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Update on the National Lung Cancer Audit

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Royal College of Physicians

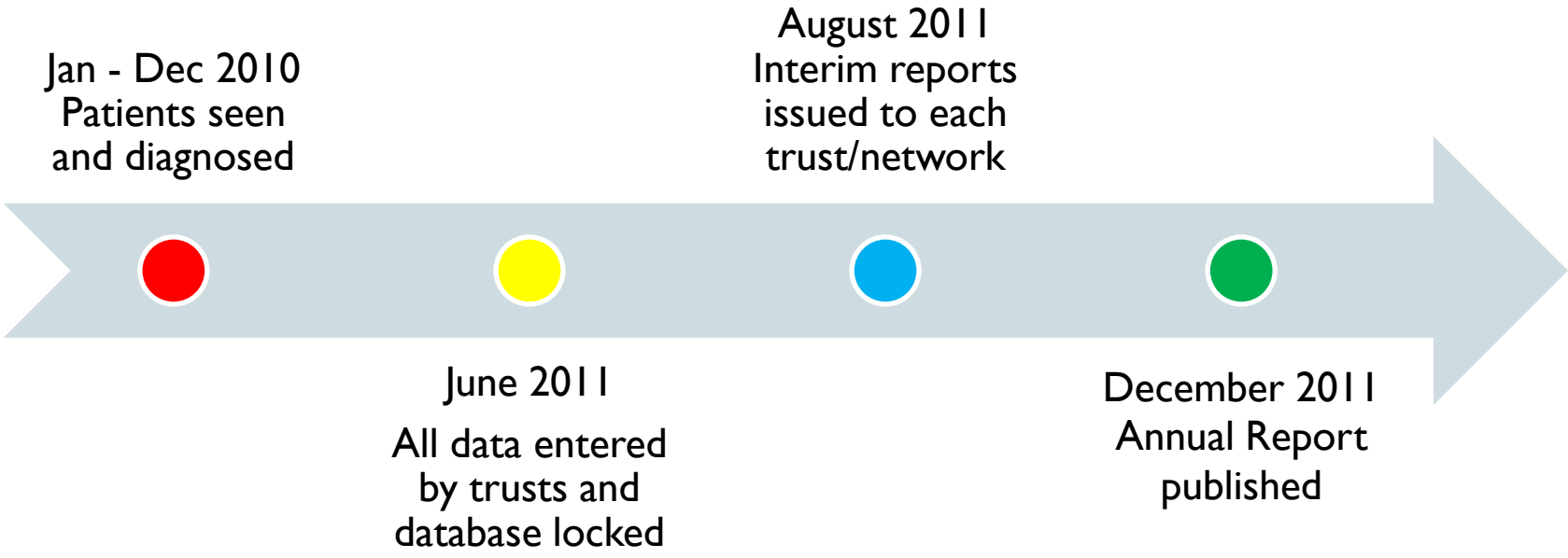
Topics

- Headline Data
- Variation
- Age
- Specialist Nurses
- Carcinoid

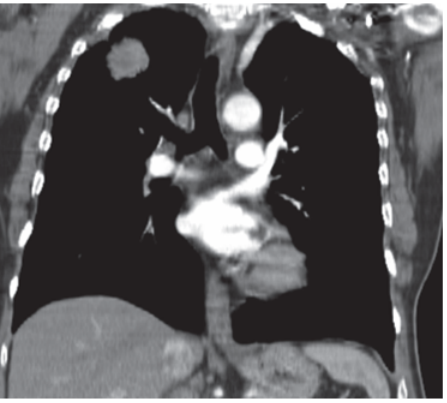
Patients First Seen 2010

HEADLINE DATA

Reporting Cycle



National Lung Cancer Audit Report 2011



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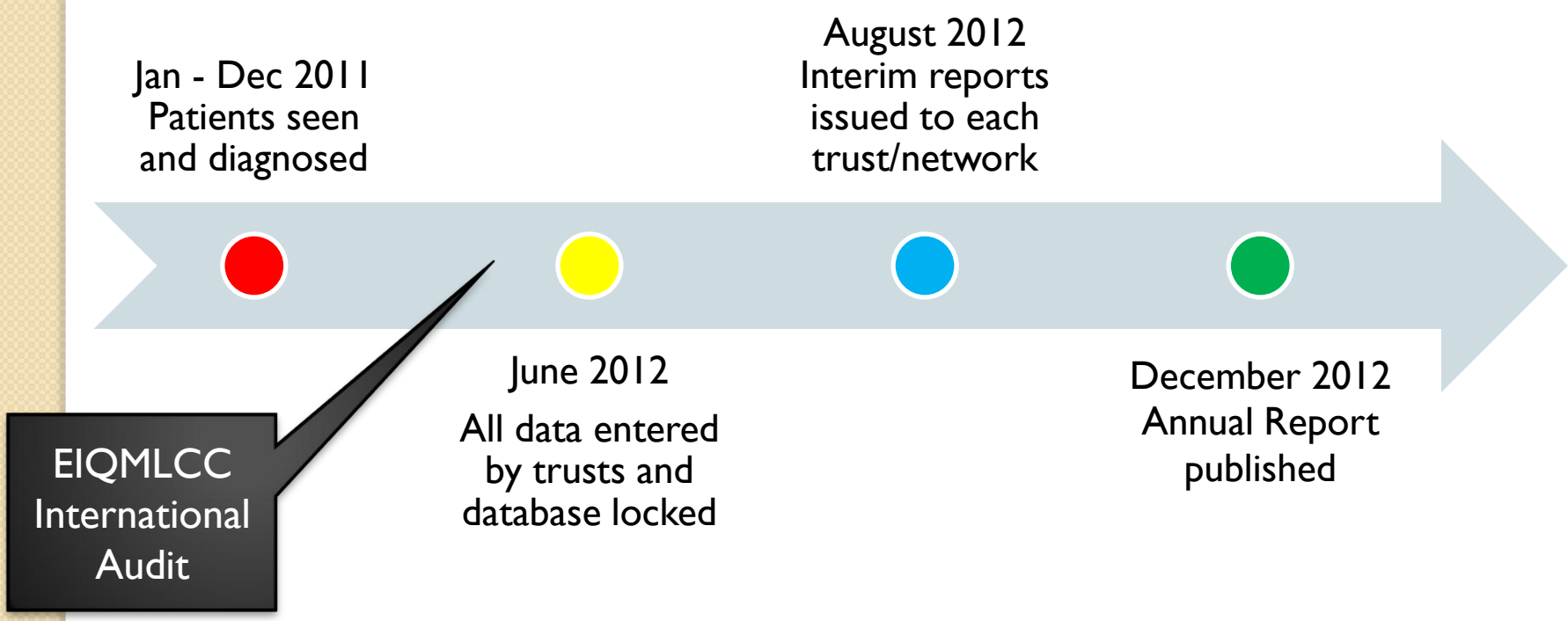
The NCLA acknowledges the work of Nottingham University School of Clinical Sciences for these data analyses, with specific thanks to Dr. Laila Tata.

Reporting Cycle



Case Ascertainment and Data Completeness (England)

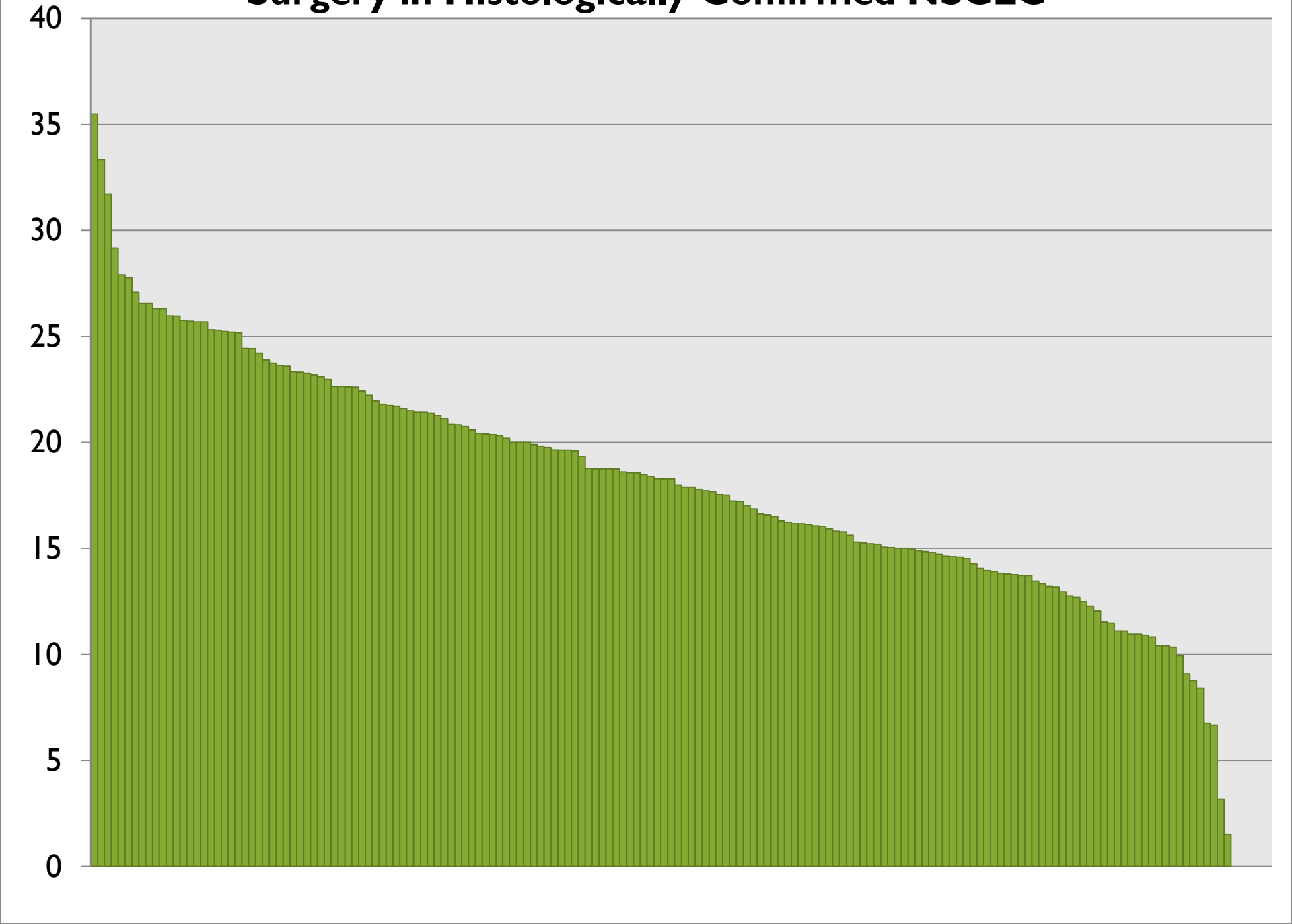
	2005	2006	2007	2008	2009	2010
Cases	10,920	16,922	20,639	25,757	30,158	30,329
PS	66%	77%	80%	87%	88%	84%
Staging	51%	55%	70%	77%	80%	82%
Treatment	66%	72%	79%	82%	89%	89%

