NOSCAN
North of Scotland Cancer Network

NHS SCOTLAND

NORTH OF SCOTLAND PLANNING GROUP

Urological Cancer Managed Clinical Network

Audit Report

Testicular Cancer
Quality Performance Indicators

Patients diagnosed October 2015 – September 2016

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The North of Scotland Cancer Network (or NOSCAN), is one of the 3 regional Scottish Cancer Networks, which report to their respective regional NHS Board Planning Groups and for specific workstreams, to the Scottish Cancer Taskforce Group.

The principle role of NOSCAN is to support the organization, planning and delivery of regional and national cancer services, and thereby to ensure consistent and high quality cancer care is being provided equitably across the North of Scotland.

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EXECUTIVE SUMMARY

This publication reports the performance of cancer services in the six NHS Boards in the North of Scotland (NoS) for patients diagnosed with testicular cancer between October 2015 and September 2016. The quality of Board and regional performance are measured and reported against a set of nationally agreed standards (the Testicular Cancer Quality Performance Indicators, or 'QPIs') that were clinically identified and thereafter service implemented across Scotland. This is the second year in which QPIs results for Testicular Cancer have been collected and results are compared with those from 2014-2015.

In the North of Scotland during the 2015-2016 period audited:

- 63 patients diagnosed with testicular cancer were audited, a significant increase from the 32 patients diagnosed in 2014-2015.
- Overall case ascertainment was very high at 138%, considerably higher than the 66% in 2014-2015.
- The results reported were considered to be representative of testicular cancer services in the region.

Summary of QPI Results

QPI	QPI Target	Performance[b]			
		Grampian	Highland	Tayside	NOSCAN
QPI 1: Radiological Staging - Proportion of patients with testicular cancer who undergo Computer Tomography (CT) scanning, ideally contrast-enhanced CT, of the chest, abdomen and pelvis within 3 weeks of orchidectomy.	95%	85% n=27	85% n=13	80% n=15	**84% n=58**
QPI 2: Pre-operative Assessment - Proportion of patients with testicular cancer who undergo preoperative assessment of the testicle which, at a minimum, includes: (i) STMs, and (ii) testicular ultrasound.	95%	93% n=27	77% n=13	100% n=15	**91% n=58**
QPI 3: Primary Orchidectomy - Proportion of patients with testicular cancer who undergo primary orchidectomy within 2 weeks of ultrasonographic diagnosis.*	95%	52% n=27	67% n=15	67% n=15	**60% n=57**
QPI 4: Multi-Disciplinary Team Meeting - Proportion of patients with testicular cancer who are discussed at a MDT meeting to agree a definitive management plan post orchidectomy.	95%	100% n=27	100% n=14	100% n=18	**100% n=62**
QPI 5: Pathology Reporting - Proportion of patients with testicular cancer undergoing orchidectomy where the pathology report contains tumour type and size, vascular invasion and rete stromal invasion.	90%	96% n=27	100% n=14	100% n=17	**97% n=61**

QPI 6: Quality of Adjuvant Treatment - Proportion of patients with stage I seminoma receiving adjuvant single dose carboplatin AUC of 7mg/ml/min (AUC7), based on EDTA clearance, within 8 weeks of orchidectomy.	95%	91% n=11	-	-	**85% n=13**
QPI 7: Serum Tumour Markers - Proportion of patients with metastatic testicular cancer who undergo STMs 2 weeks before starting chemotherapy.	98%	83% n=6	50% n=6	-	**69% n=13**
QPI 8: Systemic Therapy - Proportion of patients with metastatic testicular cancer who undergo SACT within 3 weeks of a MDT decision to treat with SACT.	95%	100% n=6	33% n=6	-	**62% n=13**
QPI 9: Computed Tomography Scanning for Surveillance Patients - Proportion of patients with stage I testicular NSGCT (or mixed) under surveillance who undergo at least three CT scans of the abdomen +/- chest and pelvis within 14 months of diagnosis**	85%	Too few patients to report			
QPI 10: 30 Day Mortality - Proportion of patients with testicular cancer who die within 30 days of treatment for testicular cancer.					
(a) Orchidectomy*	<5%	0% n=27	0% n=16	0% n=14	**0% n=57**
(b) Radiotherapy	<5%	Too few patients to report			
(c) Chemotherapy	<5%	6% n=17	0% n=8	9% n=11	**5% n=39**
Clinical Trials Access - Proportion of patients with colorectal cancer who are enrolled in an interventional clinical trial or translational research.					
Interventional clinical trials	7.5%				0% n=46
Translational research	15%				4.3% n=46

Performance shaded pink where QPI target has not been met by NOSCAN.
[b] Excluding Boards with less than 5 patients.
* Results are analysed by Hospital of Diagnosis with the exception of QPIs 3 & 11(a), which are presented by 'Board of Surgery'.
** QPI reported 1 year in arrears, results for patients diagnosed 2014-2015

Within NOSCAN three out of 11 QPIs reported were achieved during this audit cycle. The main areas for concern relate to QPI1 and QPI3. Both of these QPIs are difficult to achieve as they require adequate resource (radiological and urological) and no patient related issues (e.g. unavailability, concurrent comorbidities necessitating greater preoperative work up, prior orchidectomy etc) to achieve the tight timelines in these QPIs.

Results from the second year of QPI reporting have helped to identify the following actions to improve on the quality of clinical services for patients with testicular cancer in the North of Scotland:

- **NHS Tayside to ensure that revisions to the patient pathway are implemented to ensure timely CT imaging and access to theatre provision.**

- **NHS Highland to examine their radiology resource.**

- **All NHS Boards to stress the importance of full serum tumour marker checking prior to definitive surgery.**

- **NHS Highland to assess urology resource and access to clinic and theatre time to improve the time to primary orchidectomy.**

- **NHS Tayside to ensure that staging information is collected for all patients so that they can be reported in QPI 6 and 7 where appropriate.**

- **NHS Highland to identify if there is a systematic problem with STM measurement.**

- **NHS Highland to identify if there is a systematic problem relating to patients accessing chemotherapy treatment on a timely basis.**

Contents

Executive Summary 3
Contents 6
1. **Introduction** 7
2. Background 7
2.1 National Context 7
2.2 North of Scotland Context 8
3. Methodology 8
4. Results 9
4.1 Case ascertainment 9
4.2 Age Distribution..... 10
4.3 Performance against Quality Performance Indicators (QPIs)..... 11
5. Conclusions 35
6. References 37
Appendix 38

1. Introduction

In 2010, the Scottish Cancer Taskforce established the National Cancer Quality Steering Group (NCQSG) to take forward the development of national Quality Improvement Indicators (QPIs) for all cancer types to enable national comparative reporting and drive continuous improvement for patients. In collaboration with the three Regional Cancer Networks (NOSCAN, SCAN & WoSCAN) and Information Services Division (ISD), the first QPIs were published by Healthcare Improvement Scotland (HIS) in January 2012. CEL 06 (2012) mandates all NHS Boards in Scotland to report on specified QPIs on an annual basis. Data definitions and measurability criteria to accompany the Testicular Cancer QPIs are available from the ISD website[1].

The need for regular reporting of activity and performance, to assure the quality of care delivered, was first set out as a fundamental requirement of a Managed Clinical Network (MCN) in NHS MEL(1999)10[2]. This has since been further restated and reinforced in HDL(2002)69[3], HDL (2007) 21[4], and most recently in CEL 29 (2012)[5].

