North, South East and West of Scotland Cancer Networks

Sarcoma National Managed Clinical Network

Audit Report

Sarcoma Quality Performance Indicators

Clinical Audit Data:
01 April 2016 to 31 March 2017

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Introduction

This report contains an assessment of the performance of Scotland wide Sarcoma services using clinical audit data relating to patients diagnosed with sarcoma in the twelve months between 1st April 2016 and 31st March 2017. Regular reporting of activity and performance is a fundamental requirement of a Managed Clinical Network (MCN) to assure the quality of care delivered across the country. Results are measured against the Sarcoma Quality Performance Indicators (QPIs) which were introduced for patients diagnosed on or after 1st April 2014.

The National Cancer Quality Steering Group (NCQSG) completed a programme of work to develop national QPIs for all cancer types to enable national comparative reporting and drive continuous improvement for patients in 2014. In collaboration with the three Regional Cancer Networks and Information Services Division (ISD) the Sarcoma QPIs were published by Healthcare Improvement Scotland (HIS) in April 2014[1]. Data definitions and measurability criteria to accompany the cancer QPIs are available from the ISD website[2].

Twelve months of data were measured against the Sarcoma QPIs for the third consecutive year. Previous years' results are presented within this audit report for QPIs where results have remained comparable. Future reports will continue to compare clinical audit data in successive years to further illustrate trend analysis.

In order to ensure success of the National Cancer QPIs in driving quality improvement in cancer care across NHS Scotland it is critical that QPIs continue to be clinically relevant and focus on areas which will result in improvements to the quality of patient care. As part of the national process it was agreed that indicators would be formally reviewed following the availability of 3 years of comparative reporting. This clinically led review aims to identify potential refinements to the current QPIs and involves key clinicians from each of the Regional Cancer Networks. The review of sarcoma QPIs began in January 2018 and the output of the review will be communicated in due course.

Background

Sarcomas are a rare group of cancers that arise from connective tissue, including: bone, cartilage, muscle, blood vessels, nerves and fat[5] which are broadly divided into bone, soft tissue sarcomas and gastrointestinal stromal tumours (GIST). In 2016/17 the audit identified 292 patients diagnosed with a new primary invasive sarcoma. Sarcomas account for around 1% of all new cancer diagnoses in the UK[5]. In Scotland bone and connective tissue cancers are ranked 21st most common cancer, accounting for only 0.7% of all cancers diagnosed in Scotland in 2015[3].

Unlike many other cancers, sarcomas can affect people of any age. From 2012 to 2014 in the UK 47% of all bone sarcomas occurred in people under the age of 45, whilst 57% of soft tissue sarcomas occurred in the under 65's in 2010[4].

Incidence of bone sarcomas has been stable in the UK since the late 1970s whilst incidence of soft tissue sarcoma has increased overall since the late 1990s. This likely reflects improved diagnosis and data recording rather than a true increase in incidence[4].

The table below details the five centres carrying out sarcoma treatment in Scotland. These are considered the centres for specialist treatment, which includes surgery, systemic anti cancer therapy (SACT) and radiotherapy. Patients may receive diagnostic and palliative care in their local hospital where appropriate; however the majority of patients are referred to one of the five centres for specialist management.

Centre	Constituent Hospital(s)
Aberdeen	Aberdeen Royal Infirmary (ARI), Royal Aberdeen Children's Hospital
Dundee	Ninewells Hospital (NW)
Edinburgh	Surgery: Royal Infirmary of Edinburgh (RIE) Oncology: Western General Hospital (WGH) Royal Hospital for Sick Children (RHSC)
Glasgow	Surgery: Gartnavel General Hospital (GGH); Queen Elizabeth University Hospital (QEUH); and Glasgow Royal Infirmary (GRI) Royal Hospital for Children (RHC) Oncology: Beatson West of Scotland Cancer Centre (BWoSCC)
Inverness	Raigmore Hospital

Methodology

The clinical audit data presented in this report was collected by clinical audit staff in each NHS Board in accordance with an agreed dataset and definitions. The data was entered locally into the electronic Cancer Audit Support Environment (eCASE): a secure centralised web-based database. Data relating to patients diagnosed between 1 April 2016 and 31 March 2017 was downloaded from eCASE on 27 September 2017. SCAN data was collected and analysed locally and the final results were submitted to WoSCAN.

Analysis was performed centrally by the WoSCAN Information Team for NOSCAN and WoSCAN Boards and the timescales agreed took into account the patient pathway to ensure that a complete treatment record was available for each case. Initial results of the analysis were provided to local NHS Boards to check for inaccuracies, inconsistencies or obvious gaps and a subsequent download taken upon which final analysis was carried out. The final data analysis was disseminated for NHS Board verification in line with the regional audit governance process to ensure that the data was an accurate representation of service in each area.

Cancer patients under the age of 16 are treated in specialist children's' centres in Aberdeen, Edinburgh and Glasgow, separately from the adult services. Although QPI audit data are collected for patients under 16, this group is excluded from published QPI figures due to the very low numbers. However regions may report these separately to their clinical groups for internal management purposes. A very small number of patients aged under 16 years were included within the SCAN results however this has not impacted upon performance results.

Results

This is the third year of data collection for sarcoma by clinical effectiveness teams across Scotland. Case ascertainment is an estimate of the proportion of expected patients identified through audit and can aid in the assessment of data quality. Overall case ascertainment for Scotland is 88.5% which indicates that the capture of new cases of sarcomas through audit is good.

Overall data capture is good; however there are areas where improvement is required to enable robust measurement against all QPIs. QPIs 3, 4 and 5 had a high proportion of cases which were not recorded for the numerator or denominator.

Results for each QPI are shown in detail in the main report and illustrate regional or national performance against each target. Where numbers are small national results are presented to avoid any unwarranted variation associated with small numbers and to minimise the risk of disclosure. Results are presented graphically and the accompanying data table also highlights any missing data and its possible effect on any of the measured outcomes.

The summary of results over page shows the national percentage performance against each QPI target.

National - Performance Summary Report

Quality Performance Indicator (QPI)	QPI target	WoS		NoSCAN		SCAN		Scotland	
QPI 1 – Histological Diagnosis Proportion of patients with extremity sarcoma who have a histological diagnosis before undergoing a planned surgical resection.	**90%**	**100%**		**72.7%**		**84.2%**		**91.0%**	
		>		**>**		**<**		**>**	
		37	37	8	11	16	19	61	67
QPI 2 – Multi-Disciplinary Team (MDT) Meeting Proportion of patients with extremity sarcoma who are discussed at a MDT meeting before definitive treatment.	**95%**	**98.0%**		**85.0%**		**82.6%**		**91.3 %**	
		>		**>**		**<**		**>**	
		48	49	17	20	19	23	84	92
QPI 3 – Clinical Staging Proportion of patients whose extremity soft tissue sarcoma is staged using the TNM staging system prior to definitive treatment.	**95%**	**41.2%**		**28.6%**		**62.5%**		**43.8%**	
		>		**>**		**<**		**>**	
		14	34	4	14	10	16	28	64
QPI 4 – Surgical Margins Proportion of patients with extremity sarcoma, who undergo curative surgical resection where R0* resection is achieved.	**85%**	**97.3%**		**-**		**100%**		**96.2%**	
		<				**>**		**>**	
		36	37	-	-	13	13	51	53
QPI 5 – Molecular Staging of Gastrointestinal Stromal Tumour (GIST) Proportion of patients with high or moderate risk GIST, small bowel GISTs and primary metastatic GIST who have mutational analysis within 3 months of diagnosis.	**90%**	**-**		**n/a**		**87.5%**		**72.7%**	
		-	-	0	0	7	8	8	11
QPI 6 – Limb Sparing Surgery Proportion of patients with extremity sarcoma who undergo a primary limb-sparing surgery.	**85%**	**97.8%**		**83.3%**		**78.3%**		**84.1%**	
		>		**>**		**>**		**>**	
		36	41	15	18	18	23	69	82
QPI 7 – Primary Flap Reconstruction Proportion of patients with extremity sarcoma who undergo successful primary flap reconstruction following surgical resection.	**85%**	**100%**		**100%**		**-**		**100%**	
		>						**>**	
		15	15	6	6	-	-	23	23

(-) dash denotes a denominator of less than 5. Figures have been removed to ensure confidentiality.

