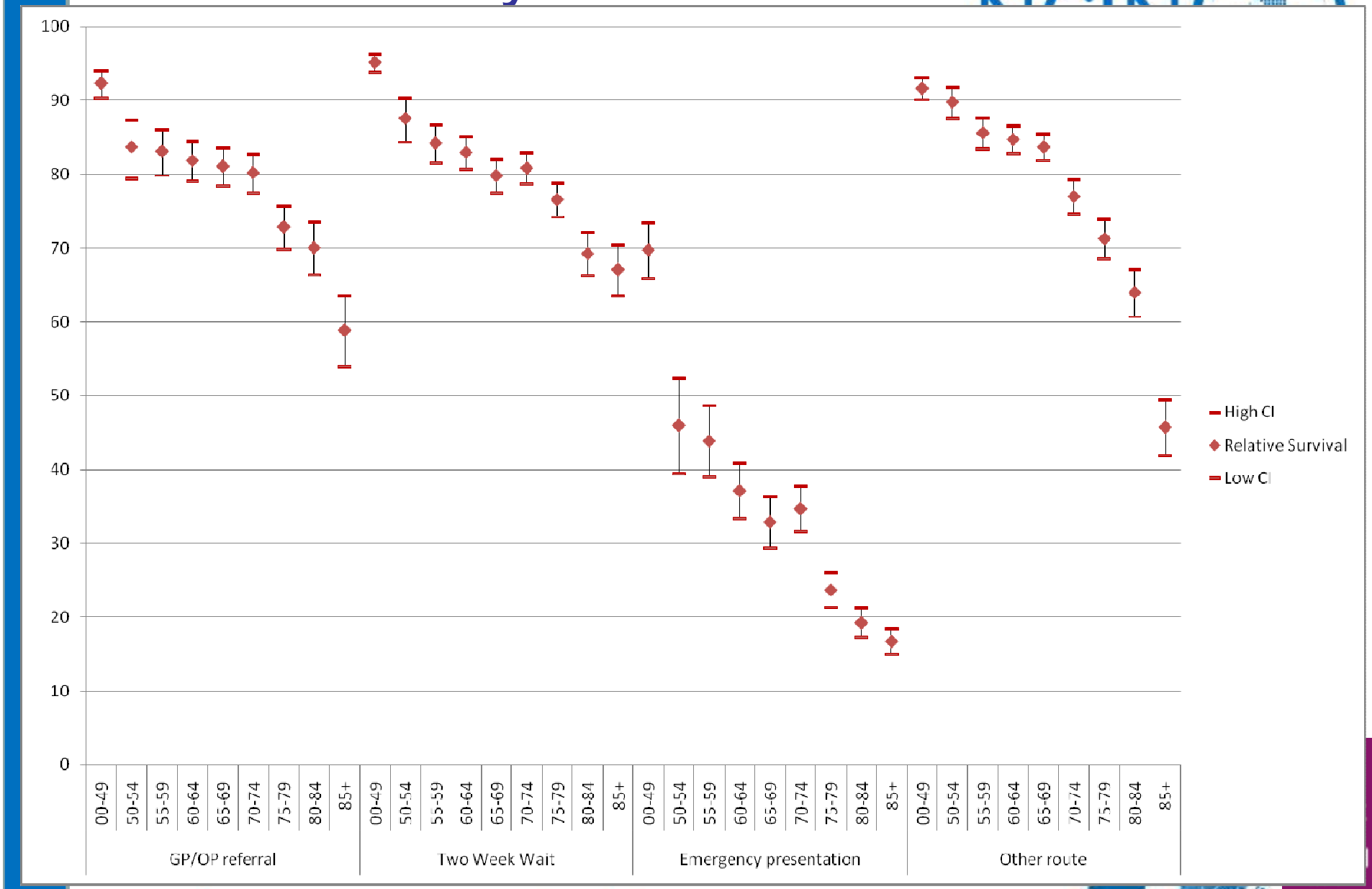
Relative one year survival: by age band

Malignant registrations, South West 2007, excluding multiples and DCOs

Age Band	GP/OP referral		Two Week Wait		Emergency		Other route	
	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival	95% CIs
00-49	92.4	(90.3 - 94.1)	95.2	(93.8 - 96.3)	69.8	(65.8 - 73.4)	91.7	(90.1 - 93.1)
50-54	83.8	(79.3 - 87.3)	87.6	(84.3 - 90.3)	46	(39.4 - 52.3)	89.8	(87.5 - 91.7)
55-59	83.2	(79.8 - 86)	84.3	(81.5 - 86.6)	43.8	(38.9 - 48.7)	85.7	(83.5 - 87.6)
60-64	81.9	(79 - 84.4)	83.0	(80.7 - 85.1)	37.1	(33.4 - 40.8)	84.8	(82.8 - 86.5)