Headline Indicators

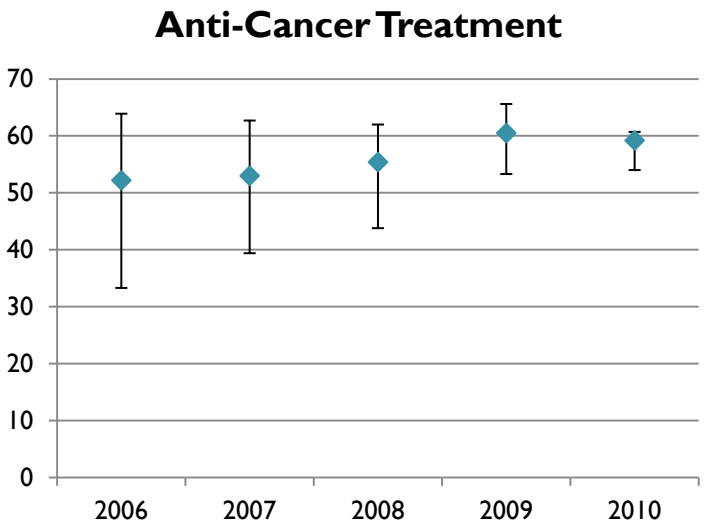
		2005	2006	2007	2008	2009	2010
Histocytological diagnosis		68%	66%	65%	66.7%	69.5%	76.5%
Histology	NSCLC	44.8%	43.9%	45.5%	52.2%	56%	57%
	SCLC	10.3%	10%	9.6%	10.3%	10.5%	10.9%
	Mesothelioma	3.7%	3.5%	4.2%	4.4%	5.0%	5.5%
NSCLC NOS Rate		-	36%	32%	33.6%	30%	24%
Discussed at MDT?		79%	84.3%	86.8%	88.6%	93.2%	96.1%
Anti-cancer treatment?		45%	50%	52%	54%	58.9%	58.5%
Overall resection rate		9%	9.4%	10.3%	11.2%	13.9%	13.9%
NSCLC resection rate		13.8%	14.3%	15.2%	16%	19%	18.3%
SCLC chemotherapy rate		57.7%	61.7%	64.5%	63%	66%	65%
1 year survival		35.5%	35.0%	34.6%	34.7%	35.2%	35.8%

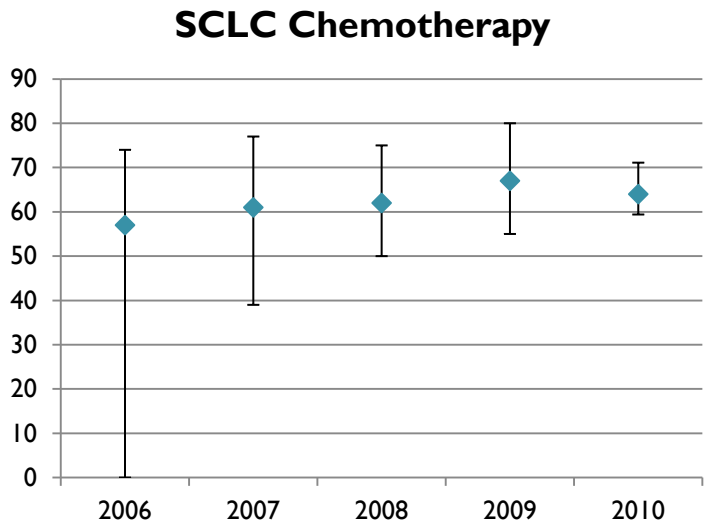
VARIATION

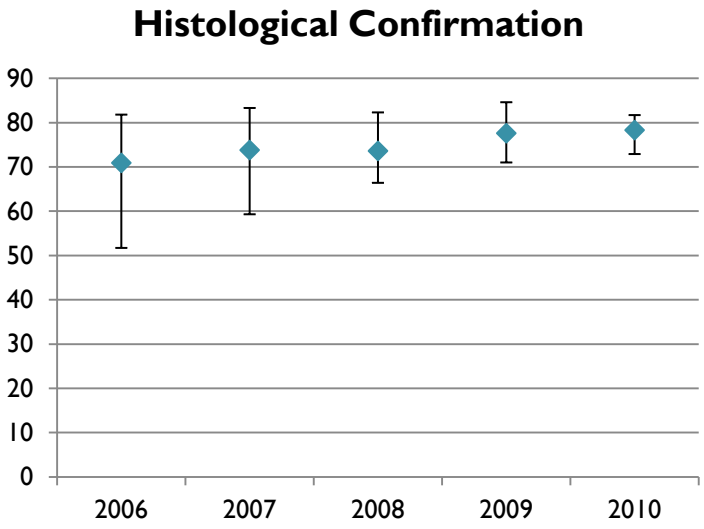
Surgery in Histologically-Confirmed NSCLC



Reducing Variability







Is the variation in surgical resection rates across England primarily due to patient features or to the features of the NHS trust where a patient is first seen?

- NLCA data on comorbidity is incomplete and limited to six disease groups.
- The audit records only whether comorbidity influenced the treatment decision.
- Linked the NLCA to HES to calculate a Charlson Index.
- Calculated OR for surgery and HR for survival based on:
  - Patient characteristics
  - Trust characteristics (surgical centre, radiotherapy centre, high trial recruiter, peer review score)

Thorax 2011;66:1078-1084 doi:10.1136/thx.2011.158972

Inequalities in outcomes for non-small cell lung cancer: the influence of clinical characteristics and features of the local lung cancer service

Anna L Rich et al

Surgery

- OR for having surgery for patients with a Charlson Index of ≥4 compared with patients with a Charlson index of 0 was 0.67 (95% CI 0.56 to 0.80).
- **Patients first seen in a thoracic surgical centre - adjusted OR 1.51 (95% CI 1.16 to 1.97).**
- In patients who had stage I/II disease - adjusted OR 1.53 (95% CI 1.09 to 2.13).
- Whether the NHS trust was a radiotherapy centre or an active trial centre did not influence the likelihood of having surgery.
- The overall score at peer review had no influence on the likelihood of receiving surgery.

Thorax 2011;66:1078-1084 doi:10.1136/thx.2011.158972

Inequalities in outcomes for non-small cell lung cancer: the influence of clinical characteristics and features of the local lung cancer service

Anna L Rich et al

Survival

- Patients with a Charlson Index score of ≥4 had an adjusted HR of 1.59 (95% CI 1.52 to 1.66) compared with those with a Charlson Index score of 0.
- Patients who had surgery had an almost 60% lower overall mortality (adjusted HR 0.41, 95% CI 0.39 to 0.44).
- In the subgroup of people with stage I/II disease, the fully adjusted HR was very similar at 0.41 (95% CI 0.37 to 0.46).
- If the 73% of patients first seen at a non-surgical centre had the same chance of having surgery as those first seen at a thoracic surgical centre, this would increase the overall resection rate in this patient group from 13% to 17% with no detrimental impact on survival after surgery.
- Does not show is what aspects of 'being a surgical centre' are crucial to increasing resection rates.