This report assesses the performance of specialist cancer services for patients diagnosed with testicular cancer in the North of Scotland Cancer Network during the twelve months from 1st October 2015 to 30th September 2016.

Using clinical audit data, which has been collected at individual Board level for all patients diagnosed with testicular cancer during the period indicated, performance is reported against the Testicular Cancer Quality Performance Indicators (QPIs)[6] which were implemented for patients diagnosed on or after 1st October 2014. Results are reported both by Board, and collectively as a network, with supporting narrative to enhance understanding of performance outcomes.

2. Background

Six NHS Boards across the North of Scotland serve the 1.40 million population[7]. There were 63 patients diagnosed with testicular cancer in the North of Scotland between 1st October 2015 and 30th September 2016. The configuration of the Multidisciplinary Teams (MDTs) in the North of Scotland for the management of urological cancer, which includes testicular cancer, is set out below.

MDT	Constituent Hospitals
Grampian	Aberdeen Royal Infirmary, Balfour Hospital, Kirkwall, Gilbert Bain Hospital, Lerwick
Highland	Raigmore Hospital, Inverness
Tayside	Ninewells Hospital, Dundee

2.1 National Context

Latest available cancer registration figures indicate that with 218 cases recorded in Scotland during 2014, testicular cancer is one of the less common types of cancer in men, with incidence rates changing little over the past 10 years[8].

Relative survival from testicular cancer is higher than for any other tumour types in men. Survival from testicular cancer has increased considerably since 1987-1991, due to the substantial advances in treatment of this disease during this time[9]. The table below details

the percentage change in 1 and 5 year relative survival for patients diagnosed 1987-1991 to 2007-2011.

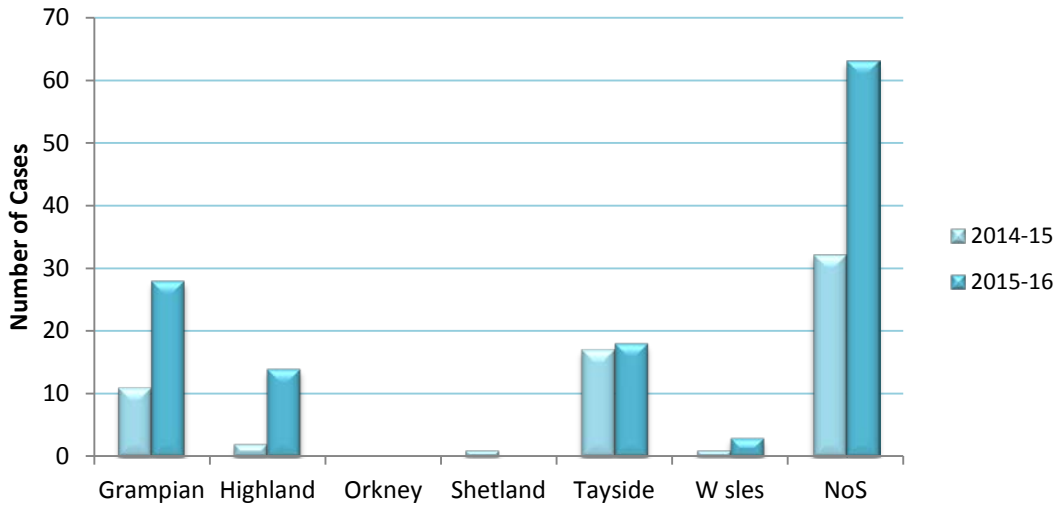
Relative age-standardised survival for testicular cancer in Scotland at 1 year and 5 years showing percentage change from 1987-1991 to 2007-2011[9].

Relative survival at 1 year (%)		Relative survival at 5 years (%)	
2007-2011	% change	2007-2011	% change
97.6%	+ 8.3%	93.4%	+ 11.9%

2.2 North of Scotland Context

Between 1st October 2015 and 30th September 2016, a total of 63 cases of testicular cancer were diagnosed in the North of Scotland and recorded through audit. The number of patients diagnosed within each Board is presented below.

	Grampian	Highland	Orkney	Shetland	Tayside	W Isles	NoS
Number of Patients 20015-16	**28**	**14**	**0**	**0**	**18**	**3**	**63**
% of NoS total	**44.4%**	**22.2%**	**0%**	**0%**	**28.6%**	**4.8%**	**100%**



Number of patients diagnosed with testicular cancer by Board of diagnosis, 2014-2015 and 2015-2016.

3. Methodology

The clinical audit data presented in this report were collected in accordance with an agreed dataset and definitions[1]. The data were entered into the electronic Cancer Audit Support Environment (eCASE): a secure centralised web-based database.

Data for patients diagnosed between 1st October 2015 and 30th September 2016 were locally collated by cancer audit staff within individual NHS Boards. These data and any comments

on QPI results were then signed-off at NHS Board level to ensure that the data was an accurate representation of service in each area prior to submission to NOSCAN for collation at a regional level. The reporting timetable was developed to take into account the patient pathway (i.e. time taken from first cancer diagnosis until the point at which all information required to measure the QPIs is available) and thereby ensure that a complete treatment record was available for the vast majority of cases.

Where the number of cases meeting the denominator criteria for any indicator is between one and four, the results has not been shown in 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 an asterisk (*). However, any commentary provided by NHS Boards relating to the impacted indicators will be included as a record of continuous improvement.

4. Results

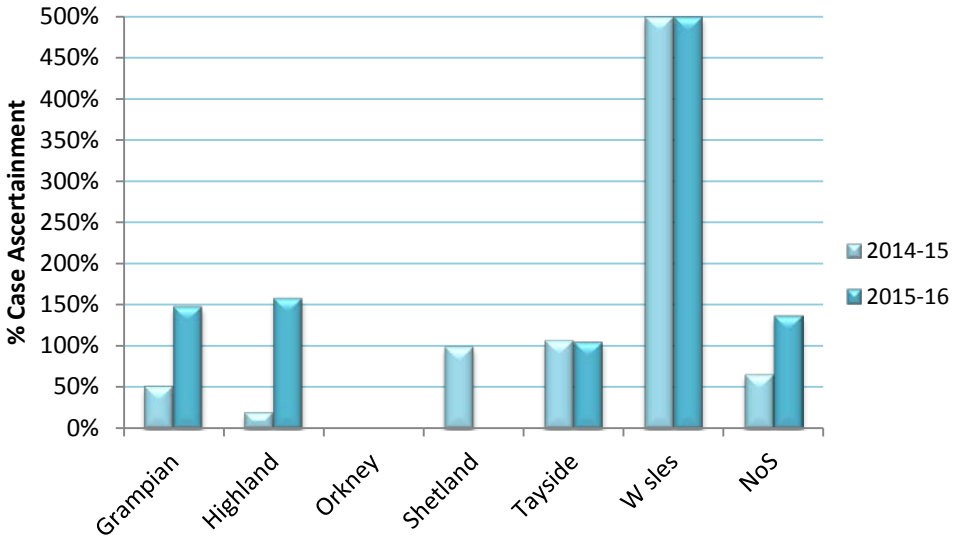
4.1 Case Ascertainment

Audit data completeness can be assessed from case ascertainment, the proportion of expected patients that have been identified through audit. Case ascertainment is calculated by comparing the number of new cases identified by cancer audit with the numbers recorded by the National Cancer Registry, by NHS Board of diagnosis. Cancer Registry figures were extracted from ACaDMe (Acute Cancer Deaths and Mental Health), a system provided by NHS Information Services Division (ISD). Due to the timescale of data collection and verification processes, National Cancer Registry data are not available for 2016. Consequently an average of the previous five years' figures is used to take account of annual fluctuations in incidence within NHS Boards.

