

Supplementary analysis for patients starting treatment for cancer of unknown primary

Patients waiting over 104 days from urgent suspected cancer referral to starting treatment for cancer of unknown primary

There was no evidence of a significant relationship between gender, deprivation or comorbidity and the likelihood of waiting over 104 days for patients diagnosed with cancer of unknown primary (Table 1). Those aged 80+ were less likely to wait over 104 days compared to those aged 60–69, in all analyses. There was an increased likelihood of waiting over 104 days with later financial year.

The longest interval covered by a Cancer Waiting Times standard was from referral to informed of diagnosis (Table 2), which was a median of 70 days for patients waiting over 104 days in Q1 & Q2 2022/2023. The time from decision to treat (DTT) to starting treatment was generally short with a median of 16 days in Q1 & Q2 2022/2023 and there was a median of 35 days between informed of diagnosis and a DTT being made.

The most common reason for delay between referral and treatment start for patients waiting over 104 days was a medical reason for diagnosis delay (Table 3). Only very small numbers of patients met the 28-day standard from referral to being informed of diagnosis, while 87% of patients met the 31-day standard from DTT to treatment start in Q1 & Q2 2022/2023.

Patients waiting over 62 days from urgent suspected cancer referral to starting treatment for cancer of unknown primary

The regression findings for likelihood of waiting over 62 days were very similar to those for likelihood of waiting over 104 days (Table 4), with the only consistent finding being a reduced likelihood of waiting over 62 days for those aged 80+ compared to those aged 60–69 and an increase in likelihood with increasing financial year.

The longest interval for those waiting over 62 days was also from referral to informed of diagnosis (Table 5), although this was shorter than the median time for patients waiting over 104 days, as was the time from informed of diagnosis to DTT. The median time from DTT to treatment start was similar at 13 days in Q1 & Q2 2022/2023.

The most common reason for delay between referral and treatment start for patients waiting over 62 days was also a medical reason for diagnosis delay (Table 6). 22.1% of patients met the 28-day standard from referral to informed of diagnosis and 90.3% of patients met the 31-day standard from DTT to start of treatment.

Table 1: Regression analysis for likelihood of waiting over 104 days by characteristic for cancer of unknown primary. Results presented for both the original and Rapid Cancer Registration Dataset (RCRD) linked cohort. The results for the original cohort are presented unadjusted and adjusted and results for the RCRD linked cohort are presented unadjusted, with minimal adjustment to align with the original cohort analysis and with full adjustment

		Original cohort		RCRD linked cohort		
Characteristic	Category	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs)	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs) (minimal adjustment)	Adjusted odds ratio (95% CIs) (fully adjusted)
Gender	Female	0.98 (0.82–1.17)	1.01 (0.84–1.21)	0.95 (0.73–1.24)	1.03 (0.78–1.35)	1.01 (0.77–1.33)
	Male (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Age group	19–49	1 (0.68–1.47)	0.94 (0.64–1.4)	1.16 (0.65–2.08)	1.1 (0.6–1.99)	1.08 (0.59–1.96)
	50–59	0.98 (0.74–1.31)	0.95 (0.71–1.27)	1.19 (0.78–1.8)	1.1 (0.72–1.68)	1.08 (0.71–1.66)
	60–69 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	70–79	1.07 (0.84–1.36)	1.13 (0.88–1.44)	1.12 (0.79–1.6)	1.15 (0.8–1.65)	1.13 (0.78–1.64)
	80+	0.64 (0.49–0.84)*	0.68 (0.51–0.89)*	0.45 (0.29–0.69)*	0.47 (0.3–0.72)*	0.45 (0.29–0.7)*
Deprivation quintile	1 – most deprived	1.55 (1.17–2.05)*	1.35 (1.01–1.82)	1.27 (0.83–1.95)	1.2 (0.76–1.88)	1.19 (0.76–1.88)
	2	1.05 (0.78–1.42)	1.02 (0.75–1.39)	1.36 (0.89–2.09)	1.43 (0.91–2.24)	1.46 (0.93–2.29)
	3	1.23 (0.93–1.63)	1.19 (0.89–1.58)	1.29 (0.85–1.96)	1.32 (0.86–2.04)	1.36 (0.88–2.1)
	4	1.13 (0.86–1.5)	1.13 (0.85–1.5)	0.97 (0.63–1.5)	0.99 (0.64–1.54)	0.99 (0.64–1.54)
	5 – least deprived (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Financial year	Base year (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)