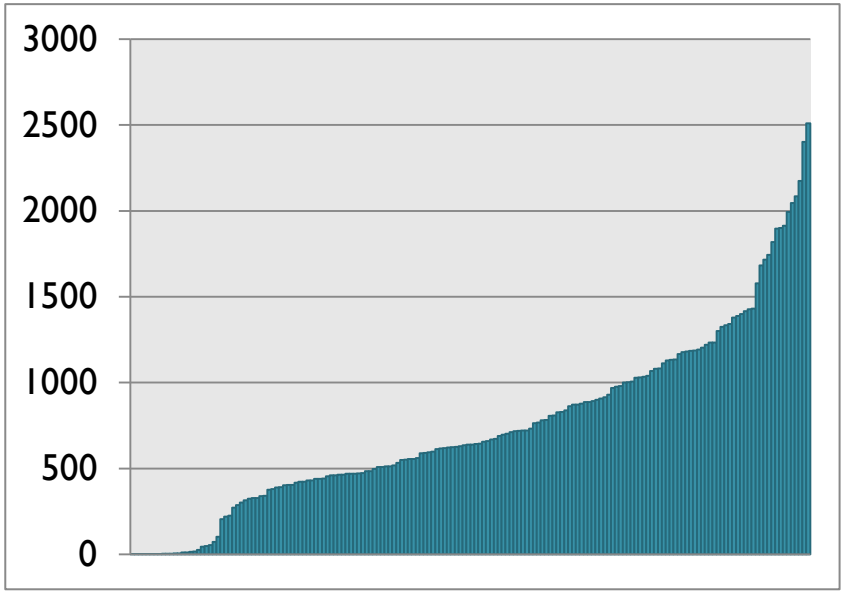
Thorax 2011;66:1078-1084 doi:10.1136/thx.2011.158972

Inequalities in outcomes for non-small cell lung cancer: the influence of clinical characteristics and features of the local lung cancer service

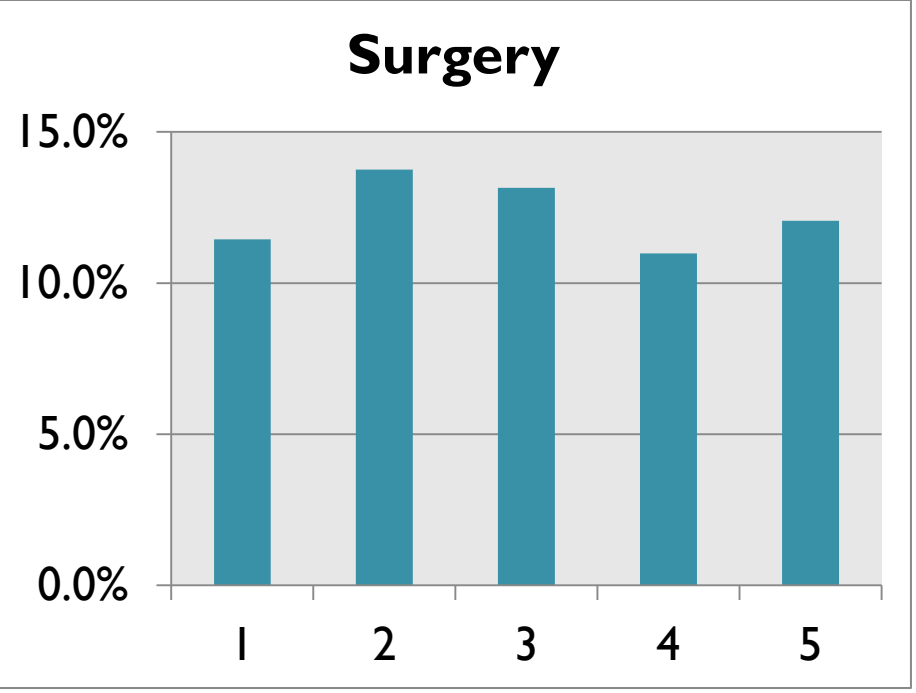
Anna L Rich et al

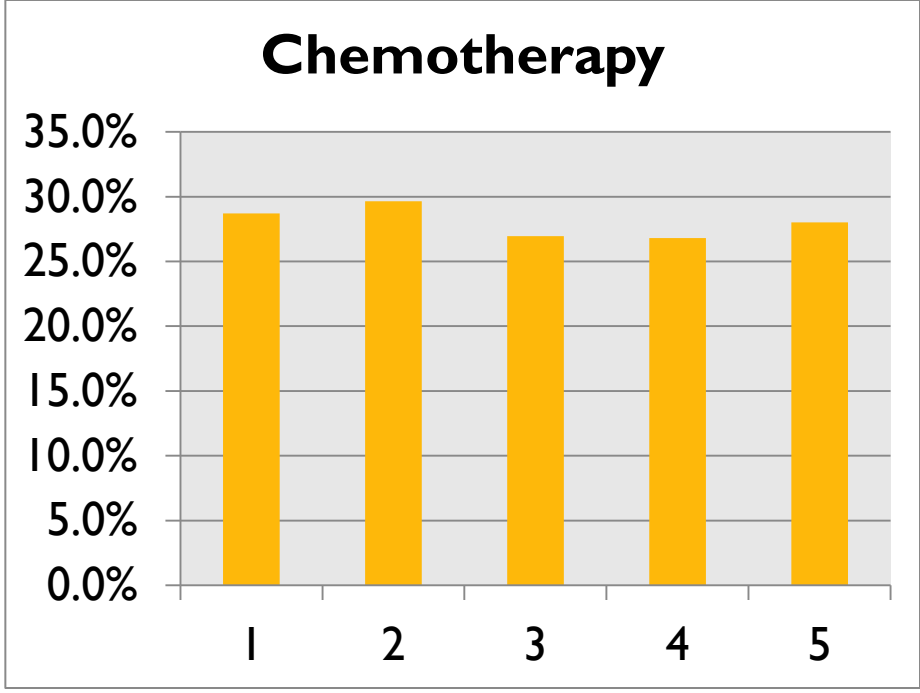
MDT size

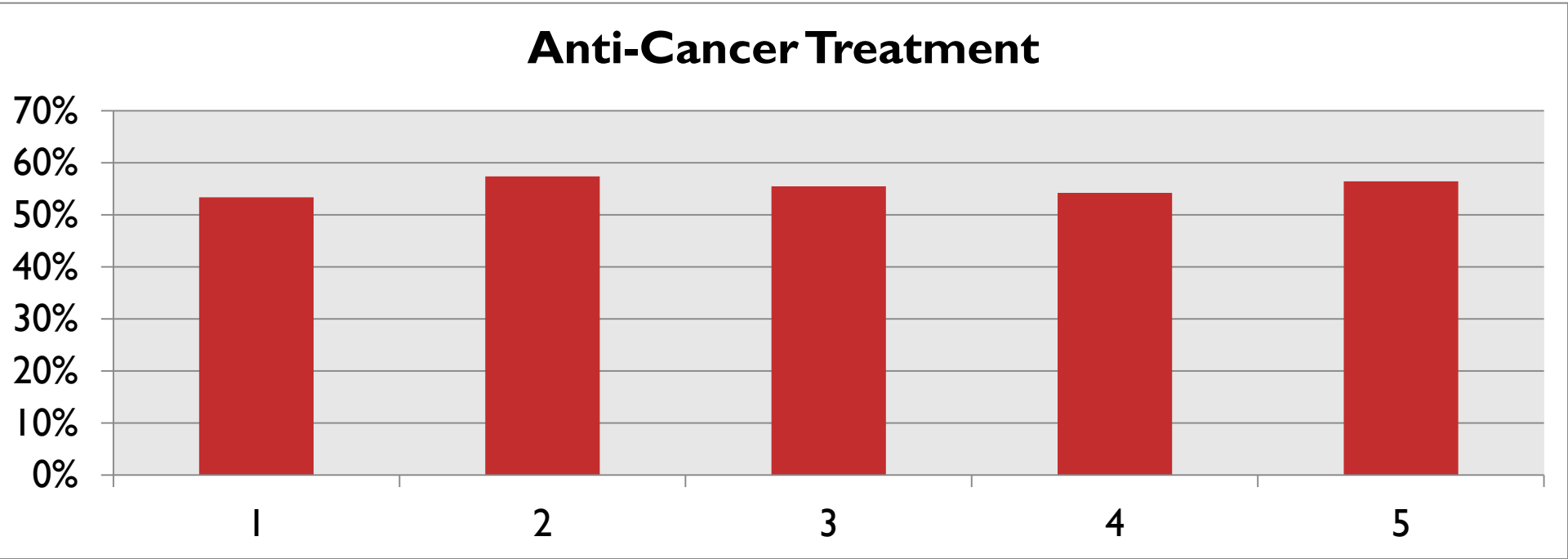
- All English LUCADA records 2006-2010 with "date first seen" (preferred) or date of diagnosis, and recorded "place first seen".
- Subsequent analyses only on MDTs with >=100 cases.

