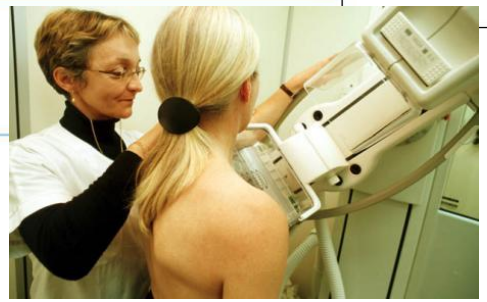
Routes to diagnosis – urology workshop

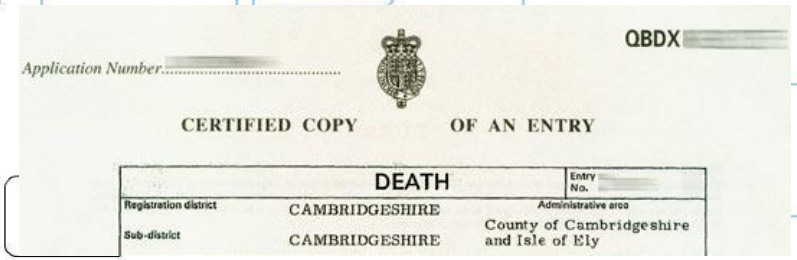
Jon Shelton

National Cancer Intelligence Network

What is routes to diagnosis (RtD)?

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





What did we want to achieve?

1. *Can we use available datasets to define the route to diagnosis for patients?*
2. *If so, how do routes differ by cancer site, age, sex, ethnicity, deprivation or cancer network?*
3. *Can we show how survival rates differ for different routes?*

In the beginning...

Pilot in the South West

Expanded to 1st national analyses using 2007 data

Used data from:

- Cancer registries
- Screening programme
- Cancer waiting times
- Inpatient HES
- Outpatient HES

Not without limitations.

Assigned 8 routes

Screen detected: breast or cervical (In situ neoplasms not included)

Two week wait: urgent GP referrals with a suspicion of cancer

GP/Outpatient referral: includes routine and non-2WW GP referrals

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

Inpatient elective: where no earlier information found prior to inpatient visit

DCO: diagnosis by death certificate only

Unknown: no data available from HES, CWT or screening

All cancers combined

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

Routes to diagnosis (all cancers)

• Screen Detected	3%
• Two week wait	25%
• Non- 2WW GP referral	24%
• Other outpatient	14%
• Inpatient	2%
• Emergency	23%
• DCO	1%
• Unknown	8%