Overall case ascertainment for the period reported in the North of Scotland was very high at 138%, considerably higher than the 2014-15 figures of 66.1%. Low levels of case ascertainment in 2014-115 were considered to reflect lower than usual numbers of patients being diagnosed in 2014-2015 rather than issues with patients being captured by audit and 2015-16 figures indicate that data capture by cancer audit was very good in this year.

The rarity of testis cancer and the small size of the Boards within NOSCAN will inevitably result in peaks and troughs in incidence and care must be taken not to over-interpret a single year of audit data.

Case ascertainment for each Board across the North of Scotland is illustrated in the figure below.



Case ascertainment by NHS Board for patients diagnosed with testicular cancer in 2014-2015 and 2015-2016.

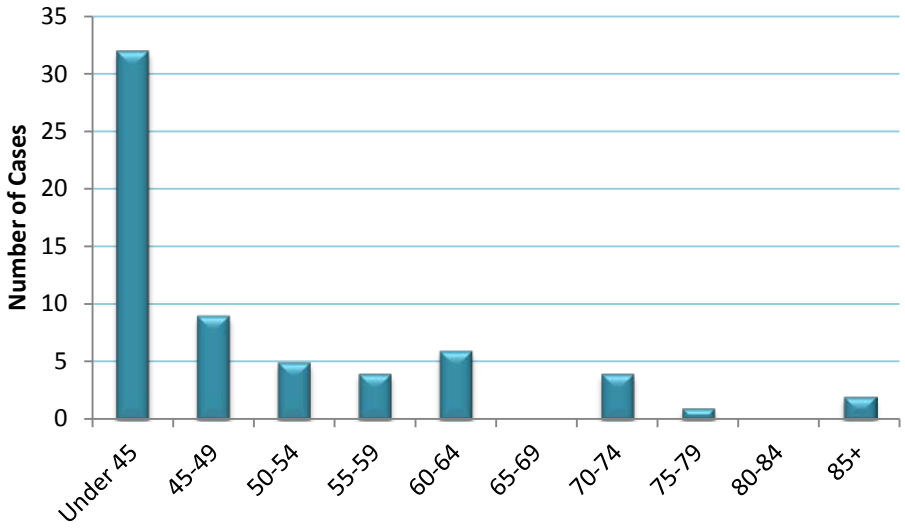
	Grampian	Highland	Orkney*	Shetland*	Tayside	W Isles*	NoS
Cases from audit 2015-16	28	14	0	0	18	3	**63**
ISD Cases (2011-2015)	19	9	0	1	17	0	**46**
% Case ascertainment 2015-16	**148.9%**	**159.1%**	**-**	**0.0%**	**105.9%**	**1500.0%**	**137.6%**
% Case ascertainment 2014-15	51.9%	20.0%	0.0%	100.0%	107.6%	500.0%	66.1%

QPI calculations based on data captured are considered to be representative of all patients diagnosed with testicular cancer in the North of Scotland during the audit period.

For patients included within the audit, data collection was very good, with only information on the staging of disease and whether patients were entered into clinical trials missing for some patients in NHS Tayside.

4.2 Age Distribution

The graph below shows the age distribution of patients diagnosed with testicular cancer in the North of Scotland in 2015-2016.



Age distribution of patients diagnosed with testicular cancer in NOSCAN 2015-16.

Age	Grampian	Highland	Orkney	Shetland	Tayside	W Isles	NOSCAN
Under 45	19	11	0	0	1	1	32
45-49	6	1	0	0	2	0	9
50-54	2	1	0	0	1	1	5
55-59	1	0	0	0	2	1	4
60-64	0	0	0	0	6	0	6
65-69	0	0	0	0	0	0	0
70-74	0	1	0	0	3	0	4
75-79	0	0	0	0	1	0	1
80-84	0	0	0	0	0	0	0
85+	0	0	0	0	2	0	2
Total	***28***	***14***	***0***	***0***	***18***	***3***	***63***

4.3 Performance against Quality Performance Indicators (QPIs)

Results of the analysis of Testicular Cancer 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 for most QPIs are presented by Board of diagnosis, however surgical QPIs (QPIs 3 and 10) are presented by Hospital of Surgery. Where performance is shown to fall below the target, commentary is often included to provide context to the variation. Specific regional and NHS Board actions have been identified to address issues highlighted through the data analysis where appropriate.

QPI 1: Radiological Staging

QPI 1: Radiological Staging: Patients with testicular cancer should be evaluated with appropriate imaging to detect the extent of disease and guide treatment decision making*.

Timely imaging is important to ensure treatment decision making can occur as soon as possible. Unnecessary delays can have an impact on prognostic groups and hence survival rates. CT scanning is an essential part of the staging of all germ cell tumours.

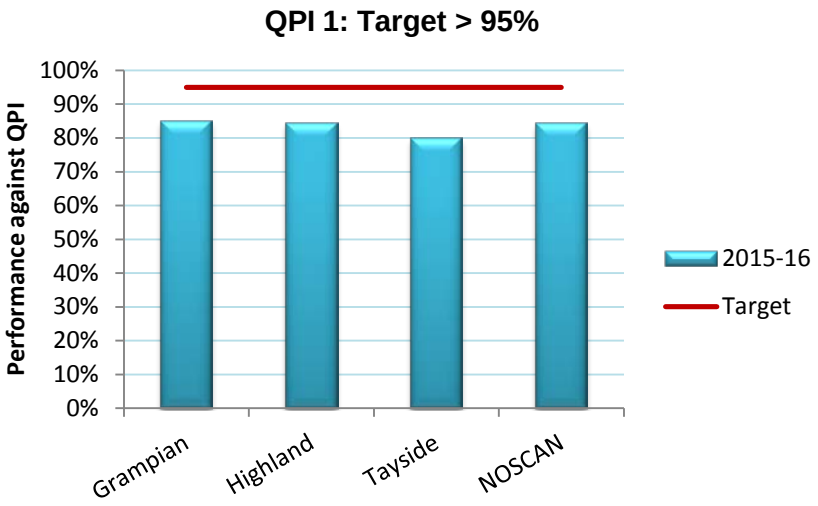
Numerator:	Number of patients with testicular cancer undergoing CT scanning of the chest, abdomen and pelvis within 3 weeks of orchidectomy.
Denominator:	All patients with testicular cancer undergoing orchidectomy.
Exclusions:	Patients undergoing chemotherapy prior to orchidectomy.
Target:	95%

***** This includes CT performed pre-operatively providing this is carried out no longer than 3 weeks prior to surgery.

QPI 1 Performance against target

Of the 58 patients diagnosed with testicular cancer in North of Scotland in 2015-2016 undergoing orchidectomy, 49 had a CT scan of the chest, abdomen and pelvis within 3 weeks of orchidectomy. This equates to a rate of 84.5%, which is does not meet the target rate of 95%. It is not possible to compare results with the previous year due to changes in the way this QPI is measured.

This QPI was only met in one Board with patient diagnosed with testicular cancer, NHS W Isles.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator
Grampian	**85.2%**	23	27	0	0%	0	0%	0
Highland	**84.6%**	11	13	0	0%	0	0%	0
Tayside	**80.0%**	12	15	0	0%	0	0%	0
W Isles*	**-**	-	-	-	-	-	-	-
NoS	**84.5%**	**49**	**58**	**0**	**0%**	**0**	**0%**	**0**

In NOSCAN, none of the three boards listed achieved the target of more than 95%, each achieving between 80 and 90%.