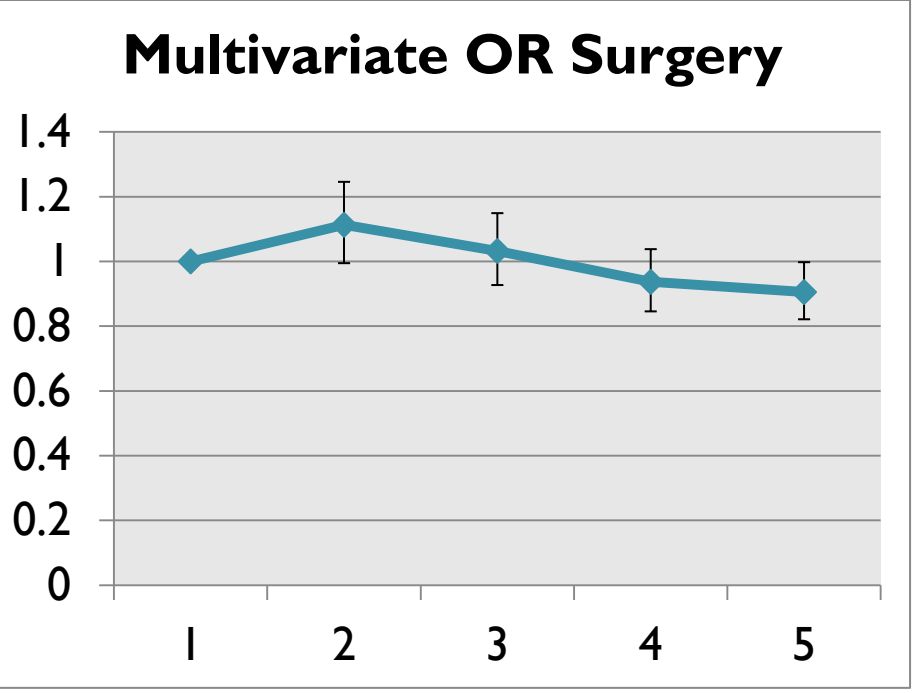


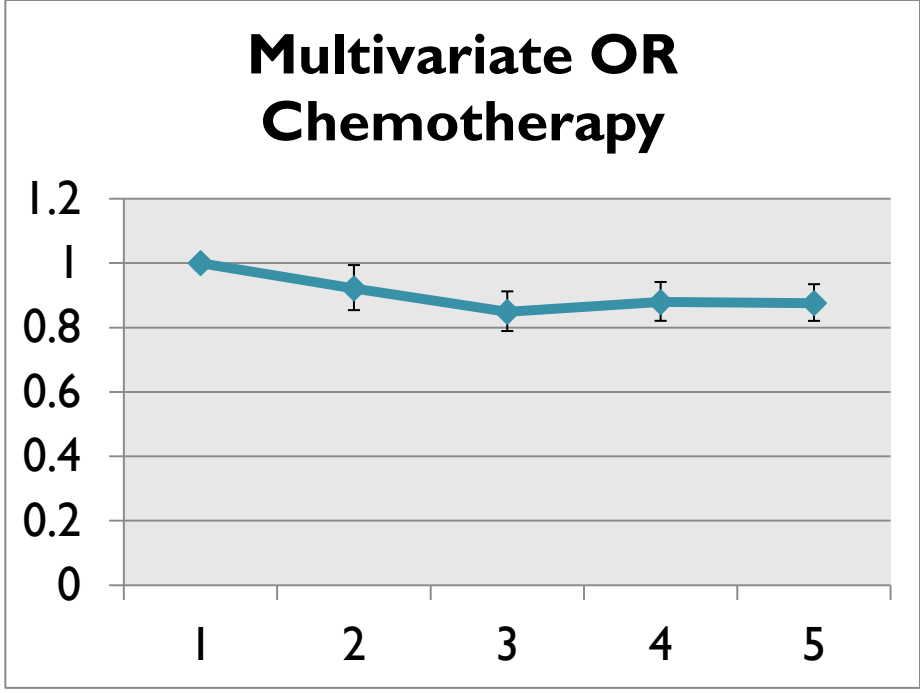
Size Quintile	Number	Percent
1 (smallest)	11,144	8.75
2	16,073	12.62
3	21,586	16.95
4	30,265	23.76
5 (largest)	48,311	37.93
Total	**127,379**	**100.00**