Quality Performance Indicator (QPI)	QPI target	WoS		NoSCAN		SCAN		Scotland	
QPI 8 – Post Operative Radiotherapy Proportion of patients with an extremity soft tissue sarcoma which is deep and grade 2 or 3 who receive post operative radiotherapy within 3 months of a planned marginal or wide local excision (R0 or R1).	**90%**	**-**		**-**		**-**		**75%**	
		-	-	-	-	-	-	6	8
QPI 9a - Neo-adjuvant Systemic Anti Cancer Therapy (SACT) for Osteosarcoma Proportion of patients with osteosarcoma sarcoma who receive neoadjuvant combination SACT.	**90%**	**-**		**-**		**-**		**71.4%**	
		-	-	-	-	-	-	5	7
QPI 9b - Neo-adjuvant Systemic Anti Cancer Therapy (SACT) for Ewings Sarcoma Proportion of patients with Ewings sarcoma who receive neoadjuvant combination SACT.	**90%**	**-**		**-**		**n/a**		**-**	
		-	-	-	-	0	0	-	-
QPI 10 – Adjuvant Oncological Treatment for Gastrointestinal Stromal Tumours (GIST) Proportion of patients with high risk GIST who commence adjuvant imatinib within 3 months of complete macroscopic resection.	**85%**	**n/a**		**n/a**		**n/a**		**n/a**	
		0	0	0	0	0	0	0	0
QPI 11(i)a - 30 Day Mortality – Surgery Proportion of patients with sarcoma who die within 30 days of surgical resection for sarcoma.	**<10%**	**0.9%**		**0.0%**		**0.0%**		**0.7%**	
		>		**=**		**>**		**>**	
		1	115	0	18	0	20	1	153
QPI 11(i)b - 30 Day Mortality – Radical Radiotherapy Proportion of patients with sarcoma who die within 30 days of radical radiotherapy for sarcoma.	**<10%**	**n/a**		**-**		**-**		**0.0%**	
		0	0	-	-	-	-	0	5
QPI 11(i)c - 30 Day Mortality – Neo-Adjuvant Chemotherapy Proportion of patients with sarcoma who die within 30 days of neo-adjuvant chemotherapy for sarcoma.	**<10%**	**0.0%**		**-**		**0.0%**		**0.0%**	
		0	6	-	-	0	6	0	13
QPI 11(i)d - 30 Day Mortality – Neo-Adjuvant Radiotherapy Proportion of patients with sarcoma who die within 30 days of neo-adjuvant radiotherapy for sarcoma.	**<10%**	**0.0%**		**-**		**-**		**0.0%**	
		0	13	-	-	-	-	0	17

(-) dash denotes a denominator of less than 5. Figures have been removed to ensure confidentiality.

Quality Performance Indicator (QPI)	QPI target	WoS		NoSCAN		SCAN		Scotland	
QPI 11(i)e - 30 Day Mortality – Adjuvant Chemotherapy Proportion of patients with sarcoma who die within 30 days of adjuvant chemotherapy for sarcoma.	**<10%**	**n/a**		**-**		**0.0%**		**0.0%**	
		0	0	-	-	0	5	0	8
QPI 11(i)f - 30 Day Mortality – Adjuvant Radiotherapy Proportion of patients with sarcoma who die within 30 days of adjuvant radiotherapy for sarcoma.	**<10%**	**0.0%**		**0.0%**		**0.0%**		**0.0%**	
		0	18	0	11	0	8	0	37
QPI 11(i)g - 30 Day Mortality – Chemoradiotherapy Proportion of patients with sarcoma who die within 30 days of chemoradiotherapy for sarcoma.	**<10%**	**n/a**		**n/a**		**-**		**-**	
		0	0	0	0	-	-	-	-
QPI 11(i)h - 30 Day Mortality – Biological Therapy Proportion of patients with sarcoma who die within 30 days of biological therapy for sarcoma.	**<10%**	**0.0%**		**-**		**0.0%**		**0.0%**	
		0	7	-	-	0	7	0	15
QPI 11(ii)a - 30 Day Mortality – Palliative Radiotherapy Proportion of patients with sarcoma who die within 30 days of palliative radiotherapy for sarcoma.	**<15%**	**25.0% >**		**12.5%**		**-**		**15.8%**	
		2	8	1	8	-	-	3	19
QPI 11(ii)b - 30 Day Mortality – Palliative Chemotherapy Proportion of patients with sarcoma who die within 30 days of palliative chemotherapy for sarcoma.	**<15%**	**0.0%**		**25.0%**		**-**		**13.0%**	
		0	12	2	8	-	-	3	23
QPI 16: Clinical Trial Access – INTERVENTIONAL Proportion of patients with sarcoma who are enrolled in an **interventional** clinical trial.	**7.5%**	**-**		**-**		**-**		**2.4%**	
		-	-	-	-	-	-	8	330
QPI 16: Clinical Trial Access – TRANSLATIONAL Proportion of patients with sarcoma who are enrolled in **translational research.**	**15%**	**6.6%**		**-**		**-**		**4.5%**	
		10	151	-	-	-	-	15	330

	Meets/exceeds QPI target
	Does not meet QPI target
>	Indicates increase on previous year's figure
<	Indicates decrease from previous year's figure
=	Indicates no change from previous year

Figures below percentage performance denote the numerator and denominator values.

(-) dash denotes a denominator of less than 5. Figures have been removed to ensure confidentiality.

Conclusions and Action Required

The development of national QPIs for sarcoma cancers will help drive continuous quality improvement in patient care whilst ensuring that activity is focussed on those areas that are most important in terms of improving survival and patient experience. In addition, the introduction of QPIs and the associated governance structure will facilitate regular monitoring and reporting of data to ensure equitable care across the country.

Results presented in this report demonstrate that work is still required to ensure patients with sarcoma receive an equitable and consistent standard of care across NHS Scotland. It is evident that many of the QPI targets set have been challenging for centres to achieve and some variance and a number of areas for improvement have been highlighted. It should however be noted that given the rarity of sarcoma, numbers included within the measurement of the majority of indicators are small and therefore percentages should be compared with caution.

This audit report has identified areas where data capture must improve to enable more meaningful analysis of performance against QPIs in the coming years, specifically with regards to TNM staging and intent of surgery. However overall case ascertainment and data capture has improved in the third year of data collection and analysis. This provides a good foundation from which to measure service improvement in future years, however further work is required.

It is extremely encouraging that all regions have met the target level for a number of QPIs, including: primary flap reconstruction and 30 day mortality following curative treatment.

Action required:

QPI 1 – Histological Diagnosis

- Aberdeen Centre to provide further detail on cases not meeting the QPI to NMCN.
- Dundee centre to review cases not meeting the QPI and report results to NMCN.

QPI 2 – MDT Meeting

- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

QPI3 – Clinical Staging

- Aberdeen and Glasgow centres to ensure recording of TNM for all sarcomas at MDT meeting.
- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

QPI 4 – Surgical Margins

- NoSCAN should review processes for the recording of ‘intent of surgery’ to reduce the proportion of cases that have not-recorded values.
- The Dundee centre to review cases not meeting the QPI and report results to NMCN,

QPI 6 – Limb Sparing Surgery

- The Dundee centre to review cases that did not undergo primary limb sparing surgery and report results to NMCN.

QPI 11 - 30 day Mortality

- NoSCAN and SCAN should discuss cases where patients died within 30 days of palliative radiotherapy/chemotherapy at Morbidity and Mortality meeting and provide feedback to NMCN.

Completed Action Plans should be returned to WoSCAN within two months of publication of this report. Progress against these plans will be monitored by the MCN Advisory Board and any service or clinical issue which the Advisory Board considers not to have been adequately addressed will be escalated to the NHS Board Territorial Lead Cancer Clinician and Regional Lead Cancer Clinician.

The NMCN will actively take forward national actions identified and NHS Boards are asked to develop local Action/Improvement Plans in response to the findings presented in the report.

1. Introduction

This report contains an assessment of the performance of Scotland wide Sarcoma services using clinical audit data relating to patients diagnosed with sarcoma in the twelve months between 1st April 2016 and 31st March 2017. Regular reporting of activity and performance is a fundamental requirement of a Managed Clinical Network (MCN) to assure the quality of care delivered across the country. Results are measured against the Sarcoma Quality Performance Indicators (QPIs) which were introduced for patients diagnosed on or after 1st April 2014.

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In order to ensure success of the National Cancer QPIs in driving quality improvement in cancer care across NHS Scotland it is critical that QPIs continue to be clinically relevant and focus on areas which will result in improvements to the quality of patient care. As part of the national process it was agreed that indicators would be formally reviewed following the availability of 3 years of comparative reporting. This clinically led review aims to identify potential refinements to the current QPIs and involves key clinicians from each of the Regional Cancer Networks. The review of sarcoma QPIs began in January 2018 and the output of the review will be communicated in due course.

2. Background

Sarcomas are a rare group of cancers that arise from connective tissue, including: bone, cartilage, muscle, blood vessels, nerves and fat[5] which are broadly divided into bone, soft tissue sarcomas and gastrointestinal stromal tumours (GIST). In 2016/17 the audit identified 292 patients diagnosed with a new primary invasive sarcoma in Scotland.

Sarcomas account for around 1% of all new cancer diagnoses in the UK[5]. In Scotland bone and connective tissue cancers are ranked 21st most common cancer, accounting for only 0.7% of all cancers diagnosed in 2013[3]. The most common site of sarcoma is the extremeties[5] which provides the focus for the majority of data analysis.

Incidence of bone sarcomas has been stable in the UK since the late 1970s whilst incidence of soft tissue sarcoma has increased overall since the late 1990s. This likely reflects improved diagnosis and data recording rather than a true increase in incidence[4]. There has been significant improvement in survival over the past few decades, with 5 year survival from 1996-2000 51% rising to 56% 2006-2010 for soft tissue sarcoma, the picture is very similar for bone sarcoma[5].

Unlike many other cancers, bone and soft tissue sarcomas can affect people of any age. From 2012 to 2014 in the UK 47% of all bone sarcomas occurred in people under the age of 45, whilst 57% of soft tissue sarcomas occurred in the under 65s in 2010[4].

Gastrointestinal Stromal Tumours (GIST) are rare with an estimated occurrence of 1/100,000[6]. These tumours are extremely rare in children and young people, with the median age reported as 60-65[5].