		Original cohort		RCRD linked cohort		
Characteristic	Category	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs)	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs) (minimal adjustment)	Adjusted odds ratio (95% CIs) (fully adjusted)
	2020/2021	1.27 (0.99-1.65)	1.27 (0.98-1.65)	1.32 (0.89-1.96)	1.3 (0.87-1.95)	1.31 (0.88-1.96)
	2021/2022	1.63 (1.27-2.08)*	1.69 (1.31-2.17)*	1.73 (1.19-2.51)*	1.83 (1.25-2.68)*	1.81 (1.24-2.66)*
	Q1 & Q2 2022/2023	1.94 (1.47-2.56)*	2.04 (1.54-2.72)*	2.66 (1.78-3.98)*	2.65 (1.75-4.01)*	2.6 (1.71-3.94)*
Comorbidity	0 (ref)			1 (ref)		1 (ref)
	1			1.44 (0.95-2.2)		1.69 (1.08-2.63)
	2			0.51 (0.23-1.11)		0.56 (0.25-1.24)
	3+			0.97 (0.55-1.72)		1.26 (0.69-2.3)

*significant at p<0.01 level

Table 2: Median and interquartile range for the intervals in the diagnostic and treatment pathway for cancer of unknown primary patients who waited over 104 days from referral to treatment in each financial year of start of treatment

Interval	2017/2018 (Median and IQR)	2020/2021 (Median and IQR)	2021/2022 (Median and IQR)	Q1 & Q2 2022/2023 (Median and IQR)
Referral to first seen	9 (7 - 12)	9 (6 - 13)	9 (6 - 13)	10 (6.5 - 13)
First seen to informed of diagnosis	Data not available	70.5 (36.25 - 104.25)	66 (43 - 88)	61 (35 - 100)
Informed of diagnosis to decision to treat	Data not available	22.5 (4.5 - 56)	28 (4 - 56)	35 (14.5 - 65)
Decision to treat to treatment start	16 (7 - 24)	15 (6 - 21)	15.5 (4.25 - 24)	16 (4.75 - 27)
Referral to informed of diagnosis	Data not available	80.5 (49.25 - 111.5)	76 (51 - 97)	70 (48 - 115.5)
Referral to decision to treat	113 (97 - 127)	113 (99 - 132)	111.5 (96.25 - 127)	113.5 (97.75 - 136.5)
Referral to treatment start	126 (117 - 142)	125.5 (113 - 146.5)	125 (113 - 143)	127.5 (112 - 153.25)

Table 3: Breakdown of the reasons for delay in each financial year of start of treatment among cancer of unknown primary patients who waited over 104 days from referral to treatment, with delay overall between referral and treatment, from referral to informed of diagnosis or from decision to treat to treatment

Delay interval	Reason for delay	2017/2018 (Number and %)	2020/2021 (Number and %)	2021/2022 (Number and %)	Q1 & Q2 2022/2023 (Number and %)
Referral to treatment start	Healthcare provider-initiated delay	18 (15.4%)	21 (14.8%)	44 (24.7%)	28 (25.9%)
	Medical reason for diagnosis delay	66 (56.4%)	78 (54.9%)	90 (50.6%)	52 (48.1%)
	Medical reason for treatment delay	<5	<5	<5	<5
	Patient-initiated delay	<5	<10	<10	<5
	Other reason (not listed)	32 (27.4%)	35 (24.6%)	36 (20.2%)	26 (24.1%)
Referral to informed of diagnosis	Healthcare provider-initiated delay	Data not available	17 (22.4%)	23 (21.9%)	17 (23.9%)
	Medical reason for diagnosis delay	Data not available	23 (30.3%)	41 (39.0%)	22 (31.0%)
	Patient-initiated delay	Data not available	<5	<5	<5
	Other reason (not listed)	Data not available	16 (21.1%)	14 (13.3%)	11 (15.5%)
	No delay	Data not available	<10	<10	<10
	Unknown	Data not available	<10	18 (17.1%)	11 (15.5%)
Decision to treat to treatment start	Healthcare provider-initiated delay	<5	<5	10 (5.6%)	9 (8.3%)
	Medical reason for diagnosis delay	<5	<5	<5	<5
	Medical reason for treatment delay	<5	<5	<5	<5