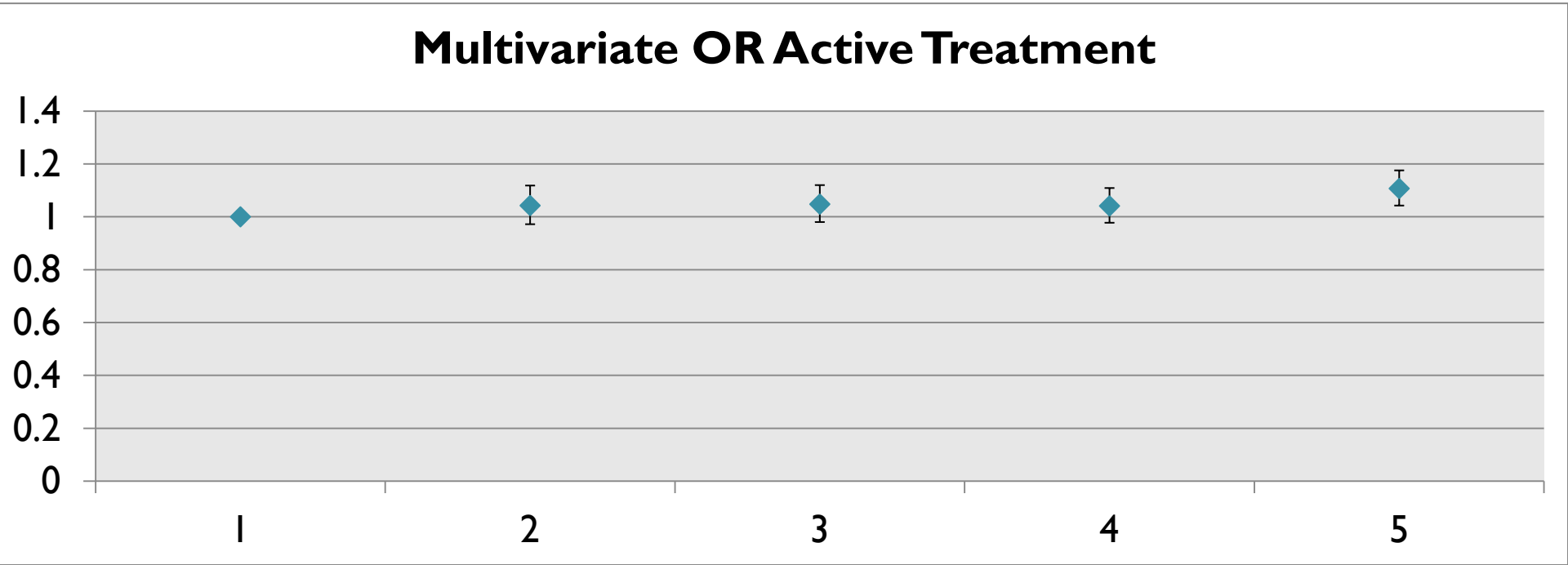

Surgery
15.0%
10.0%
5.0%
0.0%
1
2
3
4
5


Chemotherapy
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
1
2
3
4
5

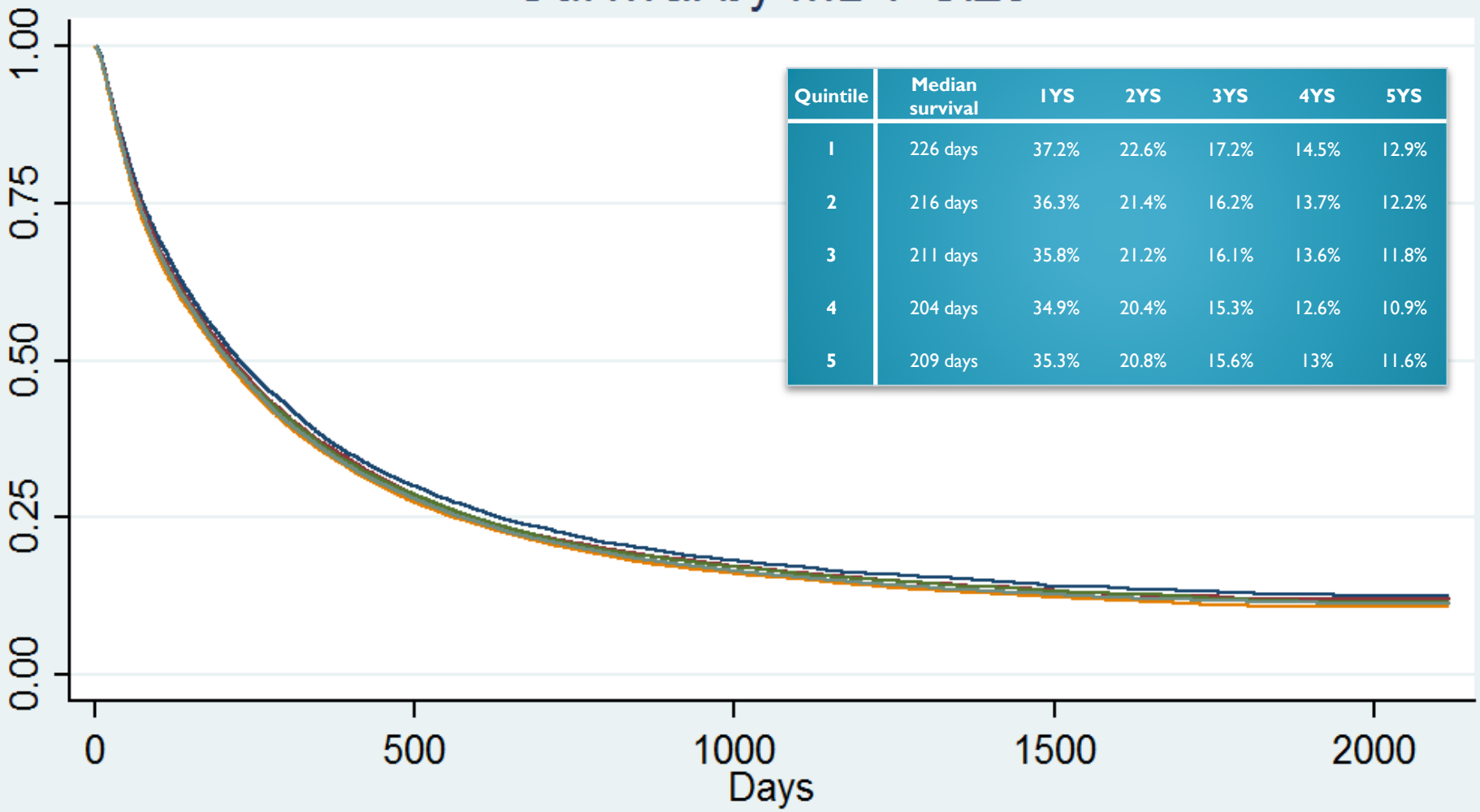

Anti-Cancer Treatment
70%
60%
50%
40%
30%
20%
10%
0%
1
2
3
4
5


Multivariate OR Surgery
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5


Multivariate OR Chemotherapy
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5


Multivariate OR Active Treatment
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5

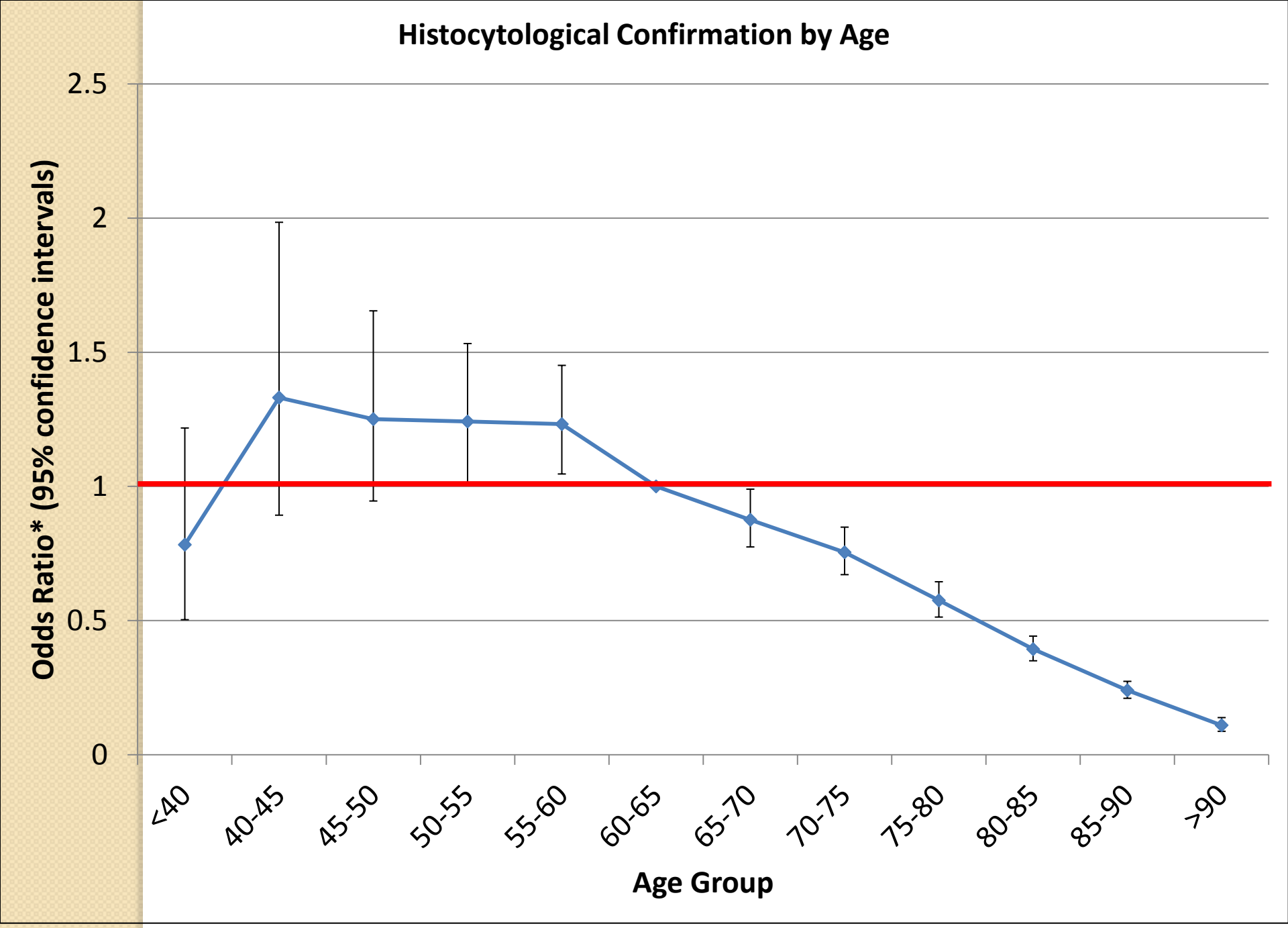
Survival by MDT Size



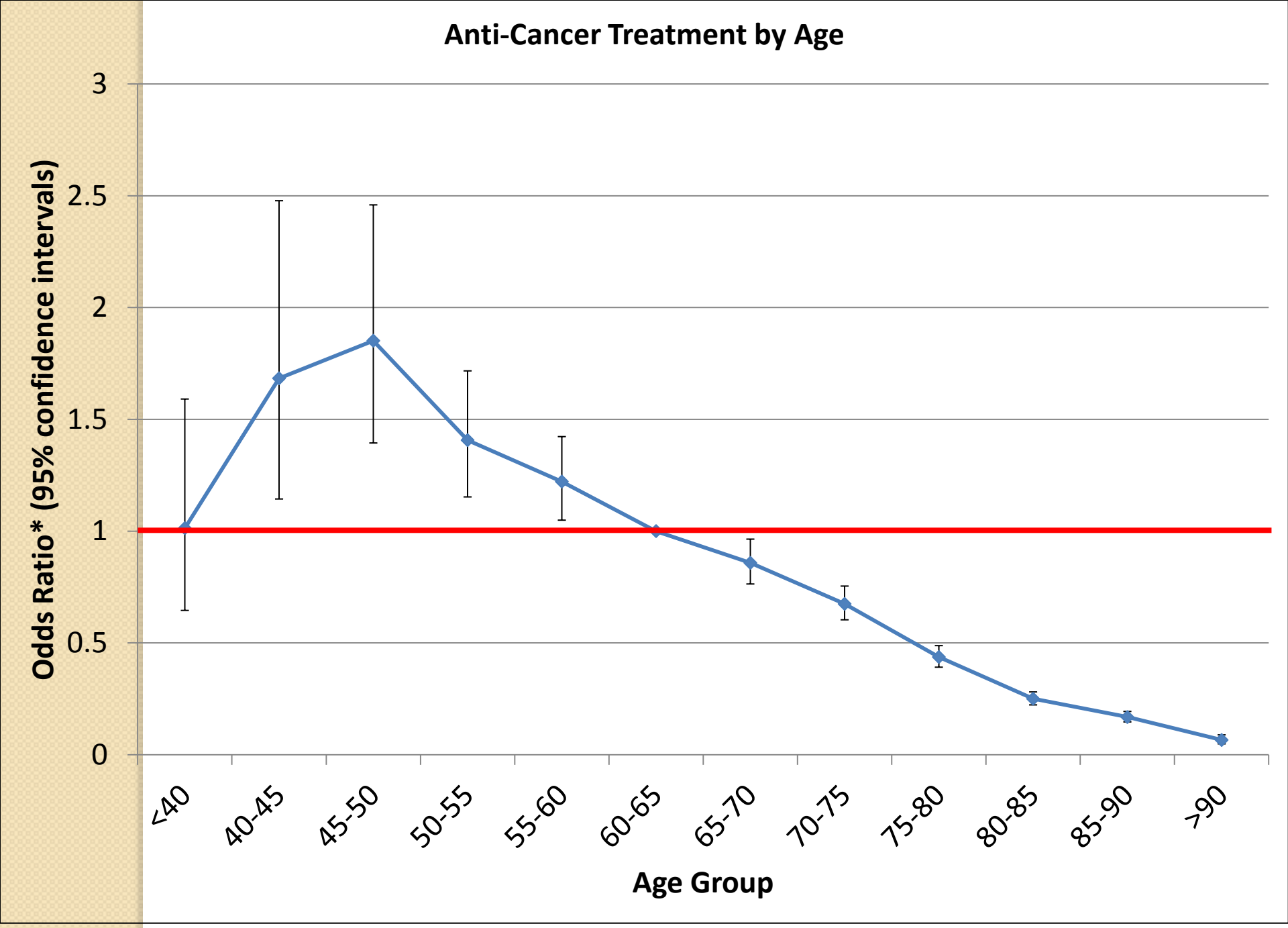
Quintile	Median survival	1YS	2YS	3YS	4YS	5YS
1	226 days	37.2%	22.6%	17.2%	14.5%	12.9%
2	216 days	36.3%	21.4%	16.2%	13.7%	12.2%
3	211 days	35.8%	21.2%	16.1%	13.6%	11.8%
4	204 days	34.9%	20.4%	15.3%	12.6%	10.9%
5	209 days	35.3%	20.8%	15.6%	13%	11.6%