The table below details the five centres carrying out sarcoma treatment in Scotland. These are considered the centres for specialist treatment, which includes surgery, systemic anti cancer therapy

(SACT) and radiotherapy. Patients may receive diagnostic and palliative care in their local hospital where appropriate; however the majority of patients are referred to one of the five centres for specialist management.

Centre	Constituent Hospital(s)
Aberdeen	Aberdeen Royal Infirmary (ARI), Royal Aberdeen Children's Hospital
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Inverness	Raigmore Hospital

3. Methodology

The clinical audit data presented in this report was collected by clinical audit staff in each NHS Board in accordance with an agreed dataset and definitions. NOSCAN and WoSCAN data was recorded manually and entered locally into the electronic Cancer Audit Support Environment (eCASE): a secure centralised web-based database. Data relating to patients diagnosed between 1 April 2016 and 31 March 2017 was downloaded from eCASE at 2200 hrs on 27 September 2017. SCAN data was collected and analysed locally and the final results were submitted to WoSCAN. Cancer audit is a dynamic process with patient data continually being revised and updated as more information becomes available. This means that apparently comparable reports for the same time period and cancer site may produce slightly different figures if extracted at different times.

Analysis was performed centrally by the WoSCAN Information Team for NOSCAN and WoSCAN Boards and the timescales agreed took into account the patient pathway to ensure that a complete treatment record was available for each case. Initial results of the analysis were provided to local NHS Boards to check for inaccuracies, inconsistencies or obvious gaps and a subsequent download taken upon which final analysis was carried out. The final data analysis was disseminated for NHS Board verification in line with the regional audit governance process to ensure that the data was an accurate representation of service in each area.

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4. Results and Action Required

4.1 Data Quality

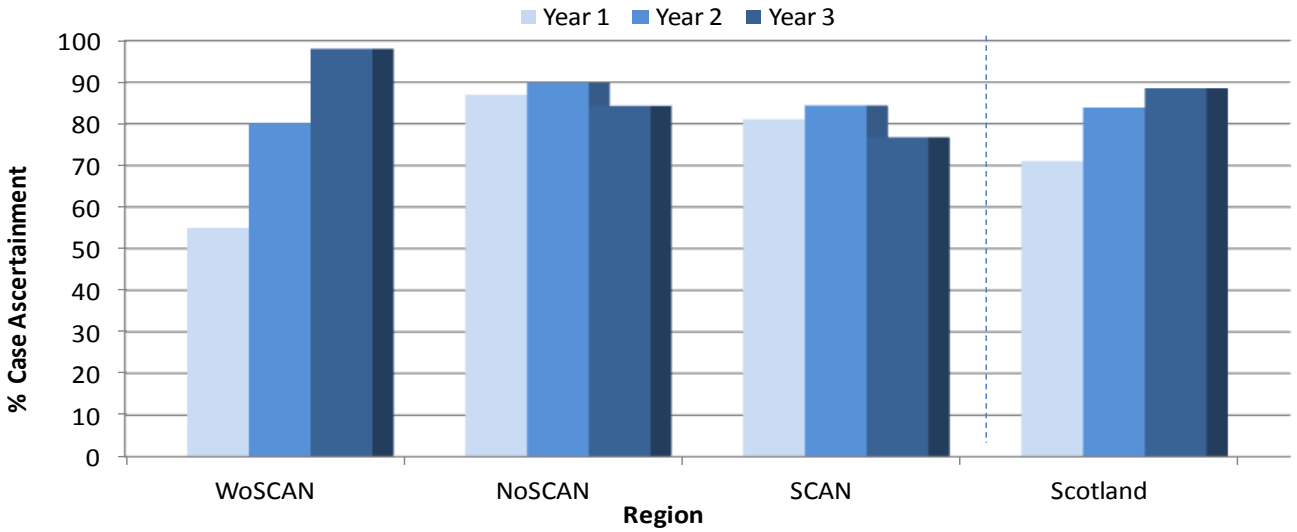
Audit data quality can be assessed in the first instance by estimating the proportion of expected patients that have been identified through audit. Case ascertainment is calculated as the number of new cases identified by the audit as a proportion of the number of cases reported by the National Cancer Registry (provided by Information Services Division, National Services Scotland). Cancer Registry figures were extracted from ACaDMe (Acute Cancer Deaths and Mental Health), a system provided by Information Services Division (ISD). Cancer Registry figures are an average of the previous five years' figures to take account of annual fluctuations in incidence within NHS Regions.

Overall case ascertainment for Scotland is good at 88.5%, especially when it is taken into consideration that collection of clinical audit data for Sarcoma was introduced in 2014. Case

ascertainment figures in WoSCAN have shown year on year improvement rising from 55% in year 1 to 98% in year 3.

Case ascertainment figures however are provided for guidance and are not an exact measurement as it is not possible to compare directly with the same cohort. Lower or higher figures can also indicate changes in incidence of a particular cancer type within a Board or region over time. Case ascertainment for each region is illustrated in Figure 1.

Figure 1: Case ascertainment by region for patients diagnosed with sarcomas in Scotland



	WoSCAN	NoSCAN	SCAN	Scotland
Cases from audit	148	75	69	292
ISD Cases (2010-2013 average)	151	89	90	330
% Case ascertainment	98%	84.3%	76.7%	88.5%

4.2 Performance against Quality Performance Indicators (QPIs)

Results of the analysis of Sarcoma Quality Performance Indicators are set out in the following sections. Graphs and charts have been provided where this aids interpretation and, where appropriate, numbers have also been included to provide context.

Data are presented for each QPI at a national or regional level both graphically and in table format. Centre level data has been reviewed by local teams however given the small numbers involved it has not been presented at this level. Aggregated centre level data will be presented in future reports when sufficient data is available to make more robust conclusions on performance. Specific regional and national actions have been identified to address issues highlighted through the data analysis.

Where the number of cases meeting the denominator criteria for any indicator is between one and four, the percentage calculation has not been shown on any associated charts or tables. This is to avoid any unwarranted variation associated with small numbers and to minimise the risk of disclosure. Any charts or tables impacted by this are denoted with a dash (-). Any commentary provided by NHS Boards relating to the impacted indicators is however included as a record of continuous improvement.

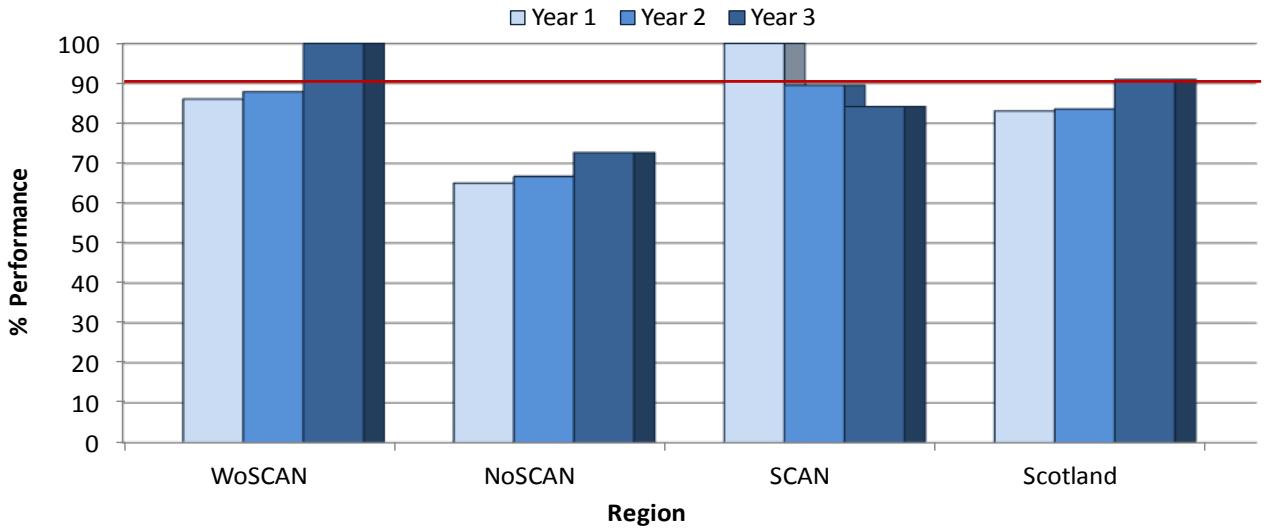
The sarcoma QPIs focus on extremity sarcomas as determined by the Sarcoma QPI Development Group, unless otherwise specified. Data is however collected on all sarcomas diagnosed in Scotland. Extremity sarcoma is defined as sarcoma of the: upper limb, shoulder girdle to fingers or lower extremity, iliac crest/buttock to toes. Extremity sarcomas account for 50-60% of all sarcomas[1].

QPI 1 – Histological Diagnosis

Histological typing of extremity sarcomas is essential for planning appropriate treatment and to provide important information relating to prognosis[1]. A histological diagnosis should be obtained before a planned surgical resection takes place as unplanned surgery has been shown to affect morbidity and mortality[1]. The 90% target set for the QPI accounts for small superficial lesions where the diagnosis of sarcoma may not be reasonably suspected clinically and emergency situations[1].

