

Supplementary Results, National Bowel Cancer Audit (NBOCA) State of the Nation Report 2024

Supplementary Table 1: Data source used for NBOCA performance indicators in England and Wales

Performance Indicator		Data Source	
		England	Wales
		Rapid Cancer Registration Dataset (RCRD)	Cancer Network Information System Cymru (CaNISC)
1 3-5	Seen by Clinical Nurse Specialist Adjusted 90-day mortality, 30-day unplanned return to theatre and 30-day unplanned readmission after major resection*	Diagnosis between 04/2022 and 03/2023 *surgery by end 06/2023	Diagnosis between 04/2022 and 03/2023 *surgery by end 06/2023
2	Trust/MDT volume for rectal cancer surgery	Surgery between 04/2022 and 03/2023	Surgery between 04/2022 and 03/2023
7 8	Stage 3 colon cancer receiving adjuvant chemotherapy Adjusted severe acute toxicity related to adjuvant chemotherapy for colon cancer	Surgery between 04/2020 and 11/2022	Surgery between 04/2020 and 11/2022
9	People with rectal cancer receiving neo-adjuvant treatment	Diagnosis between 01/2022 and 12/2022	Diagnosis between 01/2022 and 12/2022
		National Cancer Registration Dataset (NCRD)	Cancer Network Information System Cymru (CaNISC)
6	Adjusted 18-month unclosed ileostomy after anterior resection	Surgery between 04/2017 and 03/2022 (after diagnosis 01/2017 to 12/2021)	Surgery between 04/2017 and 03/2022 (after diagnosis 01/2017 to 12/2021)
10	Adjusted 2-year survival rate after major resection	Surgery between 04/2020 and 03/2021	Surgery between 04/2020 and 03/2021

Supplementary Table 2: Description of the 38,604 people diagnosed with bowel cancer between 01 April 2022 and 31 March 2023 in England and Wales, by referral source