AGE

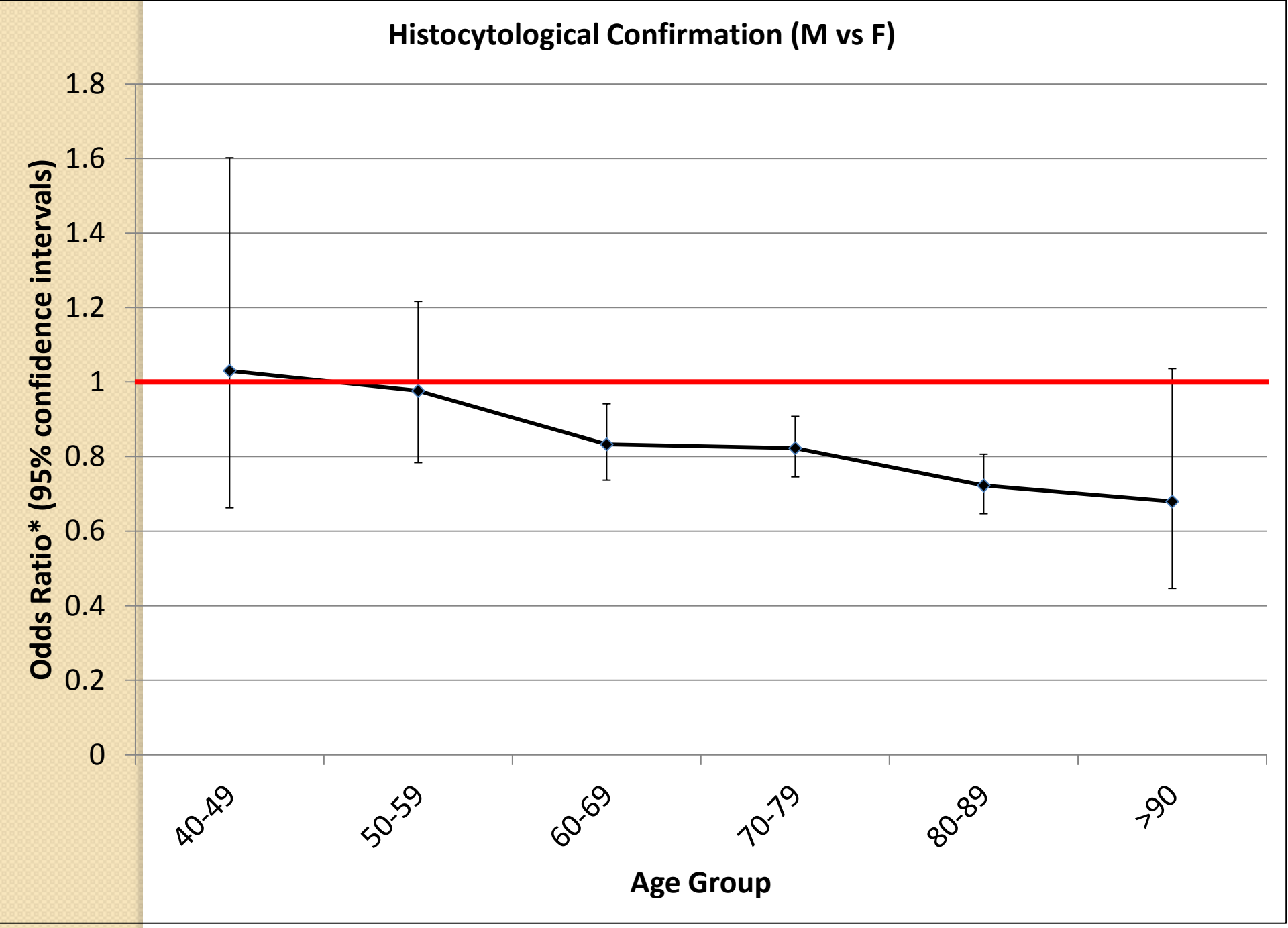
	Histocytological Confirmation					Anti-Cancer Treatment			
	Odds ratio*	95% Confidence Interval		p value		Odds ratio*	95% Confidence Interval		p value
Male	1	-	-	-		1	-	-	-
Female	0.81	0.77	0.86	<0.001		0.91	0.86	0.96	0.002
<40	0.85	0.55	1.31	0.451		1.10	0.70	1.72	0.671
40-49	1.40	1.12	1.76	0.004		1.97	1.57	2.47	<0.001
50-59	1.34	1.19	1.52	<0.001		1.40	1.25	1.58	<0.001
60-69	1	-	-	-		1	-	-	-
70-79	0.71	0.65	0.76	<0.001		0.59	0.55	0.63	<0.001
80-89	0.36	0.33	0.39	<0.001		0.24	0.22	0.26	<0.001
>90	0.12	0.10	0.15	<0.001		0.07	0.05	0.10	<0.001



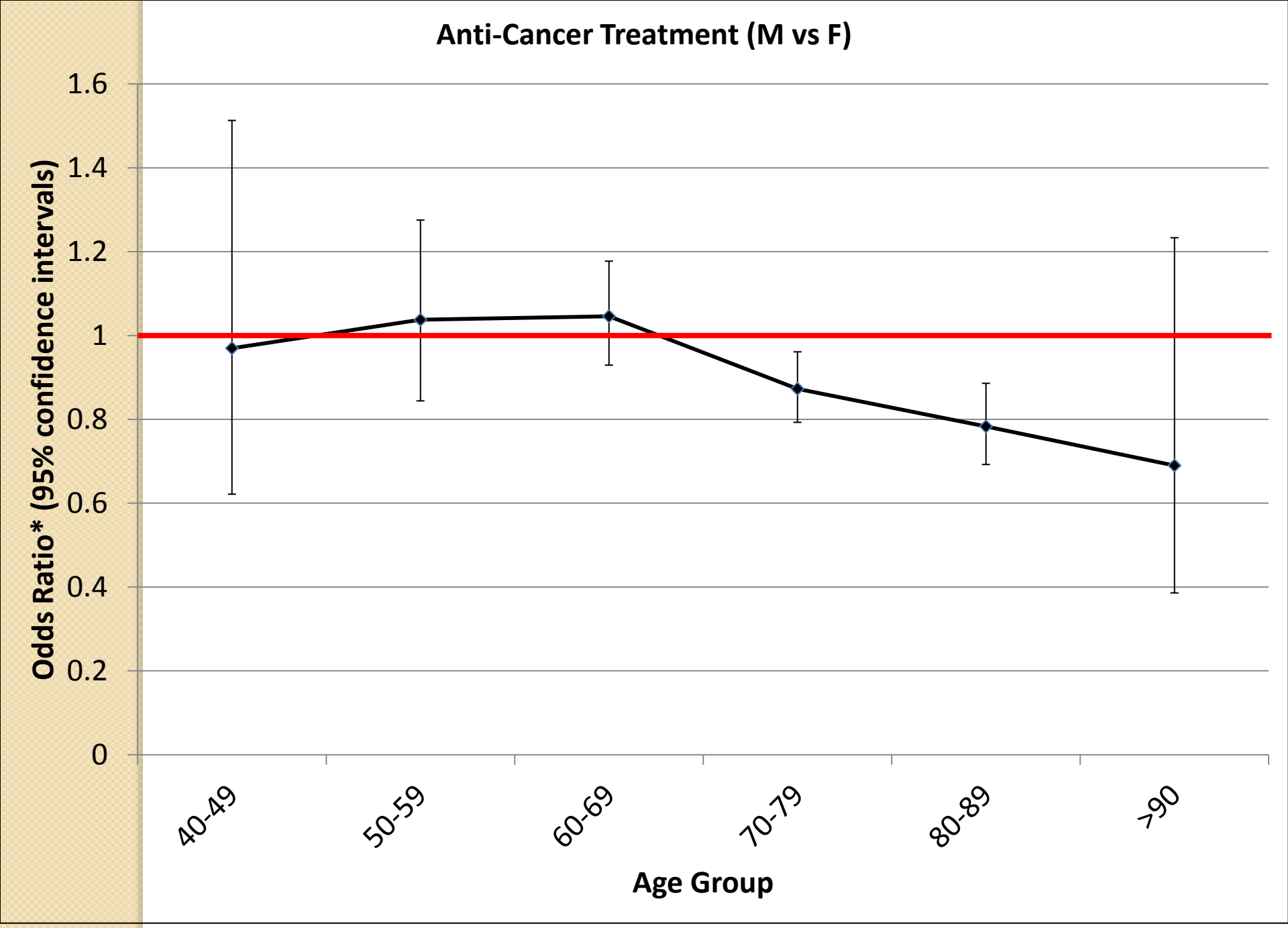
*Odds ratios adjusted for stage, performance status, comorbidity and histocytological confirmation



*Odds ratios adjusted for stage, performance status, comorbidity and histocytological confirmation



*Odds ratios adjusted for stage, performance status, comorbidity



*Odds ratios adjusted for stage, performance status, comorbidity and histocytological confirmation

SPECIALIST NURSES

Introduction

- In 2010, the National Lung Cancer Audit (NLCA) reported that for 2009, patients who saw an LCNS were more than twice as likely to receive active anti-cancer treatment.