Kidney by route

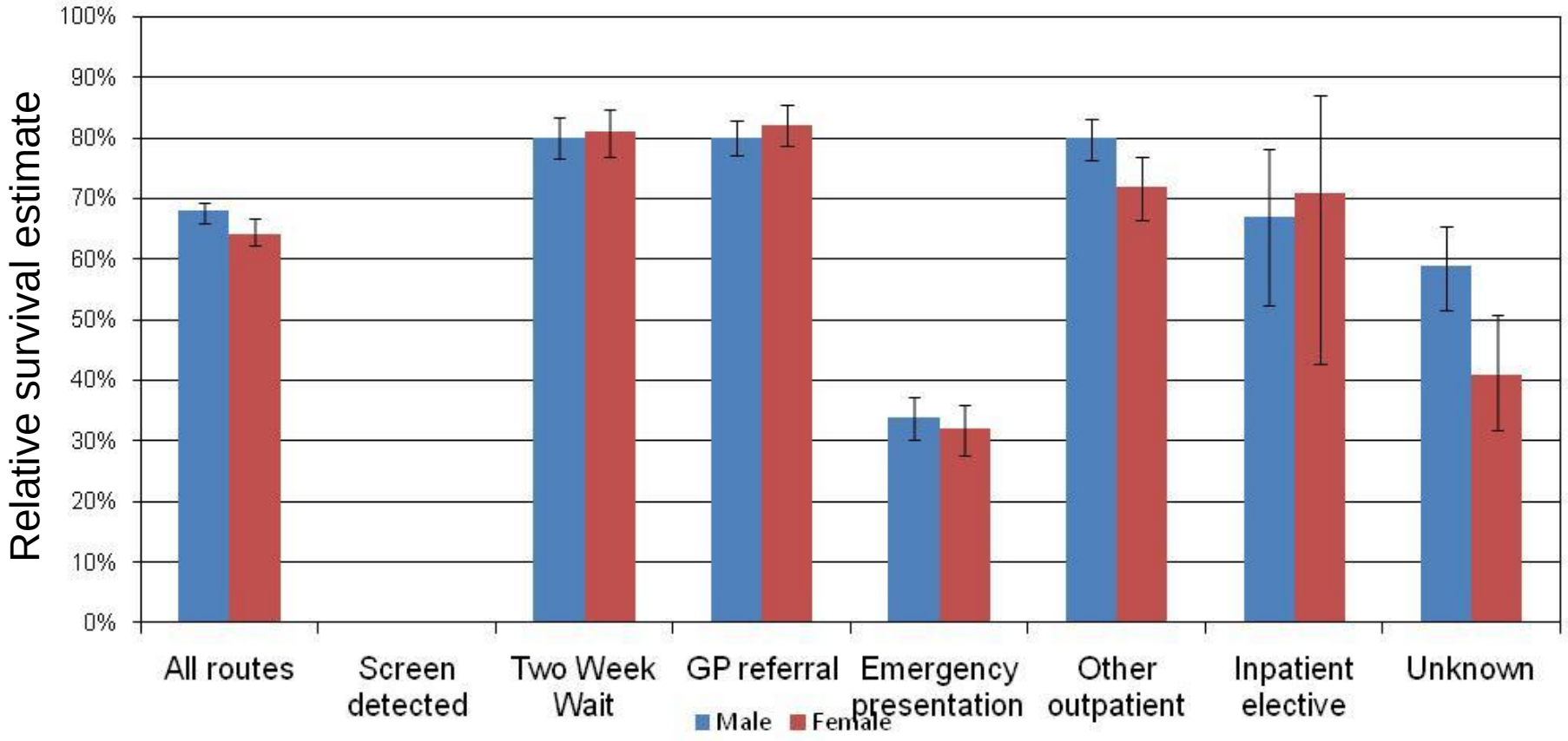
Kidney	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
Male		20%	29%	19%	2%	23%	1%	7%	**100%**	**3,221**
Confidence interval		*18% 21%*	*28% 31%*	*18% 20%*	*1% 2%*	*22% 25%*	*0% 1%*	*6% 8%*		
Female		21%	29%	16%	1%	26%	1%	5%	**100%**	**1,951**
Confidence interval		*20% 23%*	*27% 31%*	*15% 18%*	*1% 1%*	*24% 28%*	*1% 2%*	*5% 7%*		
Total		20%	29%	18%	1%	24%	1%	6%	**100%**	**5,172**
Confidence interval		*19% 21%*	*28% 30%*	*17% 19%*	*1% 2%*	*23% 25%*	*1% 1%*	*6% 7%*		

Kidney by age

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

Kidney	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
0-39		**13%**	22%	26%	4%	**26%**	0%	8%	**100%**	**202**
Confidence interval		***9% 18%***	*17% 29%*	*20% 32%*	*2% 8%*	***21% 33%***	*0% 3%*	*5% 13%*		
40-49		**26%**	29%	21%	2%	**17%**	0%	5%	**100%**	**380**
Confidence interval		***22% 30%***	*24% 33%*	*18% 26%*	*1% 4%*	***14% 21%***	*0% 1%*	*3% 7%*		
50-59		**24%**	31%	17%	1%	**18%**	0%	8%	**100%**	**947**
Confidence interval		***22% 27%***	*29% 35%*	*15% 20%*	*1% 2%*	***15% 20%***	*0% 1%*	*6% 10%*		
60-69		**24%**	31%	19%	1%	**18%**	1%	6%	**100%**	**1,335**
Confidence interval		***22% 27%***	*29% 34%*	*17% 21%*	*1% 2%*	***16% 21%***	*0% 1%*	*5% 7%*		
70-79		**19%**	30%	20%	1%	**23%**	1%	5%	**100%**	**1,405**
Confidence interval		***17% 21%***	*28% 33%*	*18% 22%*	*1% 2%*	***21% 25%***	*0% 1%*	*4% 6%*		
80+		**12%**	24%	11%	1%	**43%**	2%	8%	**100%**	**903**
Confidence interval		***10% 14%***	*21% 27%*	*9% 13%*	*1% 2%*	***40% 46%***	*1% 3%*	*6% 10%*		
Total		20%	29%	18%	1%	24%	1%	6%	**100%**	**5,172**
Confidence interval		*19% 21%*	*28% 30%*	*17% 19%*	*1% 2%*	*23% 25%*	*1% 1%*	*6% 7%*		