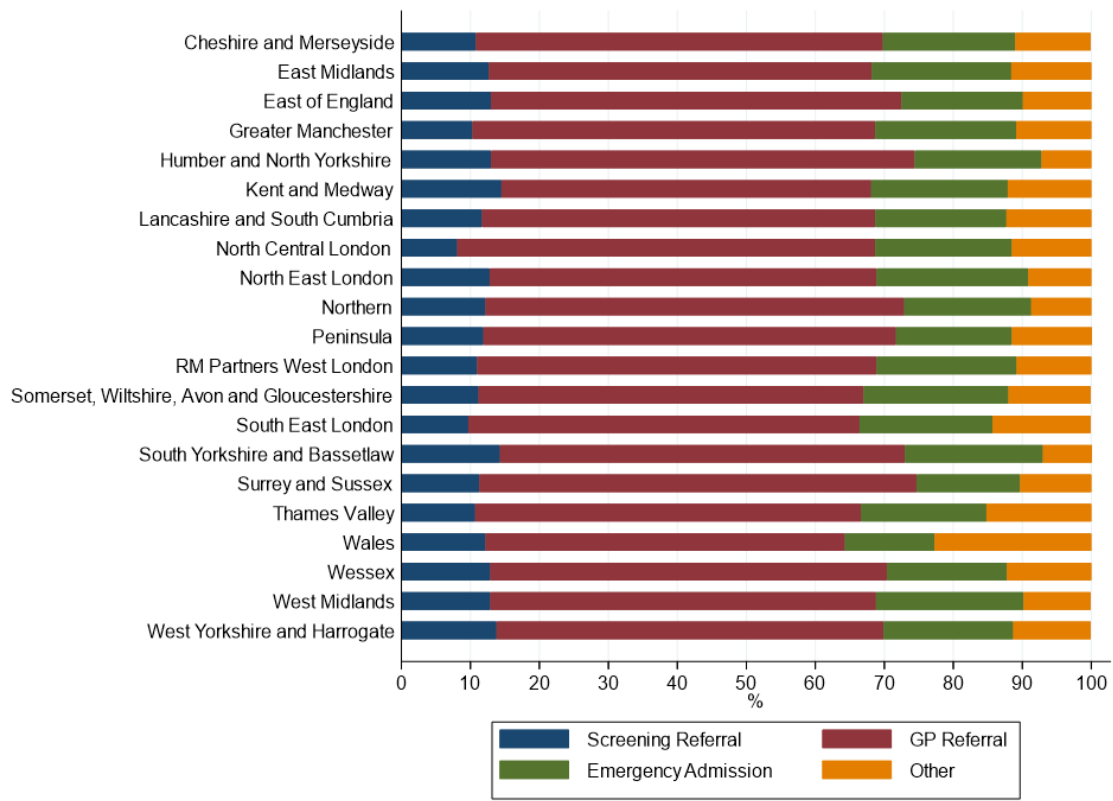
		Emergency Presentation		GP Referral		Screening Referral		Other/ Not Known	
		N	%	N	%	N	%	N	%
Total no. people		7,060		21,853		4,627		5,064	
Sex	Male	3,617	51.2	12,204	55.9	2,819	60.9	2,740	54.1
	Female	3,443	48.8	9,649	44.2	1,808	39.1	2,324	45.9
Age-group	<50 yrs	585	8.3	1,517	6.9	10	0.2	514	10.2
	50-59 yrs	859	12.2	3,027	13.9	561	12.1	743	14.7
	60-74 yrs	1,961	27.8	7,020	32.1	3,750	81.0	1,826	36.1
	75-79 yrs	1,112	15.8	4,019	18.4	206	4.5	797	15.8
	80-84 yrs	1,033	14.6	3,395	15.5	66	1.4	639	12.6
	85+ yrs	1,508	21.4	2,858	13.1	34	0.7	539	10.7
	Missing (% of total)	2(0.0)		17(0.1)		0(0.0)		6(0.1)	
Performance Status*	0	1,659	36.7	9,327	55.0	2,638	73.4	1,859	53.4
	1	1,253	27.7	5,060	29.8	797	22.2	993	28.5
	2	746	16.5	1,765	10.4	122	3.4	388	11.1
	3	677	15.0	722	4.3	33	0.9	212	6.1
	4	186	4.1	88	0.5	5	<0.1	32	0.9
	Missing (% of total)	2,539(36.0)		4,891(22.4)		1,035(22.4)		1,580(31.2)	
Ethnicity**	White	5,807	91.9	18,092	93.0	3,760	93.8	3,995	92.0
	Mixed/Multi Ethnic	35	0.6	87	0.4	15	0.4	28	0.6
	Asian	178	2.8	535	2.8	99	2.5	124	2.9
	Black	168	2.7	443	2.3	72	1.8	113	2.6
	Other	128	2.0	289	1.5	63	1.6	81	1.9
	Missing/ Not Known (% of total)	744(10.5)		2,407(11.0)		618(13.4)		723(14.3)	
IMDQ (quintile)	1 (Most deprived)	1,334	19.0	3,276	15.0	732	15.9	784	15.6
	2	1,463	20.8	3,940	18.1	830	18.0	915	18.2
	3	1,419	20.2	4,589	21.1	943	20.4	1,027	20.4
	4	1,417	20.1	4,937	22.7	1,003	21.7	1,148	22.8
	5 (Least deprived)	1,405	20.0	5,034	23.1	1,106	24.0	1,152	22.9
	Missing (% of total)	22(0.3)		77(0.4)		13(0.3)		38(0.8)	
Cancer Site	Colon	5,851	82.9	14,129	64.7	3,222	69.6	3,618	71.4
	Rectosigmoid	294	4.2	1,064	4.9	133	2.9	220	4.3
	Rectal	915	13.0	6,660	30.5	1,272	27.5	1,226	24.2
Cancer Stage	Curative	385	7.5	4,249	82.9	1,583	30.9	1,001	19.5
	Non Curative	1,335	26.0	4,870	95.0	985	19.2	879	17.2
	No Cancer Treatment	1,680	32.8	6,220	121.4	1,243	24.3	1,210	23.6
	Not Known	1,725	33.7	3,107	60.6	285	5.6	771	15.0
	Missing (% of total)	1,935(27.4)		3,407(15.6)		531(11.5)		1,203(23.8)	

		Emergency Presentation		GP Referral		Screening Referral		Other/ Not Known	
		N	%	N	%	N	%	N	%
Total no. people		7,060		21,853		4,627		5,064	
Surgical Treatment	Major Resection	2,910	41.2	12,727	58.2	3,495	75.5	2,573	50.8
	Local Excision	135	1.9	1,560	7.1	532	11.5	390	7.7
	Stoma	140	2.0	364	1.7	9	0.2	60	1.2
	Stent	126	1.8	157	0.7	6	0.1	35	0.7
	Other	6	0.1	<5	0.0	<5	0.0	<5	0.1
	None Reported	3,743	53.0	7,042	32.2	584	12.6	2,002	39.5

* WHO Performance Status. 0 = Fully active, 1 = Some restriction but cares for self, 2 = Ambulatory >50% of time, occasional assistance needed, 3 = Ambulatory ≤50% of time, nursing care needed, 4 = Bedbound.