65-69	81.1	(78.4 - 83.5)	79.9	(77.5 - 82)	32.8	(29.4 - 36.3)	83.8	(81.8 - 85.5)
70-74	80.3	(77.5 - 82.7)	80.9	(78.6 - 83)	34.7	(31.7 - 37.7)	77.0	(74.6 - 79.3)
75-79	72.9	(69.9 - 75.7)	76.6	(74.2 - 78.8)	23.6	(21.3 - 26)	71.3	(68.5 - 73.8)
80-84	70.1	(66.3 - 73.5)	69.3	(66.2 - 72.2)	19.2	(17.2 - 21.3)	64.0	(60.7 - 67.1)
85+	**58.9**	**(54 - 63.5)**	**67.1**	**(63.5 - 70.5)**	**16.7**	**(15 - 18.4)**	**45.7**	**(41.9 - 49.5)**

Using information to improve quality & choice

Relative one year survival



Using information to improve quality & choice

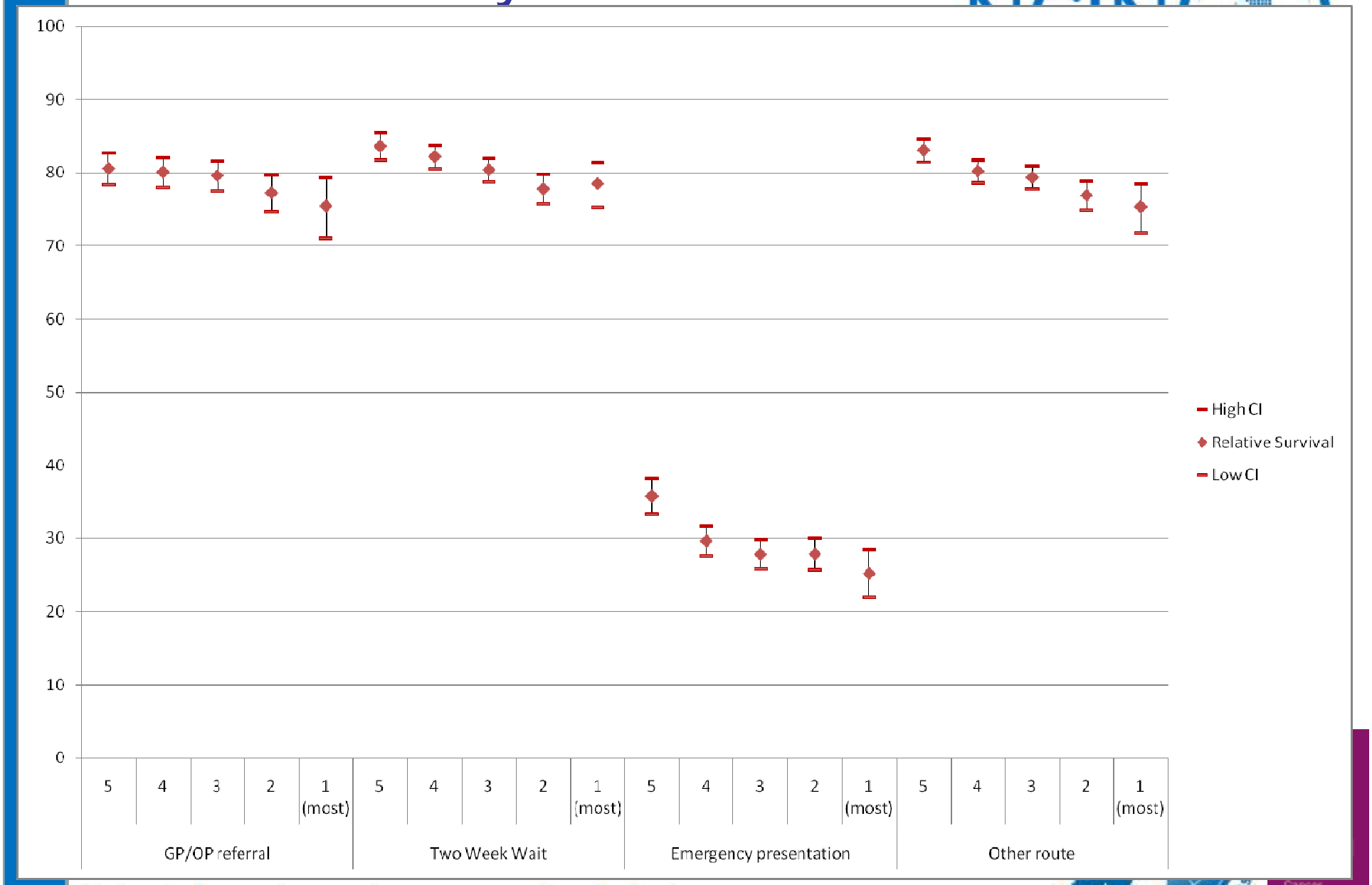
Relative one year survival: by deprivation quintile