QPI Title:	Patients with extremity sarcoma should have a histological diagnosis before undergoing a planned surgical resection.
Numerator:	Number of patients with extremity sarcoma who undergo a planned surgical resection who have a histological diagnosis before surgical resection takes place.
Denominator:	All patients with extremity sarcoma who undergo a planned surgical resection.
Exclusions:	Patients with cutaneous sarcomas.
Target:	90%

Figure 2: Proportion of patients with extremity sarcoma that should have a histological diagnosis before undergoing a planned surgical resection.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	100%	37	37	0	0.0%	0	0.0%	0
NoSCAN	72.7%	8	11	0	0.0%	0	0.0%	0
SCAN	84.2%	16	19	0	0.0%	0	0.0%	0
Scotland	91.0%	61	67	0	0.0%	0	0.0%	0

Overall performance across Scotland for QPI 1 was 90.1% in Year 3 which meets the 90% QPI target and shows improvement on previous years results. Improvement was also demonstrated in WoSCAN and NoSCAN. WoSCAN met the 90% target with 100% of patients with extremity sarcoma undergoing a planned surgical resection having a histological diagnosis before surgical resection took place.

NOSCAN achieved 72.7% against the 90% target. The Aberdeen centre had 2 cases not meeting the QPI criteria and these cases have been reviewed retrospectively.

SCAN commented that cases not meeting the QPI were diagnosed at surgery due to malignancy not being suspected at the time of excision.

Action Required:

- Aberdeen Centre to provide further detail on cases not meeting the QPI to NMCN.
- Dundee centre to review cases not meeting the QPI and report results to NMCN.

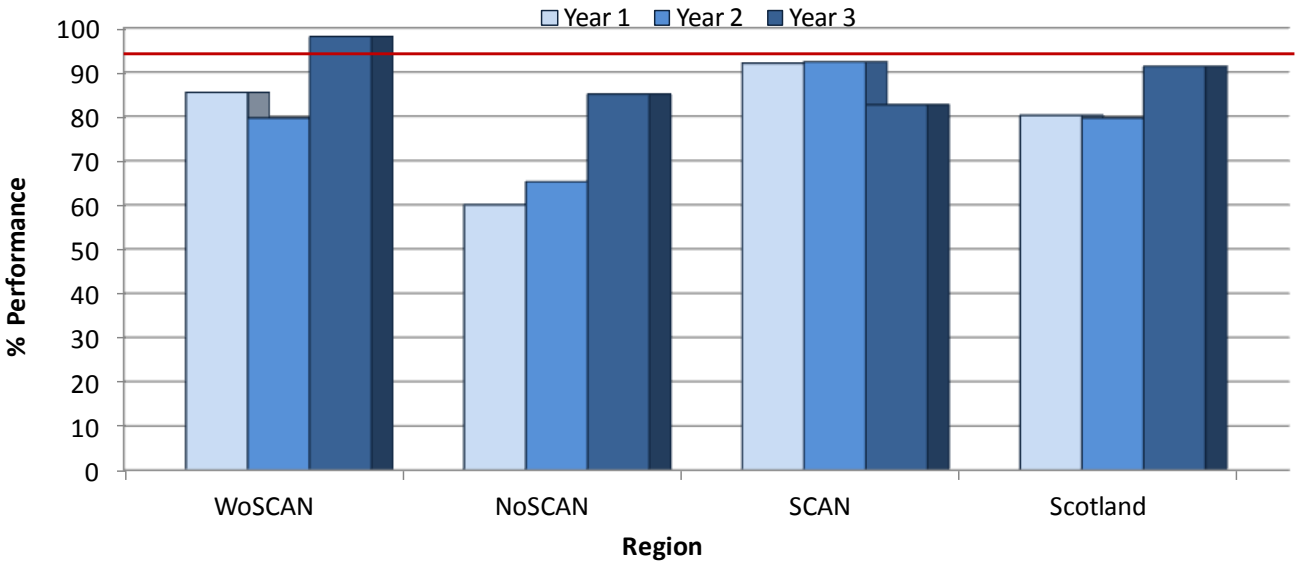
QPI 2 – Multi Disciplinary Team Meeting

Evidence suggests that patients with cancer managed by a multi-disciplinary team have a better outcome. There is also evidence that the multidisciplinary management of patients increases their overall satisfaction with their care[1].

Discussion prior to definitive treatment decisions being made provides reassurance that patients are being managed appropriately[1]. The target for this QPI is 95%, which accounts for situations where patients require treatment urgently[1].

QPI Title:	Patients with extremity sarcoma should be discussed by a multidisciplinary team (MDT) prior to definitive treatment.
Numerator:	Number of patients with extremity sarcoma discussed at the MDT before definitive treatment.
Denominator:	All patients with extremity sarcoma.
Exclusions:	Patients who died before first treatment. Patients with cutaneous sarcomas.
Target:	95%

Figure 3: Proportion of patients with extremity sarcoma that should be discussed by a multidisciplinary team (MDT) prior to definitive treatment.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	98.0%	48	49	0	0.0%	0	0.0%	2
NoSCAN	85.0%	17	20	0	0.0%	0	0.0%	0
SCAN	82.6%	19	23	0	0.0%	0	0.0%	0
Scotland	91.3%	84	92	0	0.0%	0	0.0%	2

Performance across Scotland was 91.3% against the 95% QPI target with 84 of 92 patients diagnosed with extremity sarcoma in Year 3 being discussed at MDT meeting before definitive treatment. WoSCAN exceeded the target with 98.0% of patients being discussed prior to definitive treatment.

NoSCAN and SCAN reviewed all cases not discussed at MDT prior to definitive treatment and appropriate clinical reasons were documented, including cases where malignancy was not suspected at time of surgery but were discussed after surgery.

Action required:

- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

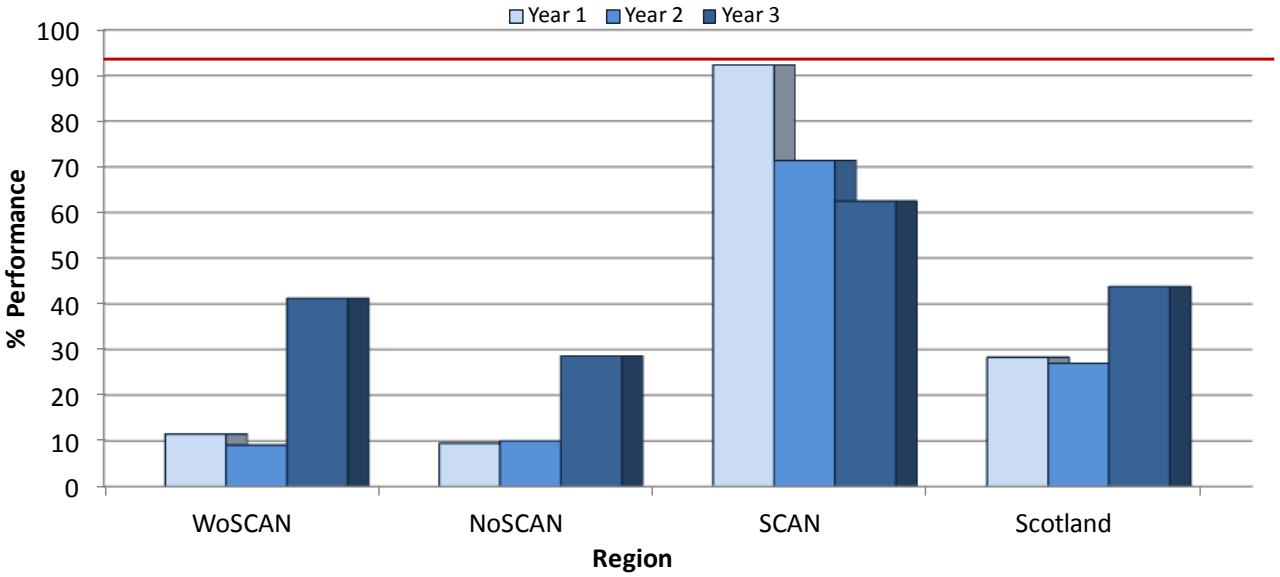
QPI 3 – Clinical Staging

Staging has an important role in determining the most effective treatment for soft tissue sarcoma and provides information on prognosis[1]. Clinical staging should follow the principles of TNM classification; this aids the determination of prognosis and choice of therapy[1].

The target for this QPI is set at 95% to account for the fact that some patients may present with very advanced disease therefore may not be fit for investigation and/or treatment. It also accounts for emergency situations.

QPI Title:	Patients with extremity soft tissue sarcoma should be staged using the Tumour Node Metastases (TNM) staging system.
Numerator:	Number of patients with extremity soft tissue sarcoma who are clinically staged using TNM staging system prior to definitive treatment.
Denominator:	All patients with extremity soft tissue sarcoma.
Exclusions:	Patients with rhabdomyosarcomas, patients with cutaneous sarcomas.
Target:	95%

Figure 4: Proportion of patients with extremity soft tissue sarcoma who should be staged using the Tumour Node Metastases (TNM) staging system.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	41.2%	14	34	18	52.9%	0	0.0%	2
NoSCAN	28.6%	4	14	8	57.1%	0	0.0%	0
SCAN	62.5%	10	16	0	0.0%	0	0.0%	0
Scotland	43.8%	28	64	26	40.6%	0	0.0%	2

Recording of TNM staging at MDT is still extremely variable across NHS Scotland. National performance is 43.8% which is up 16.8 percentage points from Year 2 results but still well below the QPI target of 95%. As with previous years results there are a high proportion of cases with not recorded information, of T, N, or M stage, in both NOSCAN and WoSCAN, which accounts for the considerably lower percentage performance in these regions.