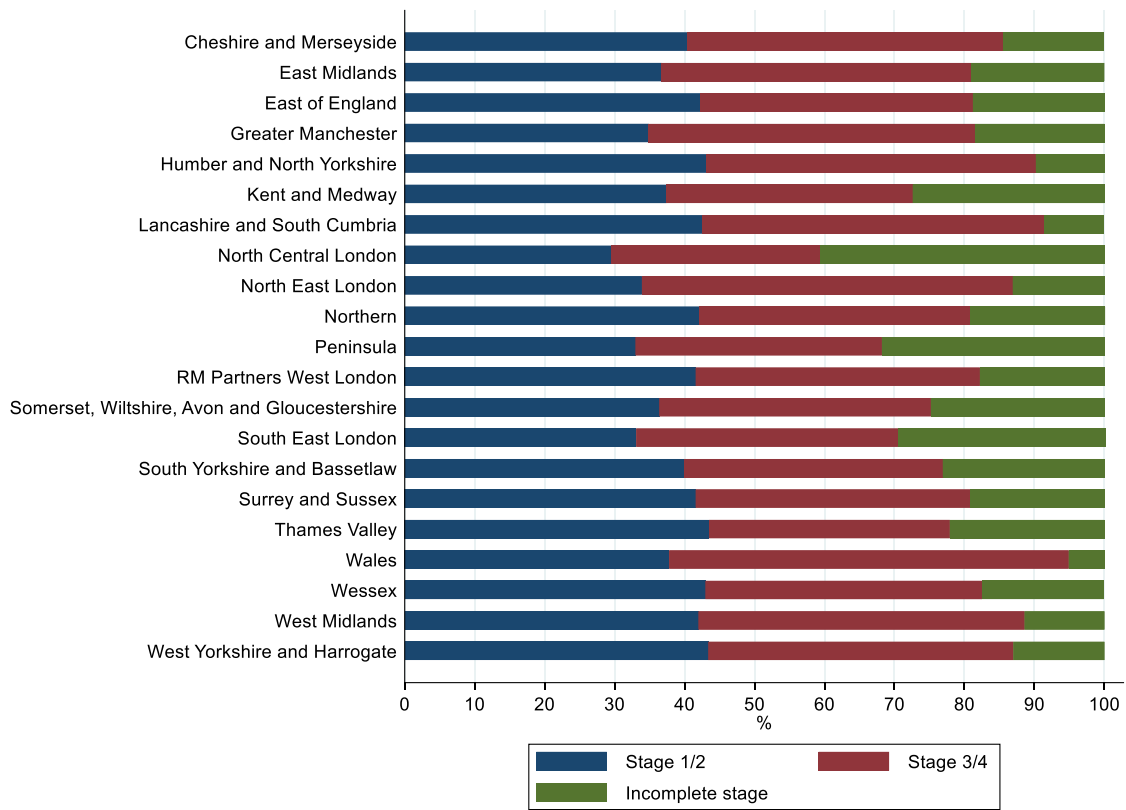
** Ethnicity obtained from NDRS rapid registration data for people with a rapid registration record and PEDW for people diagnosed in Wales

Supplementary Figure 1: Referral source of the 37,776* people diagnosed with bowel cancer between 01 April 2022 and 31 March 2023 by Cancer Alliance (England)/country (Wales)



*711 people with recorded referral source "Not Known" excluded and 117 people not allocated a cancer alliance. Data for England and Wales derived from different variables: England final route (RCRD) and Wales source of referral.

Supplementary Figure 2: Pre-treatment staging* of people diagnosed with bowel cancer between 01 April 2022 and 31 March 2023 by Cancer Alliance (England)/country (Wales)**



*England: Stage 1-4 as recorded in RCRD

Wales: Stage calculated as follows:

Stage I: T1/T2, N0, M0

Stage II: T3/T4, N0, M0

Stage III: any T, N1/N2, M0

Stage IV: any T, any N, M1

Incomplete stage: missing N or M-stage

** The proportion of people with missing pre-treatment staging varies from 5% to 41% making interpretation of geographical differences in pre-treatment staging problematic.