Kidney 1 year relative survival by route



Prostate by route

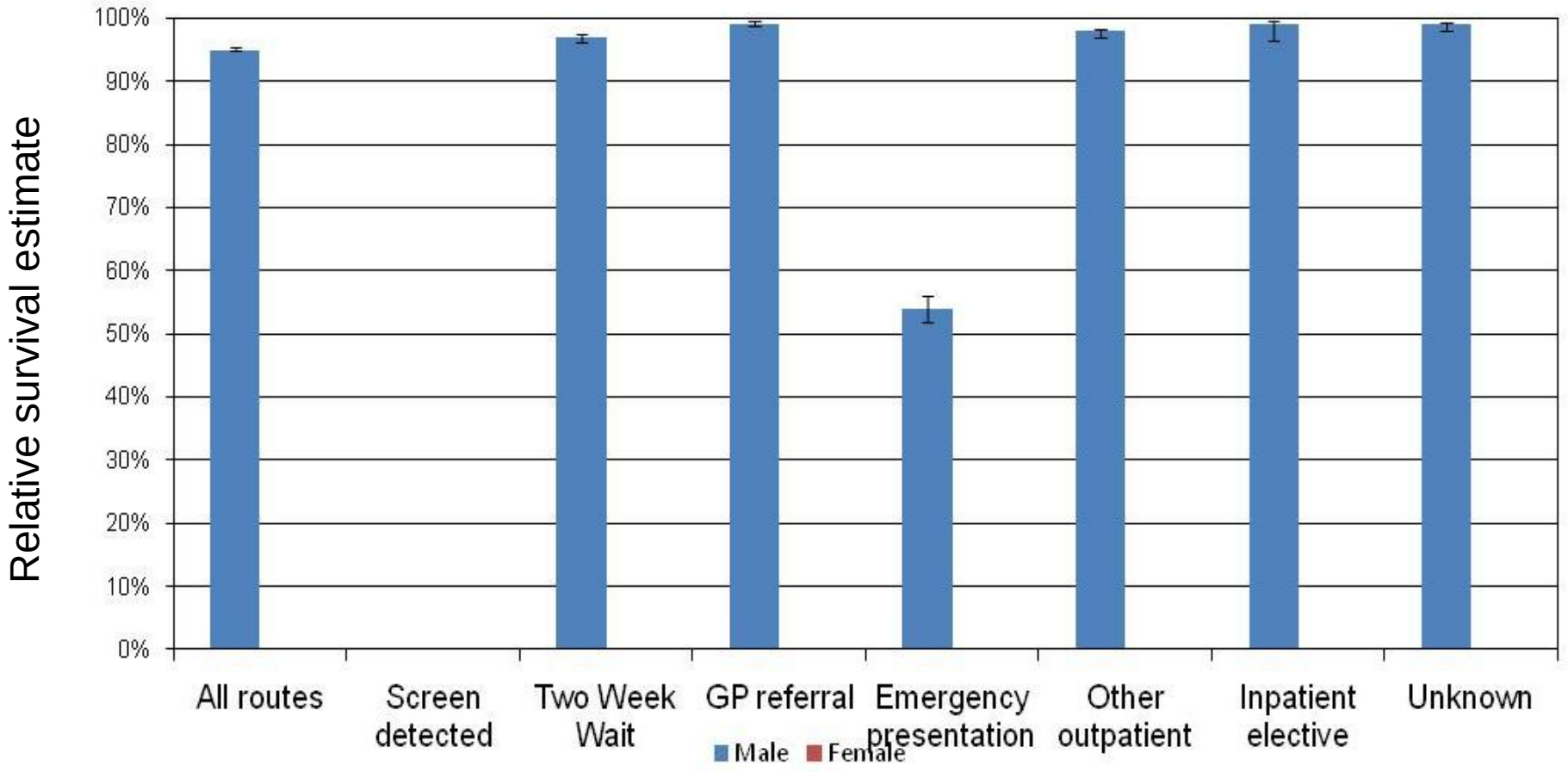
Prostate	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
Male		20%	38%	16%	3%	9%	0%	14%	**100%**	**28,362**
Confidence interval		*19% 20%*	*38% 39%*	*15% 16%*	*3% 3%*	*9% 10%*	*0% 0%*	*13% 14%*		