The Glasgow centre commented that the majority of cases not meeting the QPI did not have clinical TNM recorded prior to treatment. The centre stated that they will ensure clinical TNM is recorded in the MDT outcome for each patient, where possible. In some cases staging is incomplete at the time of MDT discussion and in these circumstances it will be the responsibility of the treating clinician to ensure that TNM is documented in the clinical record prior to treatment.

SCAN reviewed cases and reasons provided for cases not meeting the QPI included cases where the staging CT was carried out after surgery, patient died before staging and definitive treatment was complete and cases that were initially thought to be benign and were subsequently diagnosed at surgery.

The Aberdeen centre has reviewed cases and stated that 1 out of 9 cases did not meet the target as CT was carried out after definitive treatment. However, the other 8 cases did not have TNM recorded. NHS Grampian are aware TNM staging has to be improved and will reinforce the need to complete the TNM section contained within the MDT proforma.

It was acknowledged at the formal review meeting that the intention of this QPI is to ensure that patients are appropriately staged and metastatic disease is identified prior to treatment. It is anticipated that this QPI will be amended to ensure that a staging CT is carried out before definitive treatment and that TNM will be recorded. It is likely that the requirement for TNM to be recorded prior to first treatment will be removed.

Action required:

- Aberdeen and Glasgow centres to ensure recording of TNM for all sarcomas at MDT meeting.
- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

QPI 4 – Surgical Margins

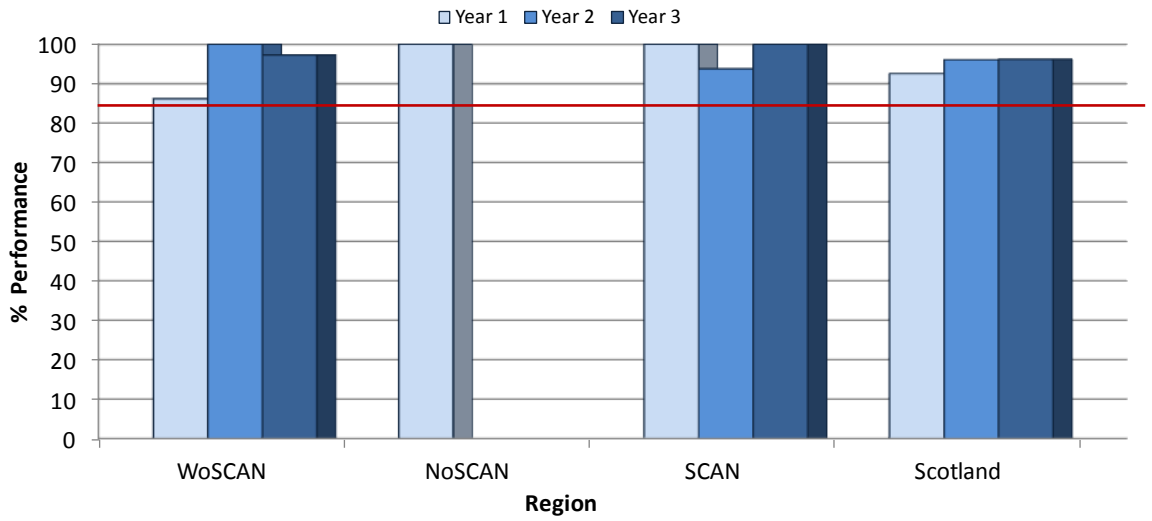
The surgical margin achieved within surgical resection impacts on local recurrence rates and survival of patients[1]. It is important that surgical procedures are planned in advance of surgery, this allows for the necessary treatment planning to take place before the initiation of treatment[1].

The target level for this QPI is set at 85% to account for situations where it is agreed due to anatomical constraints a planned positive surgical margin is acceptable.

QPI Title:	Patients with extremity sarcoma undergoing surgical resection should have their tumour adequately excised.
Numerator:	Number of patients with extremity sarcoma who undergo surgical resection with curative intent where R0* resection is achieved.
Denominator:	All patients with extremity sarcoma who undergo surgical resection with curative intent.
Exclusions:	Patients with cutaneous sarcomas.
Target:	85%

*R0 resection is a surgical resection where surgical margins are clear of microscopic disease.

Figure 5: Proportion of patients with extremity sarcoma undergoing surgical resection who have their tumour adequately excised.



	Performance	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	97.3%	36	37	0	0.0%	0	0.0%	0
NoSCAN	-	-	-	0	0.0%	0	0.0%	8
SCAN	100.0%	13	13	0	0.0%	0	0.0%	0
Scotland	96.2%	51	53	0	0.0%	0	0.0%	8

Data has been restricted for NoSCAN due to small numbers. The small number of cases in NoSCAN could be attributed to cases not being included due to intent of surgery not being recorded. Fourteen cases were not included within the denominator in Year 2 and 8 cases in Year 3.

In Scotland 96.2% of patients with extremity sarcoma undergoing surgical resection with curative intent achieved R0* resection, meeting the QPI target of 85% for the third consecutive year. WoSCAN and SCAN both exceeded the target with performance of 97.3% and 100% respectively.

The Aberdeen centre commented that although this target was passed, there were 8 cases which were not included due to the lack of operation intent documentation. As with the TNM staging, this needs to be discussed and recorded at the MDT.

Action required:

- NoSCAN should review processes for the recording of 'intent of surgery' to reduce the proportion of cases that have not-recorded values.
- The Dundee centre to review cases not meeting the QPI and report results to NMCN.

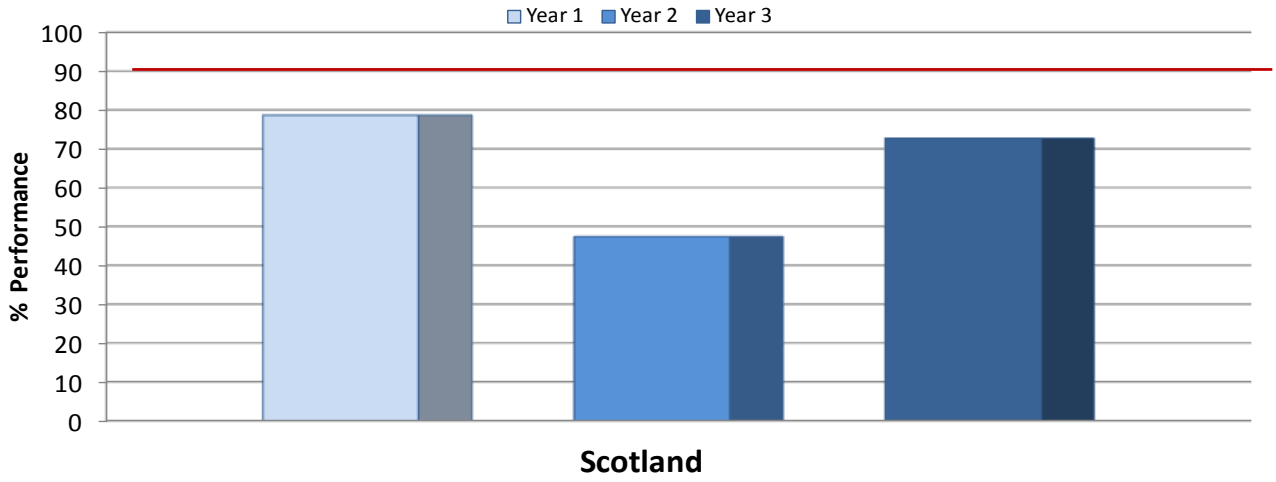
QPI 5 – Molecular Staging of Gastrointestinal Stromal Tumour

All small bowel GISTs and all intermediate and high risk GISTs, regardless of location, should have mutational analysis performed[1]. Mutational analysis provides information on the tumour, allows for a more detailed prognosis and influences the choice of treatment[1]. Mutational analysis for this patient group should include at least assessment of KIT exons 9 and 11, and PDGFRA exons 12 and 18 for mutations. If apparently wildtype, additional exons will need to be examined to rule out rare primary mutations[1].

The 90% target level accounts for situations where the patient died before the clinical features of GIST, small bowel GISTs and primary metastatic GIST were identified and reported[1].

QPI Title:	Patients with high or moderate risk gastrointestinal stromal tumour (GIST), small bowel GISTs and primary metastatic GIST should have mutational analysis within 3 months of diagnosis.
Numerator:	Number of patients with high or moderate risk GIST, small bowel GISTs and primary metastatic GIST who have mutational analysis within 3 months of diagnosis.
Denominator:	All patients with high or moderate risk GIST, small bowel GISTs and primary metastatic GIST at diagnosis.
Exclusions:	No exclusions
Target:	90%

Figure 6: Proportion of patients with high or moderate risk GIST, small bowel GISTs and primary metastatic GIST who have mutational analysis within 3 months of diagnosis.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
Year 1	78.6%	11	14	0	0.0%	0	0.0%	23
Year 2	47.4%	9	19	4	21.1%	0	0.0%	20
Year 3	72.7%	8	11	0	0.0%	0	0.0%	12

Overall performance across Scotland in Year 3 is 72.7% against the 90% target with 8 of 11 cases meeting the QPI criteria. Individual region numbers were restricted due to low numbers.

Year 1 results are not directly comparable to Year 2 and 3 as there were changes to the measurability following baseline review and the denominator now measures molecular analysis being undertaken within 3 months of diagnosis rather than 6 months of diagnosis as per Year 1.

It is important to note that there were a number of cases which were not recorded for the denominator criteria; therefore these cases were not included in the analysis, which has lowered the numbers included even further. This is principally due to TNM staging data not being complete, as per QPI 3.