Malignant registrations, South West 2007, excluding multiples and DCOs

Deprivation	GP/OP referral		Two Week Wait		Emergency		Other route	
	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival	95% CIs	Relative Survival	95% CIs
5 (least)	80.6	(78.3 - 82.7)	83.7	(81.7 - 85.4)	35.8	(33.3 - 38.2)	83.1	(81.4 - 84.6)
4	80.1	(78 - 82)	82.2	(80.5 - 83.8)	29.6	(27.6 - 31.7)	80.2	(78.6 - 81.8)
3	79.6	(77.5 - 81.5)	80.4	(78.8 - 82)	27.8	(25.9 - 29.7)	79.4	(77.7 - 80.9)
2	77.3	(74.7 - 79.6)	77.8	(75.7 - 79.8)	27.8	(25.7 - 30)	76.9	(74.8 - 78.9)
1 (most)	75.5	(71.1 - 79.3)	78.5	(75.3 - 81.4)	25.2	(22 - 28.4)	75.3	(71.8 - 78.5)

Using information to improve quality & choice

Relative one year survival



Using information to improve quality & choice

Next steps

- Methodology to be quality assured by another Cancer Registry
- Awaiting South West A&E data
- Further analysis
  - Unknowns
  - Multiples
  - In Situ tumours
- National data obtained & being processed (including Two Week Wait and Screening)
- Test methodology with national data
- National analysis & report planned September 2010

Using information to improve quality & choice

Discussion

- Data confirms what we already know
- Further survival analysis possible
- Percentage of Two Week Wait referrals (28%)
- Explore limitations of methodology
  - unknowns, inpatient elective, other outpatient
- Potential expansion of project
  - primary care data including primary care audit, treatments, stage at diagnosis, international benchmarking

NCIN
national cancer intelligence network
Using information to improve quality & choice

lucy.elliss-brookes@nhs.net

www.ncin.org.uk

SOUTH WEST PUBLIC HEALTH OBSERVATORY

NCRI National Cancer Research Institute