In NHS Grampian, four patients did not meet the target, 3 failing by no more than 4 days (23 days, 23 days, 25 days) and one failing by 12 days (33 days). For 1 patient, the required timing for the scan was not clear enough on the request; for 1 patient, there was a delay in informing oncology of orchidectomy date leading to a delay in booking the scan; for 1 patient, the scan was requested for within 3 weeks (with the dates specified), but the scan was booked for the following week; for the patient with the longest delay, the scan was delayed by the patient due to prearranged holidays. There is therefore no single factor resulting in a systematic problem.

In NHS Tayside, the pathway is in the process of being updated with increased CNS involvement to ensure CT imaging is undertaken in a timely manner.

In NHS Highland, a resource limitation in Radiology has been identified as a contributory factor.

Actions Required:

- **NHS Tayside to ensure that revisions to the patient pathway are implemented to ensure timely imaging.**
- **NHS Highland to examine their radiology resource.**

QPI 2: Pre-operative Assessment

QPI2: Pre-operative Assessment: Patients with testicular cancer should have pre-operative assessment of the testicle and Serum Tumour Markers (STMs).

In most instances, the diagnosis of testicular tumours is established with a carefully performed physical examination and scrotal ultrasound.

When conducting pre-operative assessments, evidence has demonstrated the importance of investigating STM concentrations and conducting a testicular ultrasound.

Numerator: Number of patients with testicular cancer undergoing orchidectomy, who undergo a preoperative assessment of the testicle which, at a minimum, includes: (i) STMs (ii) testicular ultrasound.

Denominator: All patients with testicular cancer undergoing orchidectomy.

Exclusions:

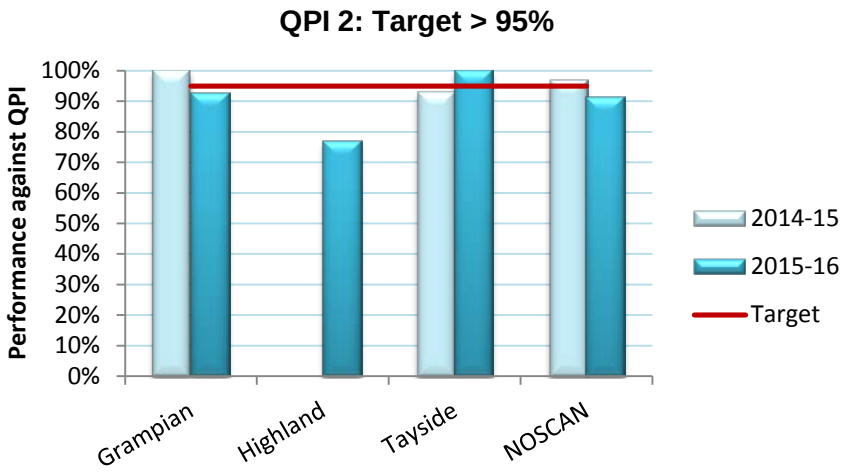
- Patients who refuse to undergo assessment.
- Patients undergoing chemotherapy prior to orchidectomy.

Target: 95%

QPI 2 Performance against target

Across the North of Scotland, 53 of the 58 patients included within the QPI (91.4%) had a preoperative assessment of the testicle which included STMs and testicular ultrasound, below the target rate of 95% and less than the 2014-15 figure of 96.6%.

This QPI was met by two of the five NHS Boards with patients diagnosed with testicular cancer, NHS Tayside and NHS W Isles.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**92.6%**	25	27	0	0%	0	0%	0	-7.4%
Highland	**76.9%**	10	13	0	0%	0	0%	0	-
Tayside	**100%**	15	15	0	0%	0	0%	0	+7.1%
W Isles*	**-**	-	-	-	-	-	-	-	-
NoS	**91.4%**	**53**	**58**	0	0%	0	0%	0	**-5.2%**

NOSCAN narrowly failed to achieve this target, with 2 patients in Grampian and 2 patients in Highland not having 'lactate dehydrogenase' checked prior to surgery.

Actions Required:

- **All NHS Boards to stress the importance of full serum tumour marker checking prior to definitive surgery.**

QPI 3: Primary Orchidectomy

QPI3: Primary Orchidectomy: Patients with testicular cancer should have primary orchidectomy within 2 weeks of ultrasonographic diagnosis.

Orchidectomy is the primary therapeutic intervention for patients who have early-stage testicular cancer.

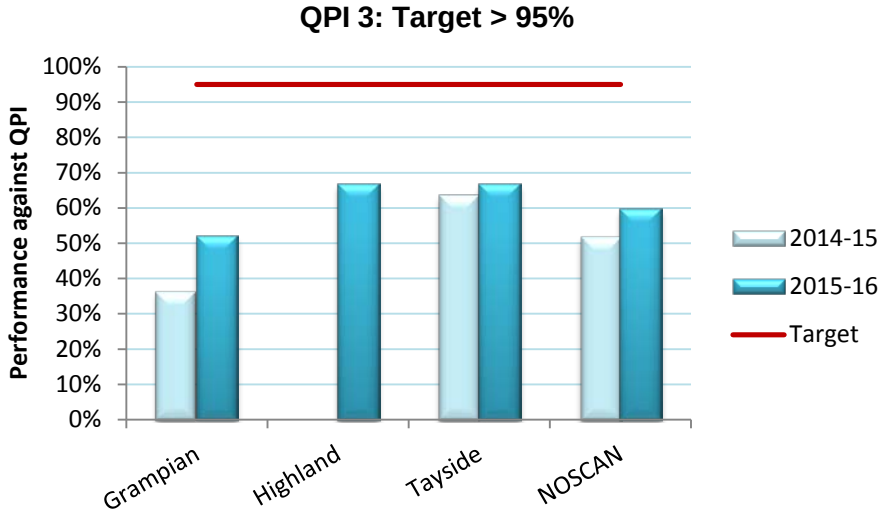
To ensure pathological information is obtained and future treatment decision making can be made, it is important that orchidectomy is carried out as quickly as possible from diagnosis.

Numerator:	Number of patients with testicular cancer undergoing orchidectomy within 2 weeks of ultrasonographic diagnosis.
Denominator:	All patients with testicular cancer undergoing orchidectomy.
Exclusions:	Patients undergoing chemotherapy prior to orchidectomy.
Target:	95%

QPI 3 Performance against target

In the North of Scotland, 59.6% of patients diagnosed with testicular cancer in 2015-2016 undergoing orchidectomy had surgery within 2 weeks of ultrasonographic diagnosis; this means that at a regional level, the target of 95% was not met although results are an improvement on the 2014-15 performance of 51.7%.

Across the North of Scotland this QPI target was met by no NHS Boards but was met in Perth Royal Infirmary (NHS Tayside).



By NHS Board	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**51.9%**	14	27	0	0%	0	0%	0	+15.5%
Highland	**66.7%**	10	15	0	0%	0	0%	0	-
Tayside	**66.7%**	10	15	0	0%	0	0%	0	+3.1%
W Isles	**-**	0	0	0	-	0	-	0	-
NoS	**59.6%**	**34**	**57**	**0**	**0%**	**0**	**0%**	**0**	**+7.9%**

By Hospital	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Aberdeen Royal Infirmary	**51.9%**	14	27	0	0%	0	0%	0	+15.5%
Raigmore Hospital	**66.7%**	10	15	0	0%	0	0%	0	-
Ninewells Hospital	**71.4%**	5	7	0	0%	0	0%	0	+3.1%
Perth Royal Infirmary	**100%**	5	5	0	0%	0	0%	0	-
Stracathro Hospital*	**-**	**-**	**-**	-	-	-	-	-	**-**

NOSCAN did not achieve the target for this QPI, however in many cases the delay was by less than a week.