Prostate by age and SES

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

Prostate	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
0-39		0%	40%	40%	0%	20%	0%	0%	**100%**	**5**
Confidence interval		*0% 43%*	*12% 77%*	*12% 77%*	*0% 43%*	*4% 62%*	*0% 43%*	*0% 43%*		
40-49		13%	43%	23%	4%	**3%**	0%	14%	**100%**	**212**
Confidence interval		*9% 18%*	*36% 50%*	*18% 29%*	*2% 7%*	***2% 7%***	*0% 2%*	*10% 19%*		
50-59		12%	41%	18%	4%	**4%**	0%	20%	**100%**	**2,933**
Confidence interval		*11% 14%*	*39% 43%*	*17% 19%*	*4% 5%*	***3% 5%***	*0% 0%*	*19% 22%*		
60-69		16%	42%	18%	3%	**5%**	0%	16%	**100%**	**9,150**
Confidence interval		*15% 17%*	*41% 43%*	*17% 19%*	*3% 4%*	***4% 5%***	*0% 0%*	*15% 17%*		
70-79		23%	39%	15%	2%	**8%**	0%	12%	**100%**	**10,548**
Confidence interval		*22% 24%*	*38% 40%*	*15% 16%*	*2% 2%*	***7% 8%***	*0% 0%*	*12% 13%*		
80+		24%	30%	11%	2%	**23%**	1%	9%	**100%**	**5,514**
Confidence interval		*23% 26%*	*29% 31%*	*10% 12%*	*2% 3%*	***22% 24%***	*1% 1%*	*8% 9%*		
Total		20%	38%	16%	3%	9%	0%	14%	**100%**	**28,362**
Confidence interval		*19% 20%*	*38% 39%*	*15% 16%*	*3% 3%*	*9% 10%*	*0% 0%*	*13% 14%*		

