

Supplementary analysis for patients starting treatment for sarcoma

Patients waiting over 104 days from urgent suspected cancer referral to starting treatment for sarcoma

There was no significant variation in the likelihood of waiting over 104 days by gender, age or comorbidity score for soft-tissue sarcoma patients (Table 1), but those in the most deprived quintile were more likely to be long waiters, although this was only significant at the 0.01 p value level in the rapid cancer registration dataset (RCRD) linked cohort. There was an increase in the likelihood of being a long waiter with increasing year, with adjusted odds ratio (AOR) of 2.71 for Q1 & Q2 2022/2023 in the original analysis and 1.78 for the RCRD linked analysis.

The longest median subinterval for those diagnosed with soft-tissue sarcoma who waited over 104 days (Table 2) was from referral to informed of diagnosis at 68 days in Q1 & Q2 2022/2023. The median time from being informed of diagnosis and DTT was 34 days in Q1 & Q2 2022/2023 and the median time from DTT to treatment was 20 days.

The most common reason for delay between referral and treatment for those diagnosed with soft-tissue sarcoma in the latest year (Table 3) was healthcare provider-initiated delay. A very small number of patients met the 28-day referral to informed of decision standard and 81.6% of patients met the 31-day decision to treat (DTT) to treatment standard in Q1 & Q2 2022/2023. This percentage remained similar to that for 2017/2018.

Patients waiting over 62 days from urgent suspected cancer referral to starting treatment for sarcoma

There were similar findings for those waiting over 62 days, with no significant variation in the likelihood of waiting over 104 days by age or comorbidity score and an increase in likelihood with increasing year (Table 4). However, there was no significant difference for those in the most deprived quintile and those of female gender were more likely to wait over 62 days compared to those of male gender in the RCRD linked analysis.

The reasons for delay findings were similar to those for patients waiting over 104 days (Table 6). The median time from DTT to treatment was similar for those waiting over 62 days compared to 104 days (Table 5), while the median time from referral to informed of diagnosis was shorter as was the median time from informed of diagnosis to DTT.

Table 1: Regression analysis for likelihood of waiting over 104 days by characteristic for soft-tissue sarcoma. 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	1.2 (0.97-1.48)	1.16 (0.93-1.44)	1.23 (0.97-1.55)	1.2 (0.94-1.54)	1.2 (0.94-1.53)
	Male (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Age group	19-49	0.77 (0.53-1.12)	0.76 (0.51-1.12)	0.71 (0.46-1.11)	0.69 (0.44-1.09)	0.7 (0.44-1.1)
	50-59	1.32 (0.94-1.87)	1.28 (0.89-1.82)	1.47 (1-2.15)	1.41 (0.95-2.09)	1.42 (0.95-2.1)
	60-69 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	70-79	1.02 (0.75-1.38)	1.02 (0.74-1.39)	1.11 (0.79-1.57)	1.17 (0.82-1.66)	1.16 (0.82-1.65)
	80+	0.77 (0.55-1.07)	0.79 (0.56-1.11)	1.05 (0.73-1.5)	1.1 (0.76-1.6)	1.1 (0.76-1.61)
Deprivation quintile	1 - most deprived	1.47 (1.05-2.05)	1.49 (1.05-2.12)	1.52 (1.06-2.19)	1.69 (1.15-2.49)*	1.68 (1.14-2.47)*
	2	1.16 (0.82-1.63)	1.12 (0.79-1.6)	1.13 (0.78-1.64)	1.17 (0.8-1.73)	1.18 (0.8-1.73)
	3	1.02 (0.73-1.42)	1 (0.71-1.41)	1.16 (0.81-1.65)	1.15 (0.8-1.66)	1.15 (0.8-1.65)
	4	1.17 (0.86-1.6)	1.16 (0.85-1.61)	1.12 (0.79-1.59)	1.12 (0.79-1.6)	1.12 (0.79-1.6)
	5 - least deprived (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)
Financial year	Base year (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	2020/2021	1.45 (1.05-1.99)	1.44 (1.04-1.99)	0.96 (0.69-1.34)	0.96 (0.68-1.35)	0.96 (0.69-1.35)
	2021/2022	1.87 (1.38-2.53)*	1.91 (1.4-2.61)*	1.22 (0.89-1.67)	1.25 (0.9-1.72)	1.26 (0.91-1.74)
	Q1 & Q2 2022/2023	2.74 (1.96-3.83)*	2.71 (1.92-3.81)*	1.77 (1.25-2.5)*	1.76 (1.23-2.53)*	1.78 (1.24-2.55)*
Comorbidity	0 (ref)			1 (ref)		1 (ref)
	1			1.17 (0.78-1.75)		1.14 (0.75-1.73)
	2			1.36 (0.79-2.34)		1.22 (0.69-2.15)
	3+			0.93 (0.5-1.71)		0.88 (0.46-1.67)