In Grampian thirteen patients did not meet this target, although 8 failed by 1 week or less. There are a number of themes for failing to meet the target:

a) 3 patients had undergone a prior contralateral orchidectomy and required a review of US, semen storage and MDT review before committing them to infertility.

b) 6 patients had clinically impalpable tumour, or equivocal tumour on ultrasound, or a history more suggestive of a benign cause, necessitating repeat ultrasound and/or MDT discussion before proceeding to orchidectomy.

c) miscellaneous delays were seen in the remaining 4 patients due to
    a. festive period
    b. patient holiday
    c. delay for patient to be seen in outlying clinic and
    d. failure to gain access to a timely theatre slot.

In 9 cases therefore, the delay was introduced in order to ensure that orchidectomy was the correct procedure to perform to reduce the likelihood of orchidectomy for a benign cause. These data represent an improvement on 2014-2015 data, and if the 9 clinically indicated delays and 1 patient-induced are removed, the performance improves to 89%. Access to theatre time is still an issue, but is not responsible for the bulk of delays.

In Tayside, there is a plan in place to streamline the patient pathway with increased CNS involvement, which should improve performance against this QPI.

In Highland, resource limitations can make it challenging to see and operate on a patient with testicular cancer within 2 weeks.

Actions Required:

- **NHS Tayside to ensure the new patient pathway is instituted to allow timely access to theatre provision.**

- **NHS Highland to assess urology resource and access to clinic and theatre time to improve the time to primary orchidectomy.**

QPI 4: Multi-Disciplinary Team Meeting

QPI 4: Multi-Disciplinary Team Meeting: Patients with testicular cancer should be discussed by a Multi Disciplinary Team (MDT) to agree a definitive management plan post orchidectomy with staging and pathology.

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

Numerator: Number of patients with testicular cancer undergoing orchidectomy who are discussed at the MDT to agree a definitive management plan post orchidectomy.

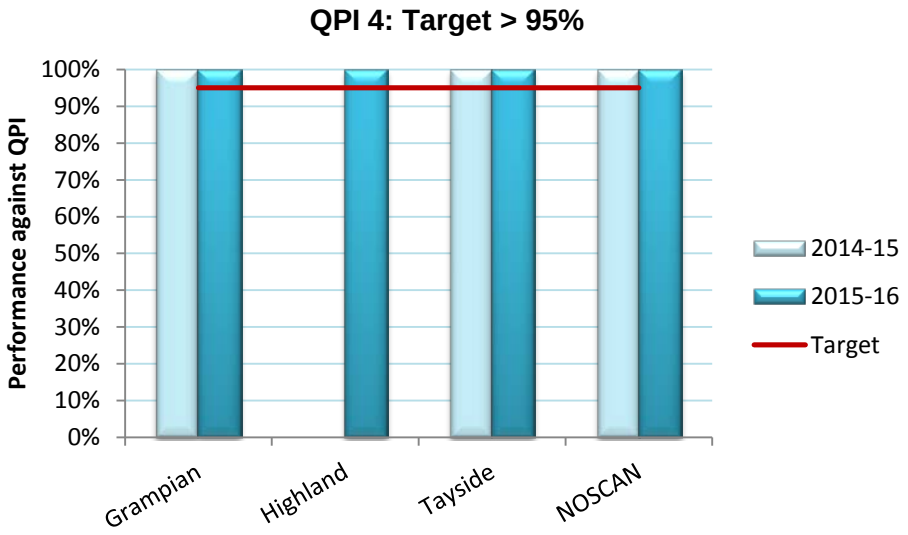
Denominator: All patients with testicular cancer undergoing orchidectomy.

Exclusions: No exclusions.

Target: 95%

QPI 4 Performance against target

Of the 62 patients diagnosed with testicular cancer in 2015-16 who underwent orchidectomy in the North of Scotland all (100%) were discussed at MDT to agree a definitive management plan following surgery. Consequently the target rate of 95% was met at both a regional and NHS Board level, the same as in 2014-15.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**100%**	27	27	0	0%	0	0%	0	0%
Highland	**100%**	14	14	0	0%	0	0%	0	-
Tayside	**100%**	18	18	0	0%	0	0%	0	0%
W Isles*	**-**	-	-	-	-	-	-	-	-
NoS	**100%**	**62**	**62**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Actions Required:

No actions identified.

QPI 5: Pathological Reporting

QPI 5: Pathological Reporting: All pathology reports for testicular cancer should contain full pathology information to inform patient management.

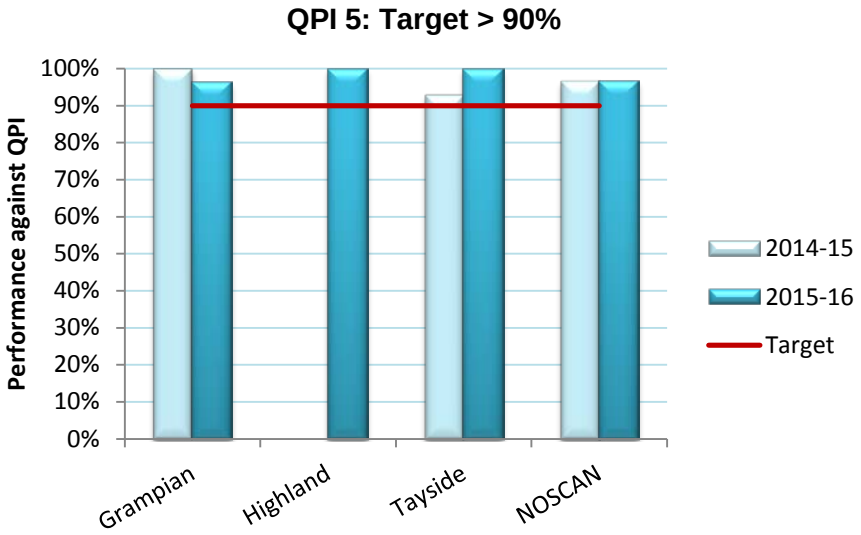
To allow treatment planning to take place for patients diagnosed with testicular cancer, it is important that adequate subtyping and staging of testicular tumours is carried out to determine clinical management. This information will allow patients to make informed decisions about their care.

Numerator:	Number of patients with testicular cancer undergoing orchidectomy where histological pathology report contains tumour type and size, vascular invasion and rete stromal invasion (based upon the current Royal College of Pathologists dataset).
Denominator:	All patients with testicular cancer undergoing orchidectomy.
Exclusions:	No exclusions.
Target:	90%

QPI 5 Performance against target

Of the 61 patients diagnosed with testicular cancer in the North of Scotland in 2015-2016 and undergoing orchidectomy, the pathology reports of 59 if these (96.7%) contained tumour type and size, vascular invasion and rete stromal invasion. These figures show that the target of 90% was met in the North of Scotland with results very similar to those for 2014-15 (96.6%).

All NHS Boards within the North of Scotland met the QPI target except NHS W Isles, where the failure to meet the QPI was the result of reporting for a single patient.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**96.3%**	26	27	0	0%	0	0%	0	-3.7%
Highland	**100%**	14	14	0	0%	0	0%	0	-
Tayside	**100%**	17	17	0	0%	0	0%	0	+7.1%
W Isles*	**-**	-	-	-	-	-	-	-	-
NoS	**96.7%**	**59**	**61**	**0**	**0%**	**0**	**0%**	**0**	**+0.1%**

Actions Required:

No actions identified.