- The relevance of this observation was obscured by a lack of case-mix adjustment and a high proportion of unrecorded data.

- We have sought to examine this finding more closely on the 2010 dataset (with less unrecorded data) by performing case-mix adjustment.

- The analyzed data is for patient seen in England only.

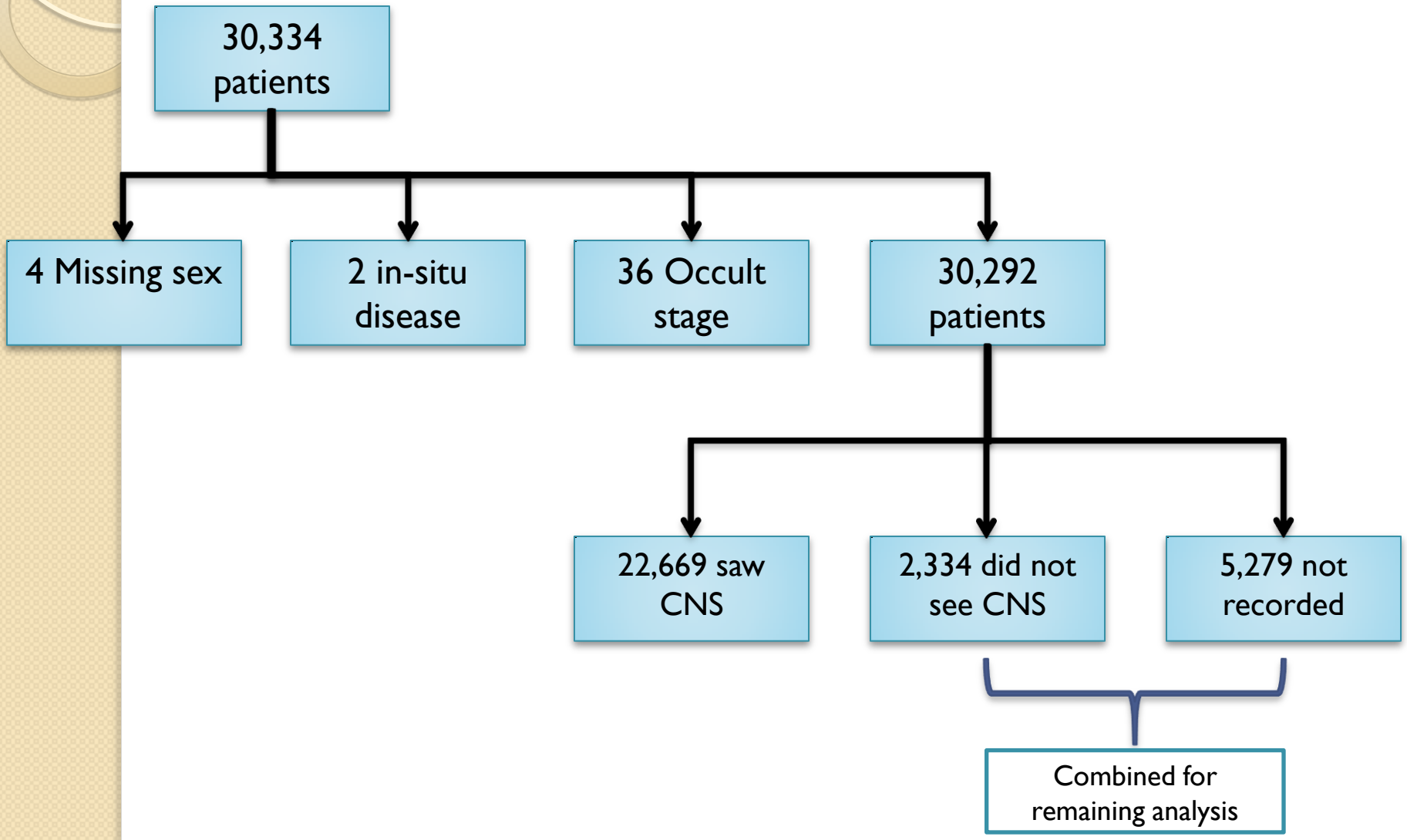
Methods

- Details of all patients from English trusts that were submitted to the NLCA database in 2010 were obtained.

- We then performed logistic regression analysis based on sex, age, stage and performance status to calculate mutually-adjusted odds ratios (OR) for overall anti-cancer treatment and for each specific anti-cancer treatment.

- Since a patient would have reduced opportunity to access an LCNS if their survival were short, a second model was created excluding those patients who had survival of <28 days.

Results


30,334 patients
4 Missing sex
2 in-situ disease
36 Occult stage
30,292 patients
22,669 saw CNS
2,334 did not see CNS
5,279 not recorded
Combined for remaining analysis

Overall Treatment Rates

	Number having treatment	% having treatment
Anti-cancer treatment	17,711	58.5%
Surgery	4,378	14.5%
Chemotherapy	8,955	29.6%
Radiotherapy	8,614	28.4%

Model 1

All Patients

30,292 patients

	Number having treatment (%)		OR (95% CI) vs no nurse/unknown
	Seen by nurse	Not seen by nurse/unknown	
Anti-cancer treatment	14,631 (64.5%)	3,080 (40.4%)	2.04 (1.91 – 2.18)
Surgery	3,456 (15.3%)	922 (12.1%)	1.06 (0.97 – 1.17)
Chemotherapy	7,708 (34.0%)	1,247 (16.4%)	2.05 (1.90 – 2.22)
Radiotherapy	7,140 (31.5%)	1,474 (19.3%)	1.57 (1.47 – 1.68)

Model 2

Patients Surviving >28 days

27,173 patients (89.7%)

	Number having treatment (%)		OR (95% CI) vs no nurse/unknown
	Seen by nurse	Not seen by nurse/unknown	
Anti-cancer treatment	14,427 (68.5%)	2,966 (48.6%)	1.87 (1.74 – 2.01)
Surgery	3,447 (16.4%)	914 (15%)	1.01 (0.91 – 1.11)
Chemotherapy	7,635 (36.2%)	1,237 (20.3%)	1.87 (1.72 – 2.02)
Radiotherapy	7,012 (33.3%)	1,378 (22.6%)	1.47 (1.38 – 1.59)

Conclusions

- Contact with a LCNS was associated with increased rates of active treatment, particularly chemotherapy or radiotherapy, but not surgery.

- This effect was independent of sex, age, disease stage and performance status.

- The analysis is weakened by the amount of missing data on nurse input.

Conclusions

- There may be other factors that influence LCNS input that we have not adjusted for, such as mode of service delivery.

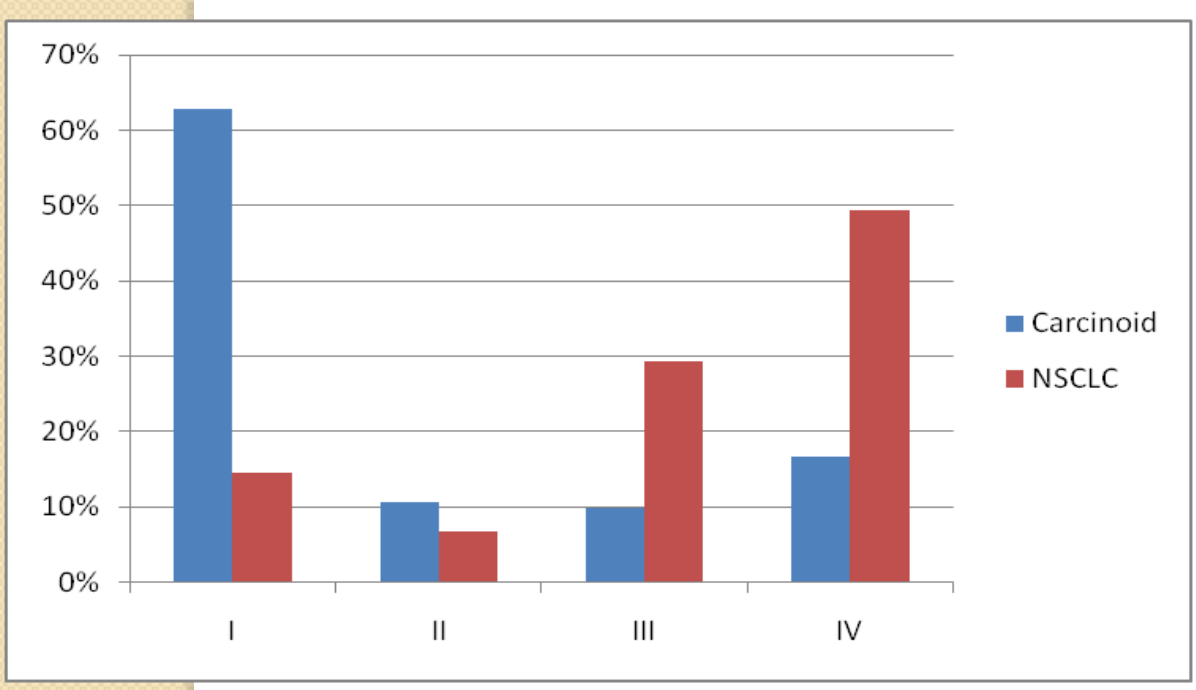
- Whilst the LUCADA dataset does not contain detailed information on individual reasons and details of LCNS assessments, this should be investigated further as there may be important additions to the known benefits LCNS provide to patients.