Prostate 1-yr survival



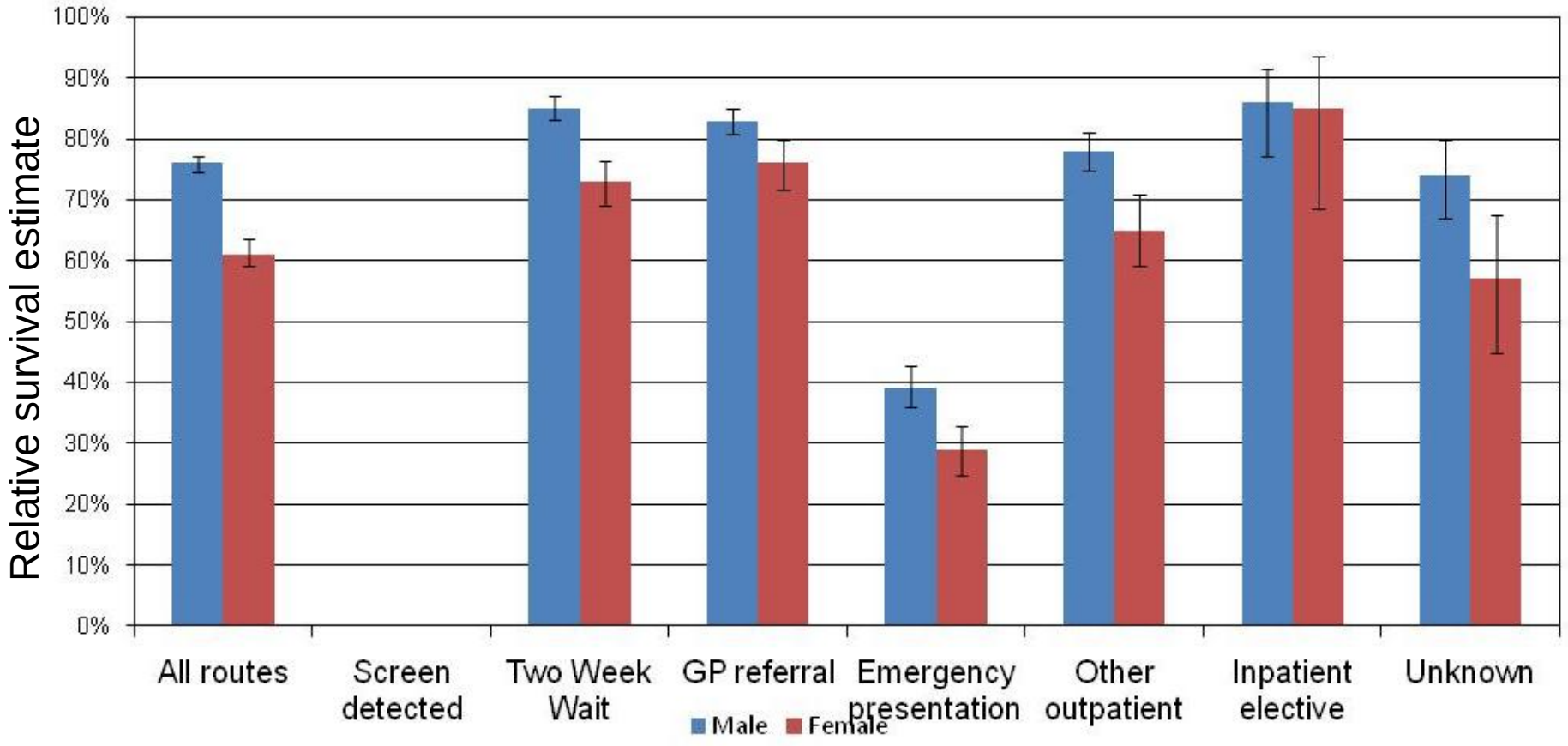
Bladder by route

Bladder	Screen detected	Two Week Wait		GP referral		Other outpatient		Inpatient elective		Emergency presentation		Death Certificate Only		Unknown		Total	Number of patients
Male		33%		29%		16%		3%		**16%**		0%		4%		**100%**	**5,493**
Confidence interval		*32%*	*34%*	*28%*	*30%*	*15%*	*17%*	*2%*	*3%*	***15%***	***17%***	*0%*	*1%*	*4%*	*5%*		
Female		30%		25%		13%		2%		**25%**		1%		4%		**100%**	**2,172**
Confidence interval		*28%*	*32%*	*23%*	*27%*	*12%*	*15%*	*2%*	*3%*	***23%***	***27%***	*0%*	*1%*	*3%*	*5%*		
Total		32%		28%		15%		2%		18%		0%		4%		**100%**	**7,665**
Confidence interval		*31%*	*33%*	*27%*	*29%*	*14%*	*16%*	*2%*	*3%*	*18%*	*19%*	*0%*	*1%*	*4%*	*5%*		