Supplementary Table 3: Number of people diagnosed with bowel cancer and their reported surgical procedure by year of diagnosis

	2018-19		2019-20		2020-21		2021-22		2022-23	
	N	%	N	%	N	%	N	%	N	%
Total	35,107		37,291		33,150		40,104		38,604	
Major Resection	21,381	60.9	22,683	60.8	19,521	58.9	23,896	59.6	21,705	56.2
Local Excision	1,944	5.5	2,335	6.3	1,954	5.9	2,827	7.1	2,617	6.8
Non-resectional Surgery*	1,023	2.9	1,209	3.2	1,133	3.4	1,291	3.2	911	2.4
No Colorectal Surgery	10,759	30.7	11,064	29.7	10,542	31.8	12,090	30.2	13,371	34.6

* Stoma only or stent insertion

Supplementary Table 4: Description of MMR immunohistochemistry testing of the 33,108 people with histologically confirmed bowel cancer diagnosed between 01 January 2021 and 31 December 2021 in England, by characteristics

		MMR immunohistochemistry testing		
		Tested		Total no. of people
		N	%	N
Total no. people		18,902	57.1	33,108
Sex	Male	10,846	57.1	19,007
	Female	8,056	57.1	14,101
Age-group	<50 yrs	1,531	70.9	2,158
	50-59 yrs	2,300	60.0	3,832
	60-74 yrs	8,698	57.4	15,160
	75-79 yrs	2,793	55.9	4,994
	80-84 yrs	2,146	53.1	4,044
	85+ yrs	1,434	49.1	2,920
Ethnicity	White	16,604	56.6	29,331
	Mixed/Multi Ethnic	112	67.9	165
	Asian	354	69.8	507
	Black	313	61.3	511
	Other	333	63.3	526
	Missing/ Not Known	1,186	57.4	2,068
IMDQ (quintile)	1 - most deprived	2,719	53.5	5,083
	2	3,266	54.7	5,976
	3	4,017	57.1	7,035
	4	4,357	58.6	7,439
	5 - least deprived	4,543	60.0	7,575
Cancer site	Colon	12,722	58.2	21,857
	Rectosigmoid	859	55.7	1,542
	Rectal	5,321	54.8	9,709
Cancer stage*	1	5,193	51.0	10,189
	2	4,672	59.6	7,842
	3	5,978	59.7	10,015
	4	3,059	60.4	5,062

Source data National Cancer Registration Dataset (NCRD). Data not available for Wales

*Stage 1: T1/T2, N0, M0

Stage 2: T3/T4, N0, M0

Stage 3: any T, N1/N2, M0

Stage 4: any T, any N, M1

Supplementary Table 5: Management of people with rectal cancer as reported to NBOCA in England and Wales, by year of diagnosis

	2018-19		2019-20		2020-21		2021-22		2022-23	
	N	%	N	%	N	%	N	%	N	%
Total No People with Rectal Cancer	9,468		9,791		8,367		10,437		10,073	
Major Resection	5,106	53.9	5,209	53.2	4,337	51.8	5,292	50.7	4,669	46.4
Local Excision	997	10.5	1116	11.4	894	10.7	1333	12.8	1269	12.6
Non-resectional Surgery	423	4.5	437	4.5	426	5.1	517	5.0	382	3.8
No Surgery	2,942	31.1	3,029	30.9	2,710	32.4	3,295	31.6	3,753	37.3

Supplementary Table 6: Type of major resection performed for people with rectal cancer in England and Wales, by year of surgery

	2017-18		2018-19		2019-20		2020-21		2021-22	
	N	%	N	%	N	%	N	%	N	%
Total	3,622		5,003		5,202		4,370		5,120	
Anterior Resection	2,420	66.8	3,080	61.6	3,159	60.7	2,563	58.6	3,132	61.2
Abdomino-perineal excision of rectum (APER)	767	21.2	1,327	26.5	1,448	27.8	1,268	29.0	1,415	27.6
Hartmann's	325	9.0	418	8.4	402	7.7	409	9.4	408	8.0
Other	110	3.0	178	3.6	193	3.7	130	3.0	165	3.2

Supplementary Table 7: Stoma status within 30 days of surgery and 18 months post-surgery for people undergoing an anterior resection in England and Wales, by year of surgery