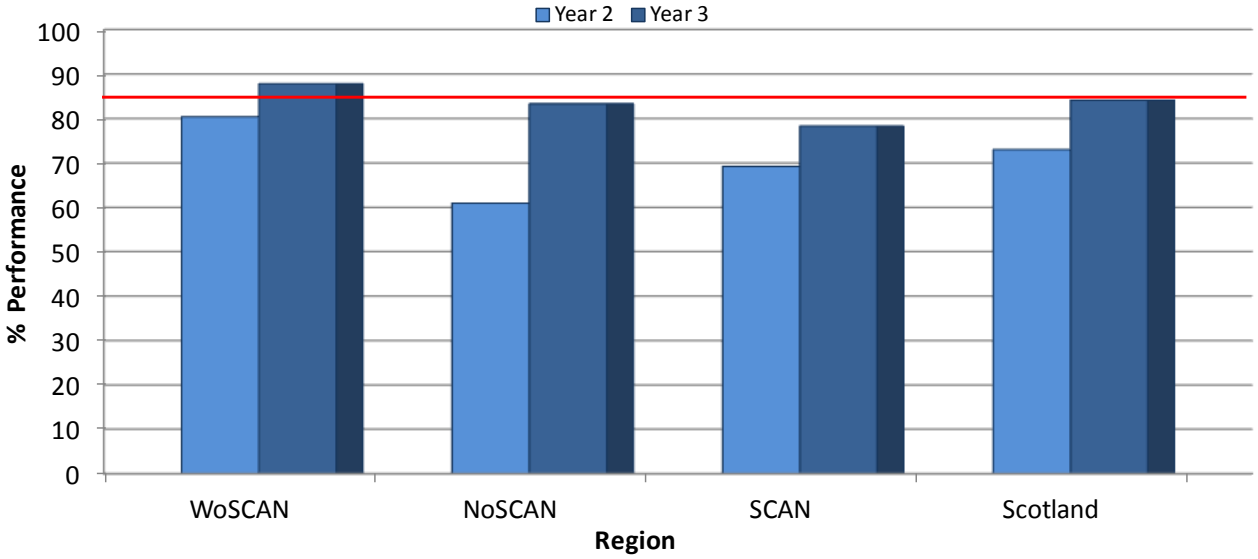
The Glasgow centre commented that documentation of mutational analysis in the clinical record at present relies on the pathologist issuing a supplementary report including the results of mutational analysis. The centre will review our processes to ensure that (i) mutational analysis is performed in all cases and (ii) results of mutational analysis are reliably copied to the clinical record.

QPI 6 – Limb Sparing Surgery

Studies have shown that surgical treatment for approximately 90-95% of patients involves limb sparing surgery[1]. Rates of amputation have decreased over the years and this treatment approach is typically reserved for patients with locally advanced disease that cannot be managed by limb sparing surgery[1]. Patients who undergo limb sparing surgery have improved quality of life post treatment, uncompromised survival rates and local tumour control, as well as, an asymptomatic and functional limb[1]. This indicator has a target level of 85% to account for patient choice.

QPI Title:	Patients with extremity sarcoma should have primary limb-sparing surgery.
Numerator:	Number of patients with extremity sarcoma who undergo a primary limb-sparing surgery.
Denominator:	All patients with extremity sarcoma.
Exclusions:	Patients who died before first treatment and patients with cutaneous sarcomas.
Target:	85%

Figure 7: Proportion of patients with extremity sarcoma who undergo a primary limb-sparing surgery.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	87.8%	36	41	0	0.0%	0	0.0%	0
NoSCAN	83.3%	15	18	0	0.0%	0	0.0%	0
SCAN	78.3%	18	23	0	0.0%	0	0.0%	0
Scotland	84.1%	69	82	0	0.0%	0	0.0%	0

Overall in Scotland 84.1% of patients with extremity sarcoma underwent a primary limb sparing surgery, just short of the 85% QPI target. WoSCAN achieved the target with a performance of 87.8%. NoSCAN was only slightly below the target with 83.3%. Encouragingly each region showed improvement from Year 2 data.

SCAN achieved 78.3% against the 85% target and commented that all cases had been reviewed. The majority of cases not meeting were non surgical cases who were treated with radiotherapy.

The Aberdeen Centre reviewed all cases not meeting the QPI and detailed clinical commentary was provided.

QPI 6 will be reviewed following the formal review meeting as comments received suggest QPI 6 may be including some site codes that should be excluded.

Action required:

- The Dundee centre to review cases that did not undergo primary limb sparing surgery and report results to NMCN.

QPI 7 – Primary Flap Reconstruction

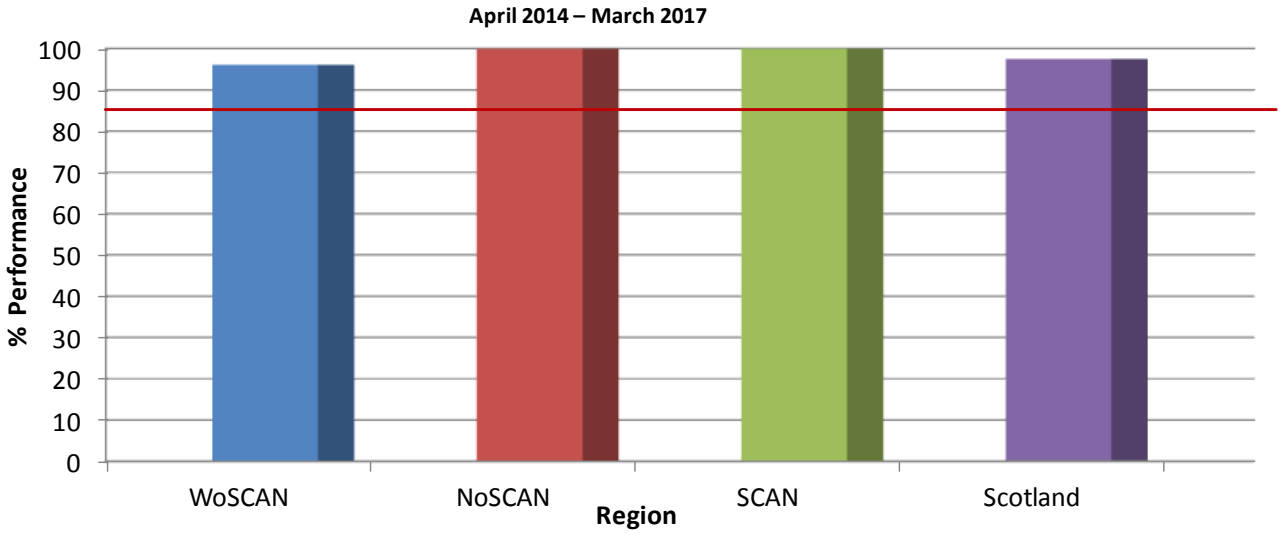
After surgical resection, reconstructive surgery may be needed to cover wounds, preserve function and/or improve the cosmetic outcome[1]. When conducting reconstructive surgery, surgeons should consider the flap success rate as one factor in choosing the best construction for any individual patient[1].

For the purpose of reporting this QPI a successful primary flap has been defined as a patient who does not need to return to theatre for unplanned surgery. The target level for this QPI is 85%; this is to account for situations where re-exploration of flaps is undertaken due to vascular insufficiency.

QPI Title:	Patients with extremity sarcoma should have successful primary flap reconstruction following surgical resection.
Numerator:	Number of patients with extremity sarcoma who undergo successful* primary flap reconstruction.
Denominator:	All patients with extremity sarcoma who undergo primary flap reconstruction.
Exclusions:	Patients with cutaneous sarcomas.
Target:	85%

*Successful has been defined as patients who do not need to return to theatre for unplanned surgical debridement of a sufficient volume of the flap reconstruction such that secondary reconstruction is required.

Figure 8: Proportion of patients with extremity sarcoma who undergo successful* primary flap reconstruction.



	Performance (%)	Numerator	Denominator	Not recorded numerator	Not recorded numerator (%)	Not recorded exclusions	Not recorded exclusions (%)	Not recorded denominator
WoSCAN	96.1%	49	51	0	0.0%	0	0.0%	2
NoSCAN	100%	18	18	0	0.0%	0	0.0%	2
SCAN	100%	12	12	0	0.0%	0	0.0%	0
Scotland	97.5%	79	81	0	0.0%	0	0.0%	2

Due to the small numbers meeting the denominator criteria in each year of analysis individual year results cannot be presented therefore Figure 8 shows aggregated three year results.

All three regions exceeded the 85% target with NoSCAN and SCAN achieving 100%. Overall Scotland performance was 97.5% with 79 of 81 patients undergoing a successful primary flap reconstruction.

QPI 8 – Post Operative Radiotherapy

Post operative radiotherapy is advocated for those with a deep tumour (any size, grade 2 or 3), who have had an R0 or R1 excision. Evidence suggests that post operative radiotherapy should start within 3 months of surgery[1]. The target level for this indicator is set at 90% to account for situations where co-morbidities, severe post-operative complications or frailty can mean the patient is not suitable for post operative radiotherapy.