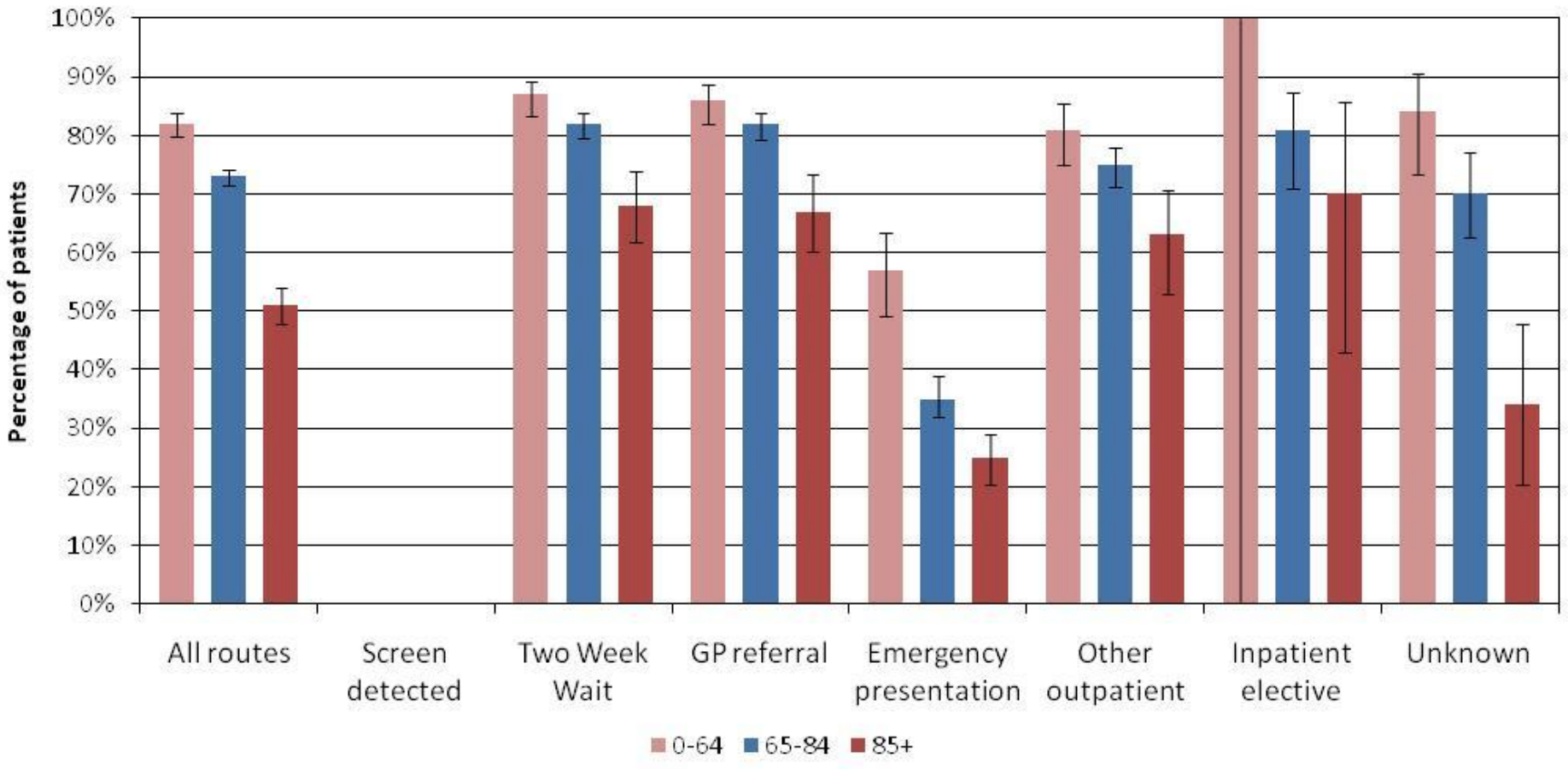
Bladder by age

Bladder	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
0-39		19%	19%	27%	3%	**19%**	0%	14%	**100%**	**37**
Confidence interval		*10% 34%*	*10% 34%*	*15% 43%*	*1% 14%*	***10% 34%***	*0% 9%*	*6% 28%*		
40-49		31%	29%	17%	1%	**16%**	1%	6%	**100%**	**143**
Confidence interval		*24% 39%*	*22% 37%*	*12% 24%*	*0% 4%*	***11% 23%***	*0% 4%*	*3% 12%*		
50-59		36%	29%	16%	3%	**10%**	0%	6%	**100%**	**598**
Confidence interval		*32% 40%*	*25% 33%*	*14% 19%*	*2% 5%*	***8% 13%***	*0% 1%*	*4% 8%*		
60-69		35%	30%	15%	3%	**13%**	0%	4%	**100%**	**1,660**
Confidence interval		*32% 37%*	*28% 32%*	*13% 17%*	*2% 4%*	***12% 15%***	*0% 0%*	*4% 5%*		
70-79		33%	31%	16%	2%	**14%**	0%	4%	**100%**	**2,520**
Confidence interval		*31% 35%*	*29% 32%*	*15% 18%*	*2% 3%*	***13% 16%***	*0% 1%*	*3% 5%*		
80+		29%	24%	13%	2%	**27%**	1%	4%	**100%**	**2,707**
Confidence interval		*27% 30%*	*23% 26%*	*12% 15%*	*2% 3%*	***26% 29%***	*1% 1%*	*3% 4%*		
Total		32%	28%	15%	2%	18%	0%	4%	**100%**	**7,665**
Confidence interval		*31% 33%*	*27% 29%*	*14% 16%*	*2% 3%*	*18% 19%*	*0% 1%*	*4% 5%*		

Bladder Survival



Survival by age



Results by network

Bladder	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
3 Counties		**25%**	**32%**	**15%**	**2%**	**19%**	**1%**	**5%**	100%	**154**