QPI 6: Quality of Adjuvant Treatment

QPI 6: Quality of Adjuvant Treatment: Patients with stage I seminoma receiving adjuvant single dose carboplatin should have an AUC of 7mg/ml/min based on ethylene diamine tetra-acetic acid (EDTA) clearance.

Evidence has shown that the administration of carboplatin can prevent metastatic relapse and contralateral cancer in patients with testicular cancer.

The trial suggested that EDTA or a comparable isotope measurement technique should be used when calculating GFR; this allowed for the best survival outcomes.

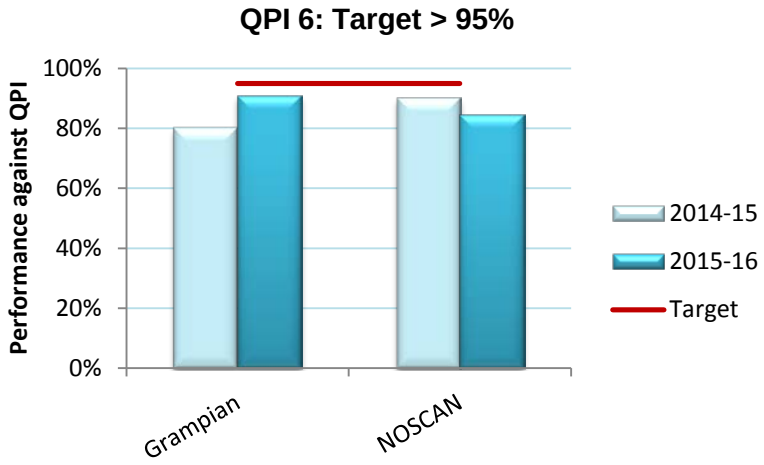
Patients receiving a single dose of adjuvant carboplatin should be given the dose AUC7, i.e. that dose required to achieve an area under the concentration time curve of 7 mg/ml per minute, based on EDTA clearance.

Numerator:	Number of patients with stage I seminoma undergoing adjuvant single dose carboplatin AUC7, based on EDTA clearance, within 8 weeks of orchidectomy.
Denominator:	All patients with stage I seminoma undergoing adjuvant single dose carboplatin AUC7.
Exclusions:	Patients who are treated within a clinical trial.
Target:	95%

QPI 6 Performance against target

Thirteen patients diagnosed with stage I seminoma in 2015-16 underwent adjuvant single dose carboplatin AUC7 in the North of Scotland. Of these, 11 (84.6%) had treatment based on EDTA clearance within 8 weeks of orchidectomy. While this is a decrease from the 2014-15 figure of 90% and below the target rate of 95%, it should be noted that numbers of patients were very small and only two patients did not meet the indicator.

Numbers of patients included within this QPI are considered to be too small to enable any useful comparison between Boards to be drawn.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**90.9%**	10	11	0	0%	0	0%	0	+10.9%
Highland	**-**	0	0	0	-	0	-	0	-
Tayside*	**-**	-	-	-	-	-	-	-	-
W Isles*	**-**	-	-	-	-	-	-	-	-
NoS	**84.6%**	**11**	**13**	**0**	**0%**	**0**	**0%**	**5**	**-5.4%**

NOSCAN narrowly failed to reach the target for this QPI as a result of a single patient in Grampian who required a PET scan, due to suspicion of involvement of paraaortic nodes reported on CT. This was an intentional delay to clarify staging and to ensure that the correct treatment was delivered.

Some patients from NHS Tayside may have been omitted from analysis as staging information was not recorded and it was therefore not possible to ascertain whether they should have been included within figures.

Actions Required:

- **NHS Tayside to ensure that staging information is collected for all patients so that they can be reported in QPI 6 where appropriate.**

QPI 7: Serum Tumour Markers

QPI 7: Serum Tumour Markers: Patients with metastatic testicular cancer should undergo Serum Tumour Markers (STMs) before starting chemotherapy to determine their correct International Germ Cell Cancer Collaborative Group (IGCCCG) prognostic grouping.

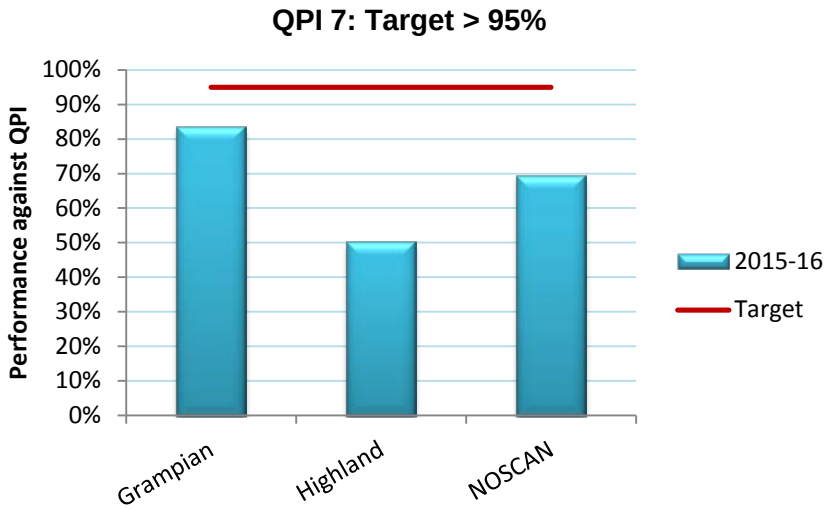
Advanced testicular cancer studies have shown that it is beneficial to measure STMs pre-chemotherapy. The value of this is to allow for appropriate treatment planning for patients with elevated STMs.

Numerator:	Number of patients with metastatic testicular cancer undergoing chemotherapy who have STMs checked 2 weeks before starting chemotherapy.
Denominator:	All patients with metastatic testicular cancer undergoing chemotherapy.
Exclusions:	No exclusions
Target:	98%

QPI 7 Performance against target

Thirteen patients diagnosed with testicular cancer in 2015-2016 in the North of Scotland had chemotherapy to treat metastatic disease. Nine of these (69.2%) had STMs checked two weeks before starting chemotherapy. This means that the North of Scotland did not met the required performance target of 98%. Results cannot be compared with those from previous years due to changes in the way this QPI is calculated.

At an NHS Board level this QPI was only met in NHS W Isles, where figures were based on a very small number of patients.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator
Grampian	**83.3%**	5	6	0	0%	0	0%	0
Highland	**50.0%**	3	6	0	0%	0	0%	0
Tayside	**-**	0	0	0	-	0	-	9
W Isles*	**-**	-	-	-	-	-	-	-
NoS	**69.2%**	**9**	**13**	**0**	**0%**	**0**	**0%**	**9**

In Grampian, the failure to reach the target relates to a single patient who did not attend two prechemotherapy appointments where up to date STMs would have been obtained.

No clinical information available for the Highland patients.

Actions Required:

- **NHS Highland to identify if there is a systematic problem with STM measurement.**
- **NHS Tayside to ensure that staging information is collected for all patients so that they can be reported in QPI 7 where appropriate.**

QPI 8: Systemic Therapy

QPI 8: Systemic Therapy: Patients with metastatic testicular cancer who are undergoing systemic therapy should receive Systemic Anti-Cancer Therapy (SACT) within 3 weeks[§] of a MDT decision to treat with SACT.