*significant at the $p < 0.01$ level

Table 2: Median and interquartile range for the intervals in the diagnostic and treatment pathway for soft-tissue sarcoma 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	11 (8 - 13)	10 (7 - 13)	10 (6 - 13)	12 (7 - 14)
First seen to informed of diagnosis	Data not available	64.5 (41.25 - 85.75)	62 (41 - 82)	61.5 (27.5 - 89.5)
Informed of diagnosis to decision to treat	Data not available	25 (7 - 55.75)	23.5 (4.25 - 62.75)	34 (11.5 - 67.25)
Decision to treat to treatment start	20.5 (9 - 28.75)	17 (4 - 25)	21 (11 - 29)	20 (13 - 29)
Referral to informed of diagnosis	Data not available	70 (48.25 - 96.5)	74 (50.25 - 93.5)	68 (44 - 104.5)
Referral to decision to treat	112.5 (91 - 134.5)	107 (91 - 122)	107 (91 - 126)	113 (90.5 - 133)
Referral to treatment start	128 (114 - 155.25)	124 (112 - 141)	126 (113 - 146)	127 (115 - 157.5)

Table 3: Breakdown of the reasons for delay in each financial year of start of treatment among soft-tissue sarcoma 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	13 (18.6%)	27 (27.8%)	53 (41.1%)	35 (40.2%)
	Medical reason for diagnosis delay	24 (34.3%)	36 (37.1%)	38 (29.5%)	27 (31.0%)
	Medical reason for treatment delay	<5	<5	<5	<5
	Patient-initiated delay	<5	<5	<5	<5
	Other reason (not listed)	31 (44.3%)	31 (32.0%)	33 (25.6%)	19 (21.8%)
Referral to informed of diagnosis	Healthcare provider-initiated delay	Data not available	16 (32.0%)	23 (28.0%)	18 (31.0%)
	Medical reason for diagnosis delay	Data not available	19 (38.0%)	20 (24.4%)	17 (29.3%)
	Patient-initiated delay	Data not available	<5	<5	<5
	Other reason (not listed)	Data not available	<5	11 (13.4%)	<10
	No delay	Data not available	<5	<10	<10
	Unknown	Data not available	8 (16.0%)	17 (20.7%)	<10
Decision to treat to treatment start	Healthcare provider-initiated delay	7 (10.0%)	5 (5.2%)	22 (17.1%)	10 (11.5%)
	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	56 (80.0%)	86 (88.7%)	102 (79.1%)	71 (81.6%)

Table 4: Regression analysis for likelihood of waiting over 62 days by characteristic for soft-tissue sarcoma. 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	1.19 (1.04-1.36)	1.17 (1.02-1.36)	1.26 (1.09-1.46)*	1.27 (1.08-1.49)*	1.26 (1.08-1.48)*
	Male (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Age group	19-49	0.8 (0.64-1.01)	0.79 (0.62-1.01)	0.8 (0.62-1.03)	0.8 (0.6-1.05)	0.8 (0.61-1.06)
	50-59	1.08 (0.86-1.37)	1.08 (0.84-1.38)	1.13 (0.87-1.45)	1.12 (0.85-1.47)	1.13 (0.86-1.48)
	60-69 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	70-79	1.01 (0.83-1.23)	1.02 (0.83-1.26)	1.06 (0.86-1.31)	1.11 (0.89-1.4)	1.11 (0.88-1.4)
	80+	0.78 (0.64-0.95)	0.82 (0.66-1.02)	0.92 (0.73-1.15)	0.96 (0.75-1.22)	0.97 (0.76-1.23)
Deprivation quintile	1 - most deprived	1.04 (0.84-1.29)	1.13 (0.89-1.43)	1 (0.79-1.27)	1.13 (0.87-1.47)	1.13 (0.87-1.47)
	2	0.96 (0.77-1.18)	1.01 (0.8-1.26)	1.01 (0.81-1.27)	1.11 (0.87-1.43)	1.11 (0.87-1.42)
	3	1 (0.82-1.22)	1.01 (0.81-1.25)	0.98 (0.79-1.22)	0.99 (0.79-1.26)	0.99 (0.78-1.25)
	4	0.96 (0.79-1.17)	0.97 (0.79-1.19)	1 (0.81-1.23)	1 (0.79-1.25)	0.99 (0.79-1.25)
	5 - least deprived (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)
Financial year	Base year (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
	2020/2021	1.23 (1.02-1.48)	1.25 (1.03-1.52)	1.06 (0.86-1.3)	1.07 (0.87-1.33)	1.07 (0.87-1.33)
	2021/2022	1.73 (1.44-2.06)*	1.8 (1.49-2.18)*	1.49 (1.22-1.82)*	1.56 (1.26-1.92)*	1.57 (1.27-1.93)*
	Q1 & Q2 2022/2023	2.59 (2.09-3.22)*	2.71 (2.16-3.41)*	2.27 (1.79-2.87)*	2.42 (1.88-3.12)*	2.43 (1.89-3.13)*
Comorbidity	0 (ref)			1 (ref)		1 (ref)
	1			1.14 (0.87-1.48)		1.15 (0.86-1.53)
	2			1.16 (0.79-1.68)		1.21 (0.8-1.82)
	3+			0.77 (0.53-1.13)		0.8 (0.52-1.22)