Confidence interval		*19% 33%*	*26% 40%*	*10% 21%*	*1% 6%*	*14% 26%*	*0% 4%*	*3% 10%*		
Anglia		**40%**	**25%**	**15%**	**1%**	**17%**	**0%**	**2%**	100%	**436**
Confidence interval		*35% 45%*	*21% 30%*	*12% 18%*	*1% 3%*	*14% 21%*	*0% 1%*	*1% 4%*		
Arden		**30%**	**25%**	**27%**	**1%**	**15%**	**0%**	**2%**	100%	**149**
Confidence interval		*23% 37%*	*19% 32%*	*20% 35%*	*0% 5%*	*11% 22%*	*0% 3%*	*1% 6%*		
Avon, Somerset & Wiltshire		**40%**	**26%**	**14%**	**2%**	**15%**	**1%**	**4%**	100%	**333**
Confidence interval		*35% 45%*	*21% 31%*	*11% 18%*	*1% 4%*	*12% 19%*	*0% 2%*	*2% 6%*		
Central South Coast		**29%**	**32%**	**13%**	**2%**	**20%**	**1%**	**4%**	100%	**284**
Confidence interval		*24% 34%*	*27% 38%*	*10% 17%*	*1% 4%*	*16% 25%*	*0% 3%*	*2% 7%*		
Dorset		**43%**	**13%**	**20%**	**8%**	**13%**	**1%**	**3%**	100%	**160**
Confidence interval		*35% 50%*	*9% 19%*	*15% 27%*	*4% 13%*	*9% 19%*	*0% 4%*	*1% 7%*		
East Midlands		**37%**	**26%**	**14%**	**2%**	**18%**	**0%**	**3%**	100%	**624**
Confidence interval		*34% 41%*	*23% 30%*	*11% 17%*	*1% 3%*	*15% 21%*	*0% 1%*	*2% 5%*		
Essex		**27%**	**32%**	**15%**	**1%**	**22%**	**0%**	**3%**	100%	**206**
Confidence interval		*21% 33%*	*26% 38%*	*11% 21%*	*1% 4%*	*17% 29%*	*0% 2%*	*1% 6%*		