Delay interval	Reason for delay	2017/2018 (Number and %)	2020/2021 (Number and %)	2021/2022 (Number and %)	Q1 & Q2 2022/2023 (Number and %)
	Patient-initiated delay	<5	<5	<5	<5
	Other reason (not listed)	<5	<5	<5	<5
	No delay	109 (93.2%)	133 (93.7%)	166 (93.3%)	94 (87.0%)

Table 4: Regression analysis for likelihood of waiting over 62 days by characteristic for cancer of unknown primary. Results presented for both the original and RCRD linked cohort. The results for the original cohort are presented unadjusted and adjusted and results for the RCRD linked cohort are presented unadjusted, with minimal adjustment to align with the original cohort analysis and with full adjustment

		Original cohort		RCRD linked cohort		
Characteristic	Category	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs)	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs) (minimal adjustment)	Adjusted odds ratio (95% CIs) (fully adjusted)
Gender	Female	0.86 (0.77-0.96)*	0.94 (0.83-1.06)	0.86 (0.72-1.01)	0.98 (0.81-1.18)	0.98 (0.81-1.17)
	Male (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Age group	19-49	0.7 (0.55-0.91)*	0.65 (0.5-0.84)*	0.95 (0.64-1.42)	0.84 (0.55-1.28)	0.84 (0.55-1.27)
	50-59	1.11 (0.92-1.33)	1.03 (0.85-1.25)	1.39 (1.05-1.84)	1.25 (0.93-1.68)	1.24 (0.92-1.67)
	60-69 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	70-79	0.73 (0.63-0.86)*	0.75 (0.63-0.88)*	0.75 (0.59-0.95)	0.75 (0.58-0.97)	0.75 (0.58-0.97)
	80+	0.48 (0.41-0.57)*	0.5 (0.42-0.6)*	0.42 (0.33-0.54)*	0.43 (0.33-0.56)*	0.43 (0.33-0.56)*
Deprivation quintile	1 - most deprived	1.16 (0.97-1.39)	1.04 (0.85-1.28)	1.09 (0.83-1.43)	1.03 (0.75-1.39)	1.03 (0.75-1.4)
	2	1.01 (0.85-1.21)	1 (0.82-1.21)	1.14 (0.87-1.5)	1.2 (0.89-1.63)	1.21 (0.89-1.64)
	3	1.13 (0.95-1.34)	1.14 (0.94-1.37)	1.16 (0.89-1.51)	1.22 (0.92-1.63)	1.23 (0.92-1.64)
	4	0.98 (0.83-1.17)	0.98 (0.82-1.18)	0.97 (0.75-1.25)	0.98 (0.74-1.31)	0.98 (0.74-1.3)
	5 - least deprived (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Financial year	Base year (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)

		Original cohort		RCRD linked cohort		
Characteristic	Category	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs)	Unadjusted odds ratio (95% CIs)	Adjusted odds ratio (95% CIs) (minimal adjustment)	Adjusted odds ratio (95% CIs) (fully adjusted)
	2020/2021	1.24 (1.06-1.44)*	1.23 (1.05-1.45)	1.23 (0.97-1.55)	1.27 (0.99-1.64)	1.28 (0.99-1.64)
	2021/2022	1.64 (1.41-1.91)*	1.71 (1.46-2.01)*	1.68 (1.34-2.11)*	1.89 (1.48-2.41)*	1.89 (1.48-2.41)*
	Q1 & Q2 2022/2023	2.26 (1.89-2.71)*	2.44 (2.01-2.95)*	2.52 (1.93-3.29)*	2.6 (1.94-3.47)*	2.58 (1.93-3.46)*
Comorbidity	0 (ref)			1 (ref)		1 (ref)
	1			0.86 (0.63-1.16)		1.05 (0.75-1.46)
	2			0.68 (0.46-1.01)		0.82 (0.53-1.26)
	3+			0.84 (0.58-1.21)		1.22 (0.81-1.83)