QPI Title:	Patients with a high grade, deep*, extremity soft tissue sarcoma should receive radiotherapy within 3 months of a planned marginal or wide local excision.
Numerator:	Number of patients, aged 16 and over, with grade 2 or 3, deep*, extremity soft tissue sarcoma undergoing a planned marginal or wide local excision who commenced post operative radiotherapy within 3 months of surgery.
Denominator:	All patients, aged 16 and over, with grade 2 or 3, deep*, extremity soft tissue sarcoma undergoing a planned marginal or wide local excision.
Exclusions:	Patients undergoing amputation. Patients who undergo a compartmentectomy. Patients who have had pre operative radiotherapy. Patients with rhabdomyosarcoma. Patients with a tumour superficial to the fascia. Patients with cutaneous sarcomas.
Target:	90%

* Deep can be defined as: deep to fascia, this is determined radiologically.

Due to the small numbers meeting the denominator criteria in each year of analysis individual region results cannot be presented. Scotland performance against this QPI for Year 3 was 75% (6 out of 8 cases), this compares to 62.5% in year 2 (5 out of 8 cases). 3 year aggregated results for Scotland give an overall performance of 76.9% with 20 of 26 cases meeting the QPI target.

QPI 9 – Neo-adjuvant Systemic Anti Cancer Therapy for Osteosarcoma or Ewing's Sarcoma

Evidence suggests that patients with Osteosarcoma or Ewing's sarcoma should be given combination neoadjuvant SACT[1]. Due to the intensity and toxicity of this neoadjuvant combination chemotherapy it may not be clinically indicated for patients over the age of 40 (osteosarcoma) or 50 (Ewing's sarcoma)[1]. This is due to a number of factors including performance status. Patients who are unsuitable for this type of treatment are considered for alternative treatment plans. The target level for this QPI is 90% this is designed to account for factors of patient choice, co-morbidities and fitness for treatment.

QPI Title:	Patients with osteosarcoma or Ewing's sarcoma should receive neoadjuvant combination SACT when clinically indicated.
Numerator:	Number of patients with osteosarcoma or Ewing's sarcoma who are under the age of 40 (50 for Ewing's sarcoma) who undergo neoadjuvant combination SACT.
Denominator:	All patients with osteosarcoma or Ewing's sarcoma who are under the age of 40 (50 for Ewing's sarcoma).
Exclusions:	Patients undergoing emergency primary surgery or radiotherapy.
Target:	90%

For the third consecutive year only a very small number of patients were included within the measurement of this QPI across Scotland and therefore individual regional results cannot be presented at this time. At a national level, aggregated 3 year data shows that 9 of 13 patients with osteosarcoma under the age of 40 underwent neo-adjuvant combination SACT resulting in a performance of 69.2% against the 90% target.

Aggregated 3 year results for Ewing's sarcoma show that 88.9% (8 out of 9) of patients under the age of 50 underwent neo-adjuvant combination SACT.

It should be noted that data for osteosarcoma and Ewing's sarcoma were reported separately for local Board management purposes.

QPI 10 – Adjuvant Oncological Treatment for Gastrointestinal Stromal Tumours

Data for clinical trials demonstrated that adjuvant imatinib therapy given for a period of three years compared to one year, significantly improved the recurrence free survival in adult patients at significant risk of relapse following resection of GIST[1]. The target level of this indicator is set at 85% to account for the fact that due to co-morbidities and fitness not all patients will be suitable for imatinib following complete macroscopic resection.

QPI Title:	Patients with high risk* Gastrointestinal Stromal Tumour (GIST) should commence adjuvant imatinib within 3 months of complete macroscopic resection.
Numerator:	Number of patients, aged 16 and over, with high risk* GIST undergoing complete macroscopic resection who commence adjuvant imatinib within 3 months of complete macroscopic resection.
Denominator:	All patients aged 16 and over, with high risk* GIST undergoing complete macroscopic resection.
Exclusions:	Patients who are enrolled in a clinical trial.
Target:	85%

* High risk is defined as: patients with large GIST tumours that have a high chance of recurring.

Only a very small number of patients were included within the measurement of this QPI across Scotland (3 patients in all 3 years of analysis) and therefore figures cannot be presented at this time. Results were circulated to centres for local management purposes.

During discussion at the Sarcoma education day it was suggested that the small number of patients included in this QPI may be due to missing operation codes within the measurability document. This was discussed at the formal review meeting, it is anticipated that the denominator specification will be updated to overcome any potential issues with operation codes.

QPI 11 – 30 Day Mortality

Treatment related mortality is a marker of the quality and safety of the whole service provided by the Multi Disciplinary Team (MDT)[1]. Treatment should only be undertaken in individuals that may benefit from that treatment, that is, treatments should not be undertaken in futile situations. This QPI is intended to ensure treatment is given appropriately, and the outcome reported on and reviewed[1].

The QPI is split into 2 separate sections; the first measures the proportion of patients who die within 30 days of treatment with curative intent and the second those patients who die within 30 days of palliative treatment. The target level is less than 10% for curative treatments and less than 15% for palliative treatments.

QPI Title:	30 day mortality following curative treatment for sarcoma.
Numerator:	Number of patients with sarcoma who undergo surgical resection or oncological treatment with curative intent who die within 30 days of treatment.
Denominator:	All patients with sarcoma who undergo surgical resection or oncological treatment with curative intent.
Exclusions:	No exclusions.
Target:	<10%

Table 1: Proportion of patients with sarcoma who undergo surgical resection or oncological treatment with curative intent who die within 30 days of treatment.

	QPI Target	WoSCAN	NoSCAN	SCAN	Scotland
Surgery	<10 %	0.9%	0.0%	0.0%	0.7%
Radical Radiotherapy	<10 %	n/a	0.0%	0.0%	0.0%
Neo-Adjuvant Chemotherapy	<10%	0.0%	0.0%	0.0%	0.0%
Neo-Adjuvant Radiotherapy	<10%	0.0%	0.0%	0.0%	0.0%
Adjuvant Chemotherapy	<10%	0.0%	0.0%	0.0%	0.0%
Adjuvant Radiotherapy	<10%	0.0%	0.0%	0.0%	0.0%
Chemoradiotherapy	<10%	n/a	n/a	0.0%	0.0%
Biological Therapy	<10%	0.0%	0.0%	0.0%	0.0%

The 30 day mortality target for patients undergoing treatment with curative intent was achieved at regional level for all treatment types.

QPI Title:	30 day mortality following palliative treatment for sarcoma.
Numerator:	Number of patients with sarcoma who undergo palliative treatment who die within 30 days of treatment.
Denominator:	All patients with sarcoma who undergo palliative treatment.
Exclusions:	No exclusions.
Target:	<15%

Table 2: Proportion of patients with sarcoma who undergo palliative radiotherapy or palliative chemotherapy who die within 30 days of treatment.

	QPI Target	WoSCAN	NoSCAN	SCAN	Scotland
Palliative Radiotherapy	<15 %	25%	12.5%	0.0%	15.8%
Palliative Chemotherapy	<15%	0.0%	25.0%	33.3%	13.0%

Overall in Scotland 15.8% (3 out of 19) of patients who received palliative radiotherapy died within 30 days of treatment. This is just marginally over the <15% target. With regards to palliative chemotherapy treatment 3 out of 23 cases in Scotland died within 30 days of treatment. This resulted in a performance of 13% which is below the <15% target. SCAN and NoSCAN were above the QPI target however, the number of patients included in the denominators is low and this can have a considerable effect on proportions.

The Glasgow centre commented that cases had been reviewed and death was due to progressive disease and not treatment related.

Action Required:

- NoSCAN and SCAN should discuss cases where patients died within 30 days of palliative radiotherapy/chemotherapy at Morbidity and Mortality meeting and provide feedback to NMCN.

Clinical Trial Access QPI

Clinical trials are necessary to demonstrate the efficacy of new therapies and other interventions. Furthermore, evidence suggests improved patient outcomes from participation in clinical trials[1]. Data definitions and measurability criteria to accompany the Clinical Trial QPI are available from the HIS website[1].

The clinical trials QPI is measured utilising Scottish Cancer Research Network (SCRN) data and ISD incidence data, as is the methodology currently utilised by the Chief Scientist Office (CSO) and National Cancer Research Institute (NCRI). Utilising SCRN data allows for comparison with CSO published data and ensures capture of all clinical trials recruitment, not solely first line treatment trials, as contained in the clinical audit data. Given that a significant proportion of clinical trials are for relapsed disease this is felt to be particularly important in driving quality improvement. This methodology utilises incidence as a proxy for all patients with cancer. This may slightly over, or underestimate, performance levels, however this is an established approach currently utilised by NHS Scotland[1].

The following definitions are used to distinguish between interventional clinical trials and translational research:

Interventional Clinical Trial: A clinical study in which participants are assigned to receive one or more interventions (or no intervention) so that researchers can evaluate the effects of the interventions on biomedical or health-related outcomes. The assignments are determined by the study protocol. Participants may receive diagnostic, therapeutic, or other types of interventions.

Translational Research: Translational research transforms scientific discoveries arising from laboratory, clinical, or population studies into clinical applications to reduce cancer incidence, morbidity, and mortality.

QPI Title:	All patients should be considered for participation in available clinical trials wherever eligible.
Numerator:	Number of patients with sarcoma enrolled in an interventional clinical trial or translational research.
Denominator:	All patients with sarcoma.
Exclusions:	No exclusions.
Target:	Interventional 7.5% Translational 15%

Overall for patients in Scotland, 8 (2.4%) patients were recruited to interventional clinical trials for sarcoma and 15 (4.5%) patients were recruited in 2016 to translational research. No individual region achieved the QPI targets for clinical trials.