*significant at the $p < 0.01$ level

Table 5: Median and interquartile range for the intervals in the diagnostic and treatment pathway for soft-tissue sarcoma 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	10 (7 - 13)	9.5 (6.75 - 13)	10 (6 - 13)	10 (7 - 14)
First seen to informed of diagnosis	Data not available	41 (28 - 58)	42 (27 - 58.5)	37.5 (21 - 56)
Informed of diagnosis to decision to treat	Data not available	13 (0 - 28)	14 (0 - 32)	18 (2 - 37.25)
Decision to treat to treatment start	16 (9 - 24)	15 (7.5 - 24)	18 (9 - 26)	18 (10 - 27)
Referral to informed of diagnosis	Data not available	50 (36 - 69)	52 (36 - 69)	48.5 (32.75 - 65)
Referral to decision to treat	70 (57 - 86)	70 (55 - 89)	70.5 (56 - 90)	71 (56 - 90.75)
Referral to treatment start	85 (74 - 103)	84 (72 - 105.5)	87 (75 - 105.25)	86.5 (73.25 - 111)

Table 6: Breakdown of the reasons for delay in each financial year of start of treatment among soft-tissue sarcoma 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	93 (29.0%)	117 (32.2%)	184 (39.0%)	127 (45.0%)
	Medical reason for diagnosis delay	79 (24.6%)	119 (32.8%)	158 (33.5%)	78 (27.7%)
	Medical reason for treatment delay	14 (4.4%)	<10	<10	<10
	Patient-initiated delay	<10	<10	14 (3.0%)	12 (4.3%)
	Other reason (not listed)	127 (39.6%)	109 (30.0%)	106 (22.5%)	59 (20.9%)
	Unknown	<5	<5	<5	<5
Referral to informed of diagnosis	Healthcare provider-initiated delay	Data not available	66 (28.3%)	84 (25.5%)	60 (29.4%)
	Medical reason for diagnosis delay	Data not available	65 (27.9%)	88 (26.7%)	57 (27.9%)
	Patient-initiated delay	Data not available	<5	<10	<10
	Other reason (not listed)	Data not available	~25	~40	~20
	No delay	Data not available	33 (14.2%)	46 (14.0%)	42 (20.6%)
	Unknown	Data not available	38 (16.3%)	63 (19.1%)	21 (10.3%)
	Healthcare provider-initiated delay	12 (3.7%)	20 (5.5%)	47 (10.0%)	24 (8.5%)

Delay interval	Reason for delay	2017/2018 (Number and %)	2020/2021 (Number and %)	2021/2022 (Number and %)	Q1 & Q2 2022/2023 (Number and %)
Decision to treat to treatment start	Medical reason for diagnosis delay	<5	<5	<5	<5
	Medical reason for treatment delay	9 (2.8%)	<5	<5	<5
	Patient-initiated delay	<5	<5	<10	<5
	Other reason (not listed)	<5	<10	<5	<5
	No delay	296 (92.2%)	330 (90.9%)	412 (87.3%)	249 (88.3%)