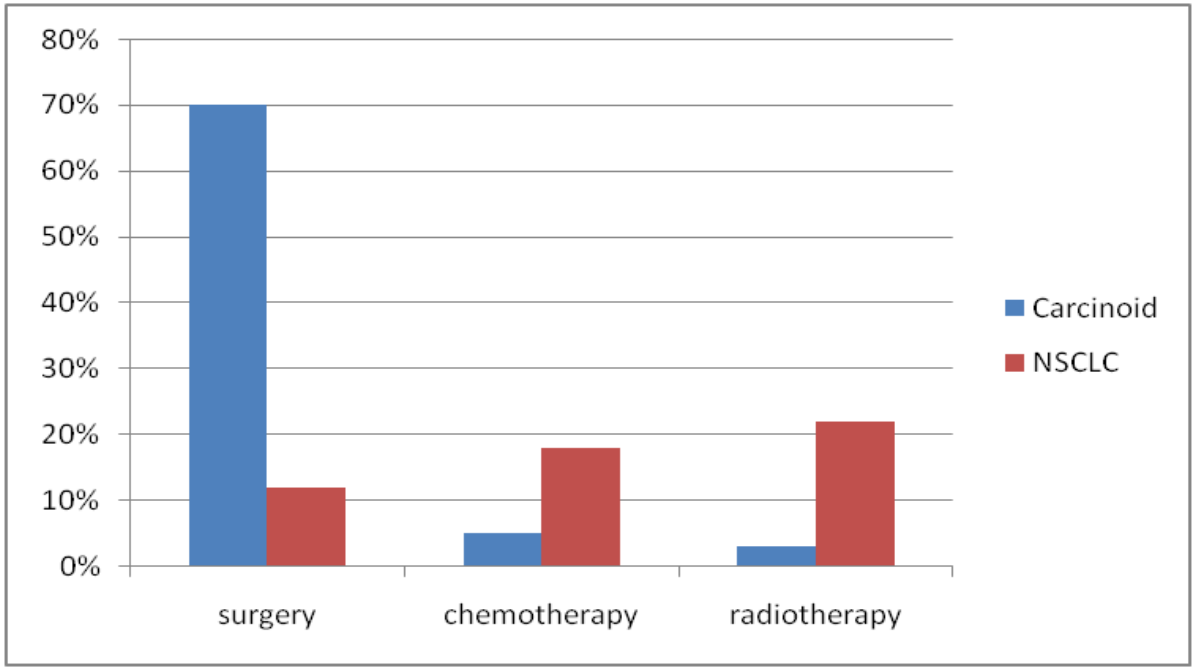
- However, regardless of the explanation, all lung cancer patients should have the opportunity to benefit from the expertise of a LCNS.

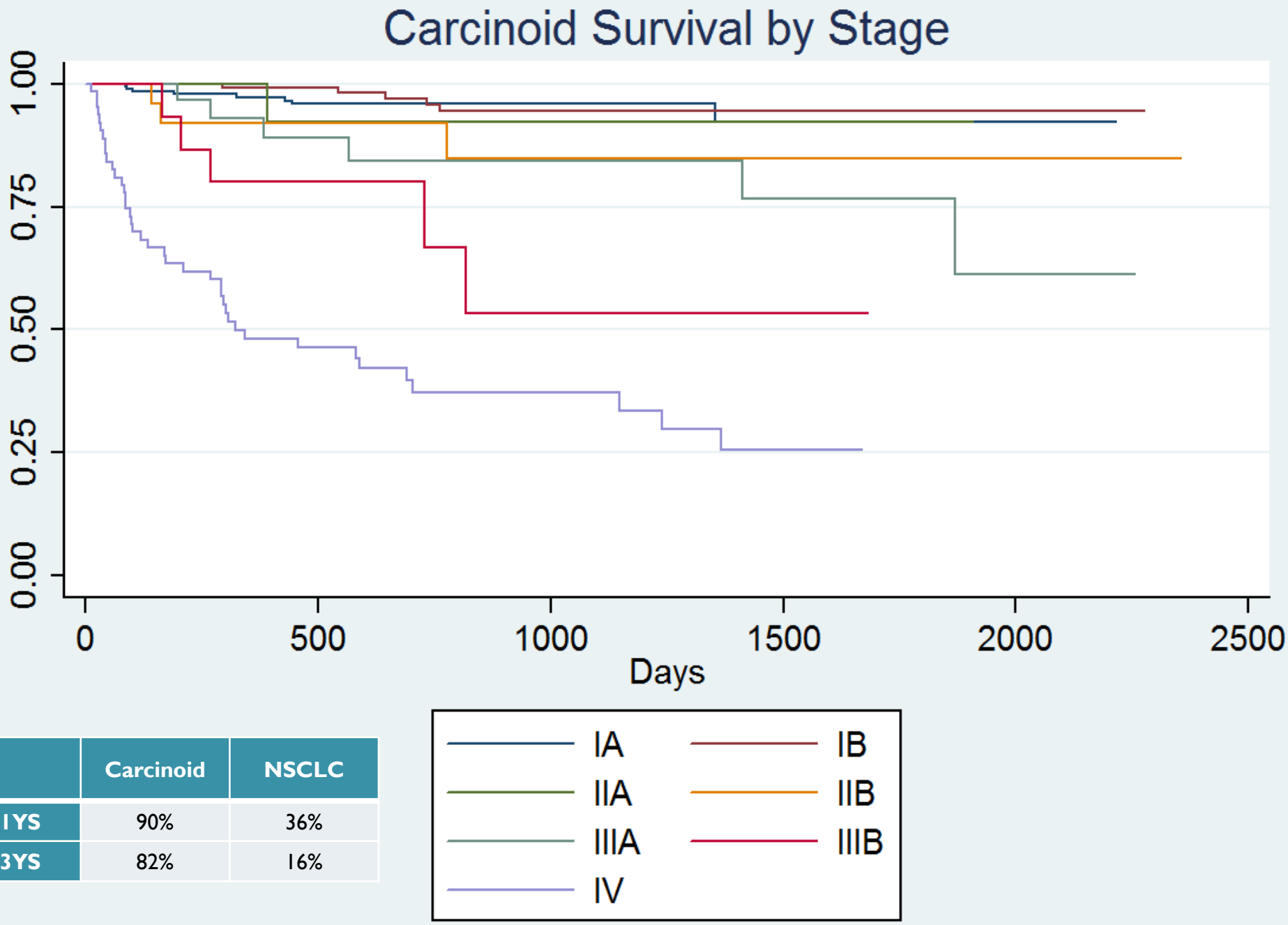
CARCINOID

Carcinoid Analysis

	Carcinoid	NSCLC
n	694	117,848
mean age	60 yrs	71 yrs
Male	43%	57%
FEV1 mean	2.27 L	1.67 L
PS 0-1	91%	53%


70%
60%
50%
40%
30%
20%
10%
0%
I
II
III
IV
Carcinoid
NSCLC


80%
70%
60%
50%
40%
30%
20%
10%
0%
surgery
chemotherapy
radiotherapy
Carcinoid
NSCLC



	Carcinoid	NSCLC
1YS	90%	36%
3YS	82%	16%

HOW IS THE DATA BEING USED?

How Is The Data Being Used?

- Local service Improvement
- NHS Choices
- ILCOP
- NICE Guidelines
- National Cancer Intelligence Network
- International Cancer Benchmarking Project
- ERS "European Quality Initiative for the Management of Lung Cancer
- Research Fellows
- Other research
- Peer Review

Acknowledgments

- **All MDT staff/clinicians/CNSs *across the UK***
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  Anthony Yelland – analyst (Information Centre)
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- Anna Rich – City Hospital Nottingham
- Analysts from Wales, Scotland (SCAN networks), Northern Ireland
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HQIP
Healthcare Quality Improvement Partnership