Table 3: List of clinical trials carried out in 2016 and the number of patients with sarcoma recruited into each clinical trial per year.

Trial Type	Project Title	Scotland Recruited in 2016
Interventional	CDI-CS-002	-
	HIPROC	-
	EpSSG NRSTS 2005	-
	Euro Ewing 2012	-
	Axi-STS	-
	STS 2006 03 (NRSTS)	-
	STS 2006 04 RMS 2005 (ESSG1)	-
Total (Interventional)		**8**
Translational	GEMCAS	11
	Chronic Stress and Reproductive Function in Female Cancer Survivors	-
Total (Translational)		15

(-) Data is not shown where the denominator is less than 5.

At the recent formal review of the Clinical Trials Access QPI, there was extensive discussion around the evolution of clinical trials, specifically with the move to more genetically selective trials. It was proposed that performance relating to equity of access was better measured by examining the number of patients consented for participation in a clinical trial rather than only those who are enrolled. There are a number of patients who undergo screening but do not proceed to enrolment for various reasons, e.g. they do not have the mutation required for entry on to the trial.

It is also more common for current interventional clinical trials to have a translational aspect rather than separate translational research. As these are no longer distinct categories the QPI will now measure the number of patients consented into clinical trials and the number of patients enrolled as a whole, rather than by trial type. The revised Clinical Trials Access QPI document is available from HIS website[1].

5. Conclusions

Cancer audit underpins much of the development and service improvement work of Managed Clinical Networks and the regular reporting of activity and performance are fundamental in assuring the quality of care delivered across NHSScotland. The development and implementation of Sarcoma QPIs will help drive continuous quality improvement in patient care whilst ensuring that activity is focussed on those areas that are most important in terms of improving survival and patient experience. In addition, the introduction of QPIs and the associated governance structure will facilitate regular monitoring and reporting of data to ensure equitable care across the country.

Results presented in this report demonstrate that work is still required to ensure patients with sarcoma receive an equitable and consistent standard of care across NHS Scotland. It is evident that many of the QPI targets set have been challenging for centres to achieve and some variance and a number of areas for improvement have been highlighted. It should however be noted that given the rarity of sarcoma numbers included within the measurement of the majority of indicators are small and therefore percentages should be compared with caution.

This audit report has identified areas where data capture must improve to enable more meaningful analysis of performance against QPIs in the coming years, specifically with regards to TNM staging and intent of surgery. However overall case ascertainment and data capture has improved in the third year of data collection and analysis. This provides a good foundation from which to measure service improvement in future years, however further work is required.

It is extremely encouraging that all regions have met the target level for a number of QPIs, including: primary flap reconstruction and 30 day mortality following curative treatment.

NHS Boards are asked to develop local Action/Improvement Plans in response to the findings presented in the report

Action required:

QPI 1 – Histological Diagnosis

- Aberdeen Centre to provide further detail on cases not meeting the QPI to NMCN.
- Dundee centre to review cases not meeting the QPI and report results to NMCN.

QPI 2 – MDT Meeting

- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

QPI3 – Clinical Staging

- Aberdeen and Glasgow centres to ensure recording of TNM for all sarcomas at MDT meeting.
- The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.

QPI 4 – Surgical Margins

- NoSCAN should review processes for the recording of ‘intent of surgery’ to reduce the proportion of cases that have not-recorded values.
- The Dundee centre to review cases not meeting the QPI and report results to NMCN.

QPI 6 – Limb Sparing Surgery

- The Dundee centre to review cases that did not undergo primary limb sparing surgery and report results to NMCN.

QPI 11 - 30 day Mortality

- NoSCAN and SCAN should discuss cases where patients died within 30 days of palliative radiotherapy/chemotherapy at Morbidity and Mortality meeting and provide feedback to NMCN.

Completed Action Plans should be returned to WoSCAN within two months of publication of this report.

Progress against these plans will be monitored by the MCN Advisory Board and any service or clinical issue which the Advisory Board considers not to have been adequately addressed will be escalated to the NHS Board Territorial Lead Cancer Clinician and Regional Lead Cancer Clinician.

Additionally, progress will be reported to the Regional Cancer Advisory Group (RCAG) annually by NHS Board Territorial Lead Cancer Clinicians and MCN Clinical Leads, as part of the regional audit governance process to enable RCAG to review and monitor regional improvement.

Acknowledgement

This report has been prepared using clinical audit data provided by each of the fourteen NHS Boards in Scotland. We would like to thank colleagues in the clinical effectiveness departments throughout Scotland for gathering, submitting and verifying these data. We would also like to thank the clinicians, nurses and others involved in the management of patients with sarcoma for their contribution to the clinical audit process.

Abbreviations

ARI	Aberdeen Royal Infirmary
ACaDMe	Acute Cancer Deaths and Mental Health
BWoSCC	Beatson West of Scotland Cancer Centre
CMG	Clinical Management Guideline
CT	Computed Tomography
eCASE	Electronic Cancer Audit Support Environment
GGH	Gartnavel General Hospital
GIST	Gastrointestinal Stromal Tumour
GRI	Glasgow Royal Infirmary
HIS	Healthcare Improvement Scotland
ISD	Information Services Division
MDT	Multidisciplinary Team
NW	Ninewells Hospital
NMCN	National Managed Clinical Network
NCQSG	National Cancer Quality Steering Group
NHSGGC	NHS Greater Glasgow and Clyde
NOSCAN	North of Scotland Cancer Network
QEUH	Queen Elizabeth University Hospital
QPI (s)	Quality Performance Indicator (s)
RCAG	Regional Cancer Advisory Group
RHC	Royal Hospital for Children
RHSC	Royal Hospital for Sick Children
RIE	Royal Infirmary of Edinburgh
SACT	Systemic Anti Cancer Therapy
SCAN	South and East of Scotland Cancer Network
TNM	Classification of Malignant Tumours

WGH	Western General Hospital
WHO	World Health Organisation
WoS	West of Scotland
WoSCAN	West of Scotland Cancer Network

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Appendix 1: NHS Board Action Plans

A summary of actions for each NHS Board has been included within the Action Plan templates in Appendix 1. Completed Action Plans should be returned to WoSCAN within two months of publication of this report.

Action / Improvement Plan

Region:	WoSCAN
Action Plan Lead:	
Date:	

KEY (Status)	
1	Action fully implemented
2	Action agreed but not yet implemented
3	No action taken (please state reason)

No	**Action Required**	**Health Board Action Taken**	**Timescales**		**Lead**	**Progress/Action Status**	**Status (see key)**
			Start	**End**			
	Action	*Detail specific actions that will be taken by the NHS Board.*	*Insert date*	*Insert date*	*Insert name of responsible lead for each specific action.*	*Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.*	*Insert No. from key above*
1.	*QPI3 – Clinical Staging* Glasgow centre to ensure recording of TNM for all sarcomas at MDT meeting.						

Action / Improvement Plan

Region:	NoSCAN
Action Plan Lead:	
Date:	

KEY (Status)	
1	Action fully implemented
2	Action agreed but not yet implemented
3	No action taken (please state reason)

No	**Action Required**	**Health Board Action Taken**	**Timescales**		**Lead**	**Progress/Action Status**	**Status (see key)**
			Start	**End**			
	Action	*Detail specific actions that will be taken by the NHS Board.*	*Insert date*	*Insert date*	*Insert name of responsible lead for each specific action.*	*Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.*	*Insert No. from key above*
1.	*QPI 1 – Histological Diagnosis* Aberdeen Centre to provide further detail on cases not meeting the QPI to NMCN.						
2.	*QPI 1 – Histological Diagnosis* Dundee centre to review cases not meeting the QPI and report results to NMCN.						
3.	*QPI 2 – MDT Meeting* The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.						
4.	*QPI3 – Clinical Staging* Aberdeen centre to ensure recording of TNM for all sarcomas at MDT meeting.						
5.	*QPI3 – Clinical Staging* The Dundee centre to review cases not discussed at MDT prior to definitive treatment and report results to NMCN.						
6.	*QPI 4 – Surgical Margins* NoSCAN should review processes for the recording of 'intent of surgery' to reduce the proportion of cases that have not-recorded values.						
7.	*QPI 4 – Surgical Margins* The Dundee centre to review cases not meeting the QPI and report results to NMCN.						

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
8.	*QPI 6 – Limb Sparing Surgery* The Dundee centre to review cases that did not undergo primary limb sparing surgery and report results to NMCN.						
9.	*QPI 11 - 30 day Mortality* NoSCAN should discuss cases where patients died within 30 days of palliative radiotherapy/chemotherapy at Morbidity and Mortality meeting and provide feedback to NMCN.						

Action / Improvement Plan

Region:	SCAN
Action Plan Lead:	
Date:	

KEY (Status)	
1	Action fully implemented
2	Action agreed but not yet implemented
3	No action taken (please state reason)

No	**Action Required**	**Health Board Action Taken**	**Timescales**		**Lead**	**Progress/Action Status**	**Status (see key)**
			Start	**End**			
	Action	*Detail specific actions that will be taken by the NHS Board.*	*Insert date*	*Insert date*	*Insert name of responsible lead for each specific action.*	*Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.*	*Insert No. from key above*
1.	*QPI 11 - 30 day Mortality* SCAN should discuss cases where patients died within 30 days of palliative radiotherapy/chemotherapy at Morbidity and Mortality meeting and provide feedback to NMCN.						