Evidence has demonstrated that delays in diagnosis and treatment can have a negative impact on the survival rates of patients.

In certain types of testicular cancer this can have a bigger impact on prognosis and survival.

Numerator: Number of patients with metastatic testicular cancer undergoing SACT within 3 weeks[§] of an MDT decision to treat with SACT.

Denominator: All patients with metastatic testicular cancer undergoing SACT.

Exclusions: Patients whose primary chemotherapy management is as part of a chemotherapy clinical trial.

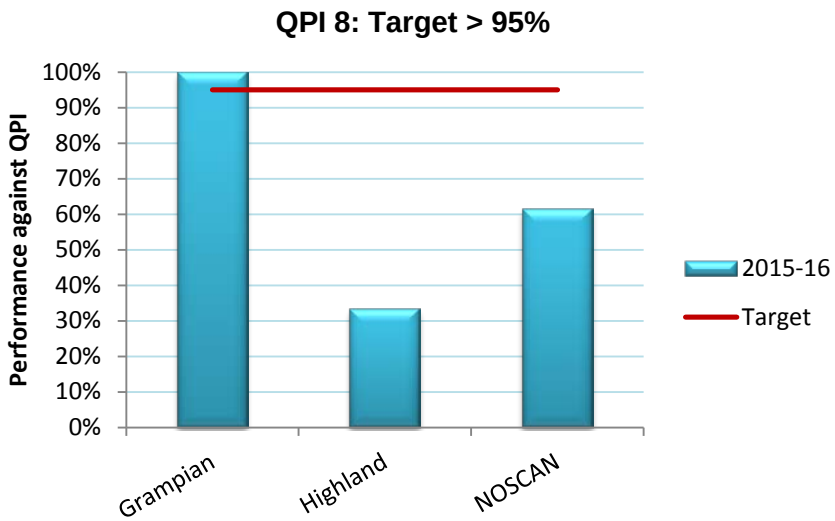
Target: 95%

[§] Patients may also begin treatment up to 3 weeks prior to MDT in order to ensure there are no delays to treatment

QPI 8 Performance against target

Eight of the13 patients diagnosed with metastatic testicular cancer in the North of Scotland in 2015-16 and undergoing SACT had this treatment within 3 weeks of an MDT decision to treat. This equates to 61.5% and therefore the North of Scotland does not meets the target of 95%. Results cannot be compared with those from previous years due to changes in the way this QPI is calculated.

At an NHS Board level this QPI was met by NHS Grampian in 2015-16 (100%) but not by NHS Highland or NHS W Isles.



	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator
Grampian	**100%**	6	6	0	0%	0	0%	0
Highland	**33.3%**	2	6	0	0%	0	0%	0
Tayside	**-**	0	0	0	-	0	-	9
W Isles*	**-**	-	-	-	-	-	-	-
NoS	**61.5%**	**8**	**13**	**0**	**0%**	**0**	**0%**	**9**

Actions Required:

- **NHS Highland to identify if there is a systematic problem relating to patients accessing chemotherapy treatment on a timely basis.**

QPI 9: Computed Tomography Scanning for Surveillance Patients

QPI 9: Computed Tomography Scanning for Surveillance Patients: Patients with stage I testicular non-seminomatous (or mixed) germ cell tumour (NSGCT) under surveillance should undergo Computed Tomography (CT) scanning of the abdomen +/- chest and pelvis, as per clinical relevance.

There are several ways to manage patients with stage I testicular nonseminomatous germ cell tumours. Active surveillance is a standard approach to take. Evidence has shown that the results from surveillance are as favourable as those who undertake adjuvant therapy. It is important that the individual will comply with the surveillance protocol.

Numerator: Patients with stage I testicular non-seminomatous (or mixed) germ cell tumour who undergo at least three CT scans of the abdomen +/- chest and pelvis within 14 months of diagnosis.

Denominator: All patients with stage I testicular non-seminomatous (or mixed) germ cell tumour.

Exclusions:

- Patients who have received adjuvant chemotherapy.
- Patients who are treated within a clinical trial.

Target: 85%

This QPI cannot be reported until 14 months of have elapsed since diagnosis. As such results for QPI 9 will be reported a year in arrears and data presented below are for patients diagnosed during 2014-15.

All of the three patients diagnosed with Stage I testicular non-seminomatous (or mixed) germ cell tumour in 2014-15 had at least three CT scans of the abdomen within 14 months of diagnosis. At 100% this means that the target for this QPI was met at both a regional level and by all NHS Boards with patients included within the figures.

Results are not provided in graphical or tabular form due to the very small numbers of patients involved.

The low incidence of testicular cancer in NOSCAN in 2014-5 results in a very small number of patients in the denominator for this QPI, however, all patients met the required standard.

Actions Required:

No action required.

QPI 10: 30 Day Mortality

QPI 10: 30 Day Mortality: 30 day mortality following treatment for testicular cancer.

Treatment related mortality is a marker of the quality and safety of the whole service provided by the Multi Disciplinary Team (MDT).

Numerator: Number of patients with testicular cancer who receive treatment who die within 30 days of treatment.

Denominator: All patients with testicular cancer undergoing treatment (orchidectomy, chemotherapy, radiotherapy).

Exclusions: No Exclusions

Target: < 5%

QPI 10 Performance against target

Surgery

In 2015 – 2016 in the North of Scotland, none of the patients diagnosed with testicular cancer and undergoing surgery died within 30 days of surgery. At 0% this meets the target of less than 5%, as in 2014-15.

With zero mortality, this QPI was met across the North of Scotland at both a Hospital and Board level. Results are not presented graphically as results for all NHS Boards and centres are zero.

By NHS Board	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**0%**	0	27	0	0%	0	0%	0	0%
Highland	**0%**	0	16	0	0%	0	0%	0	-
Tayside	**0%**	0	14	0	0%	0	0%	0	0%
W Isles	**-**	0	0	0	-	0	-	0	-
NoS	**0%**	**0**	**57**	**0**	**0%**	**0**	**0%**	**0**	**0%**

By Hospital of Surgery	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
ARI	**0%**	0	27	0	0%	0	0%	0	0%
Raigmore	**0%**	0	16	0	0%	0	0%	0	-
Ninewells	**0%**	0	7	0	0%	0	0%	0	0%
PRI*	**-**	-	-	-	-	-	-	-	-
Stracathro*	**-**	-	-	-	-	-	-	-	-

Chemotherapy

Two of the 39 patients diagnosed with testicular cancer during 2015-2016 and undergoing chemotherapy died within 30 days of treatment. At 5.1% regional performance narrowly misses the target of less than 5% and mortality was higher in 2015-16 than it was in 2014-15 (0%).

At an NHS Board level this indicator was not met by either NHS Grampian or NHS Tayside, although in each case this was due to the outcome of a single patient.

Results are not presented graphically due to small numbers.

	Performance (%)	Numerator	Denominator	Not recorded - Numerator	% not recorded - Numerator	Not recorded - Exclusions	% not recorded - Exclusions	Not recorded - Denominator	% change from 2014-2015
Grampian	**5.9%**	1	17	0	0%	0	0%	0	+5.9%
Highland	**0%**	0	8	0	0%	0	0%	0	-
Tayside	**9.1%**	1	11	0	0%	0	0%	0	+9.1%
W Isles*	**-**	-	-	-	-	-	-	-	-
NoS	**5.1%**	**2**	**39**	**0**	**0%**	**0**	**0%**	**0**	**+5.1%**

In Grampian, the patient who died presented with widespread metastatic disease which proved to be chemorefractory. He died of progressive germ cell cancer, not treatment.