*significant at p<0.01 level

Table 5: Median and interquartile range for the intervals in the diagnostic and treatment pathway for cancer of unknown primary patients who waited over 62 days from referral to treatment in each financial year of start of treatment

Interval	2017/2018 (Median and IQR)	2020/2021 (Median and IQR)	2021/2022 (Median and IQR)	Q1 & Q2 2022/2023 (Median and IQR)
Referral to first seen	9 (6 - 13)	9 (6 - 13)	9 (6 - 13)	10 (7 - 13)
First seen to informed of diagnosis	Data not available	42 (21 - 61)	39 (23 - 58)	41 (21 - 62)
Informed of diagnosis to decision to treat	Data not available	21 (3 - 38)	22 (7 - 40)	22.5 (5 - 43)
Decision to treat to treatment start	12 (3 - 21)	12 (2 - 19)	13 (3 - 21)	13 (2 - 22)
Referral to informed of diagnosis	Data not available	50 (30.25 - 70)	49 (33 - 70)	50.5 (30.25 - 70)
Referral to decision to treat	76 (63 - 93)	77 (63 - 97)	75 (63 - 95)	77.5 (64 - 95.25)
Referral to treatment start	87 (76 - 105)	88 (75 - 107)	90 (74 - 109)	89.5 (77 - 110)

Table 6: Breakdown of the reasons for delay in each financial year of start of treatment among cancer of unknown primary patients who waited over 62 days from referral to treatment, with delay overall between referral and treatment, from referral to informed of diagnosis or from decision to treat to treatment

Delay interval	Reason for delay	2017/2018 (Number and %)	2020/2021 (Number and %)	2021/2022 (Number and %)	Q1 & Q2 2022/2023 (Number and %)
Referral to treatment start	Healthcare provider-initiated delay	74 (16.3%)	116 (22.7%)	175 (28.5%)	118 (31.1%)
	Medical reason for diagnosis delay	226 (49.7%)	238 (46.6%)	280 (45.7%)	166 (43.7%)
	Medical reason for treatment delay	<5	<10	<10	<10
	Patient-initiated delay	15 (3.3%)	25 (4.9%)	20 (3.3%)	13 (3.4%)
	Other reason (not listed)	137 (30.1%)	123 (24.1%)	130 (21.2%)	78 (20.5%)
	Unknown	<5	<5	<5	<5
Referral to informed of diagnosis	Healthcare provider-initiated delay	Data not available	52 (16.1%)	77 (18.3%)	43 (16.4%)
	Medical reason for diagnosis delay	Data not available	120 (37.3%)	129 (30.6%)	79 (30.2%)
	Patient-initiated delay	Data not available	<5	11 (2.6%)	12 (4.6%)
	Other reason (not listed)	Data not available	45 (14.0%)	53 (12.6%)	37 (14.1%)
	No delay	Data not available	66 (20.5%)	81 (19.2%)	58 (22.1%)
	Unknown	Data not available	~35	70 (16.6%)	33 (12.6%)
Decision to treat to treatment start	Healthcare provider-initiated delay	<10	9 (1.8%)	28 (4.6%)	27 (7.1%)
	Medical reason for diagnosis delay	<5	<10	<5	<5

Delay interval	Reason for delay	2017/2018 (Number and %)	2020/2021 (Number and %)	2021/2022 (Number and %)	Q1 & Q2 2022/2023 (Number and %)
	Medical reason for treatment delay	<5	<5	<5	<5
	Patient-initiated delay	<5	<5	<5	<5
	Other reason (not listed)	9 (2.0%)	<10	<5	<5
	No delay	438 (96.3%)	491 (96.1%)	579 (94.5%)	343 (90.3%)