		2017-18		2018-19		2019-20		2020-21		2021-22	
		N	%	N	%	N	%	N	%	N	%
Total		2,420		3,080		3,159		2,563		3,132	
Stoma status within 30d of surgery	No stoma	605	25.0	766	24.9	811	25.7	601	23.4	786	25.1
	Ileostomy	1,494	61.7	1,845	59.9	1,853	58.7	1,439	56.1	1,805	57.6
	Colostomy	321	13.3	469	15.2	495	15.7	523	20.4	541	17.3
	Ileostomy at 18 months in people with ileostomy at surgery	423	28.3	606	32.8	883	47.7	560	38.9	697	38.6

Supplementary Table 8: Characteristics by clinical group for the 9,894 people diagnosed with rectal cancer in England between 01 January 2022 and 31 December 2022

The recommendations for the management of rectal cancer in [NICE guidelines](#) are partly based on tumour staging at diagnosis. Supplementary Table 8 shows the difference in patient and tumour characteristics and treatment (neo-adjuvant and surgical) by clinical groups defined by pre-treatment tumour staging: Early rectal cancer: T1/2, N0, M0. Locally advanced disease: any T, N1/N2, M0 or T3/4, N0, M0. Metastatic disease: any T, any N, M1.

		Early rectal cancer		Locally advanced		Metastatic		Incomplete staging	
		N	%	N	%	N	%	N	%
Total No People diagnosed with rectal cancer		2,472		4,596		1,334		1,492	
Sex	Male	1,560	63.1	2,973	64.7	864	64.8	891	59.7
	Female	912	36.9	1,623	35.3	470	35.2	601	40.3
Age-group	<50 yrs	123	5.0	365	7.9	127	9.5	111	7.4
	50-59 yrs	346	14.0	815	17.7	251	18.8	195	13.1
	60-74 yrs	1,224	49.5	1,897	41.3	514	38.6	554	37.1
	75-84 yrs	612	24.8	1,161	25.3	321	24.1	385	25.8
	85+ yrs	167	6.8	358	7.8	120	9.0	247	16.6
	Missing	0 (0.0)		0 (0.0)		1 (0.1)		0 (0.0)	
Performance Status	0 (fully active)	1,308	65.3	2,394	60.9	597	52.7	293	45.6
	1	491	24.5	1,059	27.0	308	27.2	181	28.2
	2	141	7.0	323	8.2	127	11.2	85	13.2
	3	54	2.7	133	3.4	84	7.4	71	11.1
	4 (bedbound)	10	0.5	20	0.5	16	1.4	12	1.9
	Missing (% of total)	468 (18.9)		667 (14.5)		202 (15.1)		850 (57.0)	
Referral Method	Emergency Admission	101	5.0	332	8.2	226	19.7	260	21.7
	GP Referral	1064	52.9	2662	66.1	684	59.6	576	48.0
	Screening Referral	525	26.1	555	13.8	80	7.0	127	10.6
	Other	296	14.7	388	9.6	130	11.3	198	16.5
	Unknown	24	1.2	89	2.2	27	2.4	38	3.2
	Missing (% of total)	462 (18.7)		570 (12.4)		187 (14)		293 (19.6)	
IMDQ (quintile)	1 (Most deprived)	332	13.5	794	17.3	233	17.5	227	15.2
	2	449	18.2	879	19.2	271	20.4	287	19.2
	3	533	21.6	980	21.4	267	20.1	335	22.5
	4	557	22.6	966	21.1	286	21.5	309	20.7
	5 (Least deprived)	593	24.1	963	21.0	271	20.4	333	22.3
Surgical Procedure	Anterior Resection	806	32.6	1,660	36.1	103	7.7	222	14.9
	APER/Pelvic Exenteration	378	15.3	866	18.8	70	5.2	78	5.2
	Hartmann's	83	3.4	252	5.5	24	1.8	25	1.7
	Local Excision	688	27.8	276	6.0	109	8.2	224	15.0
	Other Resection	52	2.1	120	2.6	20	1.5	28	1.9
	Stent/Stoma	7	0.3	210	4.6	182	13.6	65	4.4
	None	458	18.5	1,212	26.4	826	61.9	850	57.0
	None*	1,901	76.9	2,358	51.3	882	66.1	1,112	74.5

		Early rectal cancer		Locally advanced		Metastatic		Incomplete staging	
		N	%	N	%	N	%	N	%
Total No People diagnosed with rectal cancer		2,472		4,596		1,334		1,492	
Neo-adjuvant Radiotherapy (RT)	Long Course (LCRT)	321	13.0	1,311	28.5	160	12.0	170	11.4
	Short Course (SCRT)	250	10.1	927	20.2	292	21.9	210	14.1