In Tayside one patient died within 30 days of chemotherapy for testicular cancer. This patient had seminoma and was in the IGCCCG good prognostic group. Due to co-morbidity, and following consultation with the Medical Oncology team in WOSCAN, he was treated with Cisplatin and Etoposide with curative intent. The patient developed neutropenic sepsis during his first cycle of treatment, source of infection thought to be his graft from previous EVAR. Despite broad spectrum antibiotics, inotropic support, renal replacement therapy and ventilator support, he died of overwhelming sepsis. Both cases were discussed at the National Germ Cell Meeting in November 2016 as part of Morbidity and Mortality review.

The overall number of patients in Tayside treated with chemotherapy for germ cell cancer over the audit period was eighteen. One patient has been excluded from QPI collection as he had diagnosis and orchidectomy overseas, although had chemotherapy for metastatic disease in Tayside. One patient was excluded as received chemotherapy for recurrent disease, rather than having a new diagnosis. Five patients were excluded from the QPI due to incomplete staging at MDT. Including these patients, the 30 day mortality rate for all patients in Tayside receiving systemic chemotherapy for testicular cancer is 5.6%.

Radiotherapy

Only one patient diagnosed with testicular cancer in the North of Scotland during 2015-2016 received radiotherapy. This patient did not die within 30 days of treatment. As in 2014-15, with 0% mortality, the North of Scotland met the target of less than 5% in 2015-16, as did the single NHS Board where performance was measurable.

Results are not provided in graphical or tabular form due to the very small numbers of patients involved.

Actions Required:

No actions required.

Clinical Trials Access QPI

The ability of patients to readily access a Clinical Trial is a common issue for all cancer types, and in order to further support recruitment through more active comparison and measurement of Board and network performance across the country, a generic QPI was developed as part of the National Programme of cancer quality improvement. Further details on the development and definition of this QPI can be found here.

The QPI is defined as follows.

Clinical Trials Access QPI

All patients should be considered for participation in available clinical trials, wherever eligible.

Numerator: Number of patients with testicular cancer enrolled in an interventional clinical trial of translational research.

Denominator: All patients with testicular cancer.

Exclusions: No exclusions

Target: Interventional clinical trials – 7.5%

Translational research - 15%

Key points during the period audited:

- No patients (0%) diagnosed with testicular cancer in the North of Scotland in 2016 were recruited into interventional clinical trials in one of the three cancer centres in the region; this is well below the required target of 7.5% and the same as the 2015 figure of 0%.
- Recruitment into translational research was also lower that previously at 4.3%, well below both the target of 15% and the 2015 figure of 35.4%.

	Number of patients recruited	ISD Cases annual average (2011-2015)	Percentage of patients recruited
Interventional Clinical Trials	0	46	**0%**
Translational Research	2	46	**4.3%**

The QPI targets for clinical trials are 7.5% for interventional trials and for translational trials are 15%. It should be noted that these targets are ambitious, particularly with the move towards more targeted trials.

A limited number of testicular cancer trials were open during 2016 in NOSCAN. Testicular cancer has a relative small incidence within the region. There are also a small number of trials available within the UK for testicular cancer. Therefore cancer centres within NOSCAN were not able to open a large number of trials. NOSCAN had 1 translational trial open to recruitment during 2016, however the recruitment to this trial was stopped by the external trial office due to insufficient staff to process the biological samples received, therefore recruitment and screening were extremely low.

All cancer patients that pass through each of the three cancer centres in NOSCAN are considered for potential participation in the open trials currently available. However, as with other cancer specific studies, consequent to the demise of larger general trials and the advent of genetically selective trials that only target small populations of patients, many of the cancer trials that are currently open to recruitment in the North of Scotland have very select eligibility criteria. Consequently they will only be available to a small percentage of the total number of people who were diagnosed with cancer. Constraints imposed by the commercial trial sponsors also limit the number of trials it is possible to open in smaller cancer centres such as those in the NOSCAN region.

5. Conclusions

The Quality Performance Indicators programme was first introduced in order to drive forward a programme of continuous service improvement and to ensure the quality and equity of access to care for cancer patients across Scotland.

As part of this programme, the North of Scotland has recently launched a programme of annual reporting of regional performance against QPIs. This is the second time that the results of individual Board performance against the Testicular Cancer QPIs have been reported in the North of Scotland, providing a clearer measure of overall performance across the region, and a more formal structure around which any improvements will be made.

Case ascertainment was very high overall (138%) and results of both Board and regional performance against the Testicular Cancer QPI's for patients diagnosed between 1st October 2015 and 30th September 2016 were considered to be representative of cancer services specific to the management of testicular cancer in the North of Scotland.

Within NOSCAN three out of 11 QPIs reported were achieved during this audit cycle. The main areas for concern relate to QPI1 and QPI3. Both of these QPIs are difficult to achieve as they require adequate resource (radiological and urological) and no patient related issues (e.g. unavailability, concurrent comorbidities necessitating greater preoperative work up, prior orchidectomy etc) to achieve the tight timelines in these QPIs.

Results from the second year of QPI reporting have helped to identify the following actions to improve on the quality of clinical services for patients with testicular cancer in the North of Scotland:

- **NHS Tayside to ensure that revisions to the patient pathway are implemented to ensure timely CT imaging and access to theatre provision.**
- **NHS Highland to examine their radiology resource.**
- **All NHS Boards to stress the importance of full serum tumour marker checking prior to definitive surgery.**
- **NHS Highland to assess urology resource and access to clinic and theatre time to improve the time to primary orchidectomy.**
- **NHS Tayside to ensure that staging information is collected for all patients so that they can be reported in QPI 6 and 7 where appropriate.**
- **NHS Highland to identify if there is a systematic problem with STM measurement.**
- **NHS Highland to identify if there is a systematic problem relating to patients accessing chemotherapy treatment on a timely basis.**

NHS Boards are asked to develop local Action / Improvement Plans in response to the findings presented in the report. A blank Action Plan template can be found in the Appendix to this report.

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

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

Additionally, progress will be reported to the Regional Cancer Advisory Forum (RCAF) annually by the NOSCAN Testicular Cancer Clinical Lead as part of the regional audit governance process to enable RCAF to review and monitor regional improvement.

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Appendix 1: List of clinical trials for patients with testicular cancer into which patients were recruited in 2016.

Trial	Principle Investigator	Trial Type
The UK Genetics of Testicular Cancer Study	Neil McPhail (Highland) Ghulum Nabi (Tayside)	Translational

Appendix 2: NHS Board Action Plans

A blank Action Plan template can be found attached. Completed Action Plans should be returned to NOSCAN within two months of publication of this report.

NOSCAN
North of Scotland Cancer Network

Action Plan: Testicular Cancer

Based on patients diagnosed 2015-2016

Board:	
Action Plan Lead:	
Date:	

Status key	
1	**Action Fully Implemented**
2	**Action agreed but not yet implemented**
3	**No action taken (please state reason)**

QPI	Action Required	NHS Board Action Taken	Date		Lead	Progress	Status
			Start	End			
	Ensure actions mirror those detailed in Audit Report	*Detail specific actions that will be taken by the NHS Board*	*Insert date*	*Insert date*	*Insert name of responsible lead for each action.*	*Detail actions in progress, changes in practice, problems encountered of reasons why no action has been taken.*	*Insert no. from key*