Results for each network

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

North Trent	Screen detected	Two Week Wait	GP referral	Other outpatient	Inpatient elective	Emergency presentation	Death Certificate Only	Unknown	Total	Number of patients
All cancers	**5%**	**26%**	**27%**	**10%**	**1%**	**27%**	**0%**	**5%**	100%	**8,823**
Confidence interval	*4% 5%*	*25% 27%*	*26% 28%*	*9% 11%*	*1% 2%*	*26% 28%*	*0% 1%*	*4% 5%*		
Acute leukaemia		**6%**	**10%**	**14%**	**1%**	**65%**	**0%**	**3%**	100%	**98**
Confidence interval		*3% 13%*	*6% 18%*	*9% 23%*	*0% 6%*	*56% 74%*	*0% 4%*	*1% 9%*		
Bladder		**39%**	**26%**	**12%**	**2%**	**19%**	**0%**	**2%**	100%	**318**
Confidence interval		*34% 44%*	*21% 31%*	*9% 16%*	*1% 5%*	*16% 24%*	*0% 1%*	*1% 4%*		
Brain & CNS		**1%**	**20%**	**8%**	**1%**	**65%**	**0%**	**5%**	100%	**175**
Confidence interval		*0% 4%*	*15% 27%*	*5% 13%*	*0% 4%*	*57% 71%*	*0% 2%*	*3% 10%*		
Cervix	**21%**	**20%**	**23%**	**10%**	**0%**	**20%**	**0%**	**6%**	100%	**96**
Confidence interval	*14% 30%*	*13% 29%*	*16% 32%*	*6% 18%*	*0% 4%*	*13% 29%*	*0% 4%*	*3% 13%*		
Chronic leukaemia		**15%**	**25%**	**12%**	**3%**	**31%**	**0%**	**15%**	100%	**110**
Confidence interval		*9% 22%*	*18% 34%*	*7% 19%*	*1% 8%*	*23% 40%*	*0% 3%*	*9% 22%*		
Colorectal		**31%**	**28%**	**9%**	**2%**	**26%**	**0%**	**4%**	100%	**1,020**
Confidence interval		*29% 34%*	*25% 30%*	*7% 11%*	*1% 3%*	*24% 29%*	*0% 1%*	*3% 5%*		
Kidney		**16%**	**35%**	**14%**	**1%**	**30%**	**0%**	**4%**	100%	**237**
Confidence interval		*12% 21%*	*29% 41%*	*11% 19%*	*0% 3%*	*25% 36%*	*0% 2%*	*2% 7%*		

What did we achieve?

2007 analyses produced:

- Percentage of patients by route for 21 cancer sites/groups
- Percentages by sex, age, deprivation quintile, cancer network
- 1-yr relative survival estimates by route and sex, age, deprivation quintile

Why are there differences with CN data?

Kidney	RtD 2007	CWT on NCDR	NCDR only
DCO	1%	0%	2%
Emergency presentation	24%	**17%**	**37%**
GP referral	29%	32%	27%
Inpatient elective	1%	1%	2%
Other outpatient	18%	19%	17%
2WW	20%	**28%**	**0%**
Unknown	6%	2%	15%
Proportion of patients		69%	31%

Why are there differences with CN data?

Prostate	RtD 2007	CWT on NCDR	NCDR only
DCO	0%	0%	1%
Emergency presentation	9%	**6%**	**17%**
GP referral	38%	40%	35%
Inpatient elective	3%	2%	4%
Other outpatient	16%	15%	17%
2WW	20%	**27%**	**0%**
Unknown	14%	9%	26%
Proportion of patients		74%	26%

Why are there differences with CN data?

Bladder	**RtD 2007**	**CWT on NCDR**	**NCDR only**
DCO	0%	0%	2%
Emergency presentation	18%	14%	**32%**
GP referral	28%	27%	32%
Inpatient elective	2%	2%	3%
Other outpatient	15%	14%	18%
2WW	32%	**42%**	**0%**
Unknown	4%	1%	13%
Proportion of patients		77%	23%

All cancers

All cancers	RtD 2007	CWT on NCDR	NCDR only
DCO	1%	0%	2%
Emergency presentation	23%	**16%**	**37%**
GP referral	24%	24%	26%
Inpatient elective	2%	2%	2%
Other outpatient	14%	14%	14%
Screening	3%	4%	1%
2WW	25%	**35%**	**1%***
Unknown	8%	5%	17%
Proportion of patients		72%	28%

So what next?

We are now:

- Expanding 2007 work to cover the three year period 2006-2008
- Ensuring all results will be publicly available
- Making slight changes to methodology based on feedback and further analyses
- Looking specifically at emergency presentations with the department of health
- Allowing results to be used for further analyses

With many thanks to Lucy Elliss-Brookes and to Alex Ives, Matt Greenslade and others at SWPHO