* Includes people with radiotherapy records that cannot be classified into long or short-course regimens

Clinical Groups

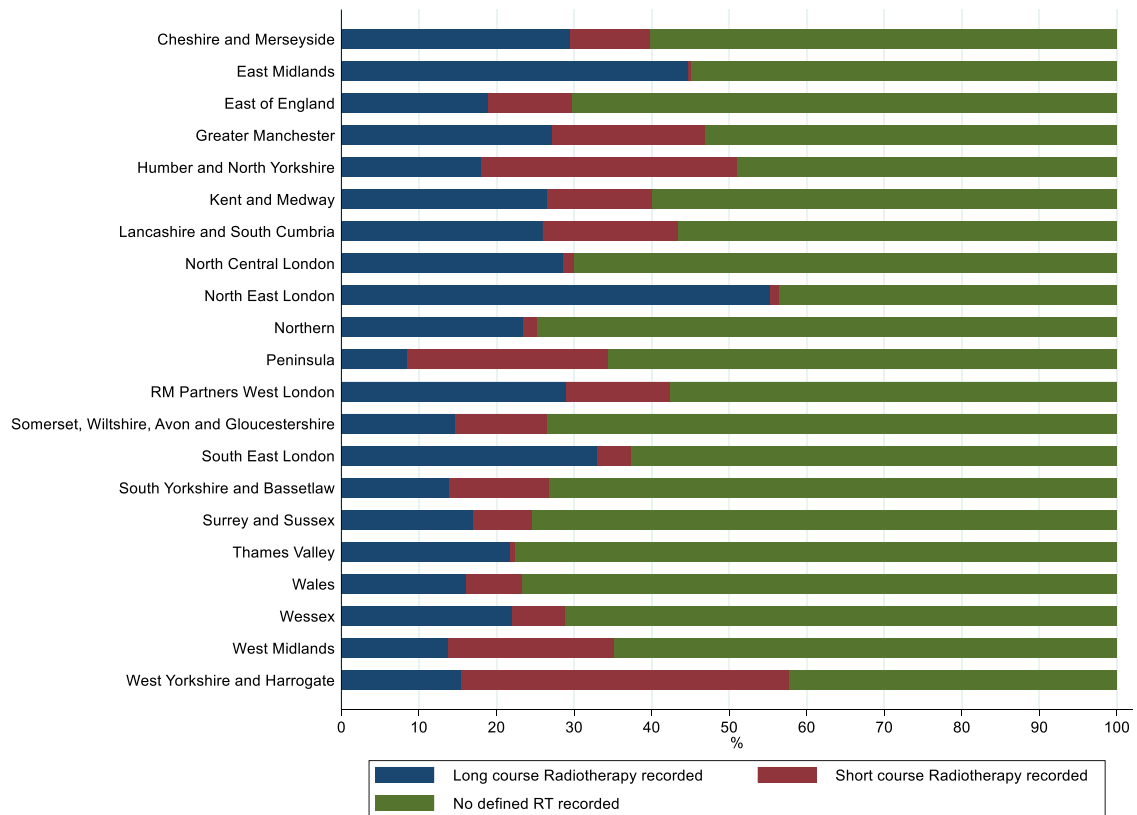
Welsh data:

Early tumour: T1/2, N0, M0
 Locally Advanced: any T, N1/N2, M0 or T3/4, N0, M0
 Metastatic: any T, any N, M1
 Incomplete: any other staging that includes missing data that prevents classification

English data (RCRD):

Early tumour: Stage 1
 Locally Advanced: Stage 2 or Stage 3
 Metastatic: Stage 4
 Incomplete: missing stage

Supplementary Figure 3: Treatment pathways for people diagnosed with rectal cancer between 01 January 2022 and 31 December 2022 who underwent major resection, by Cancer Alliance (England)/country (Wales)* performing surgery



* Radiotherapy data for England and Wales comes from different sources: Welsh data submitted by CANISC (proportion of radiotherapy lower than previous years due to data submission issues for one provider); data for England from RTDS.

Supplementary Figure 4: Adjusted cancer-specific 2-year survival rate for people who underwent a major resection between 01 April 2020 and 31 March 2021, by English NHS trusts/Welsh MDTs with more than ten people

