Queen Elizabeth National Spinal Injuries Unit for Scotland

ANNUAL REPORT 2014-15

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Section A Introduction

A1 Queen Elizabeth National Spinal injuries Unit for Scotland

A2 Aim and Date of Designation of Service

The Queen Elizabeth National Spinal Injuries Unit is responsible for the management of all patients in Scotland who have a traumatic injury to the spinal cord. Commissioned in 1992 it has continued to develop the management of the acute injury and life time care of all of its patients to maximise function and to prevent the complications of paralysis. Facilities include a combined Admission Ward and HDU (Edenhall) and a Rehabilitation Ward (Philipshill) with a Respiratory Care Unit. In addition there is a custom built Step-Down Unit for patients and relatives and Research Mezzanine (Glasgow University) which ensures that researchers are embedded in the Unit. Clinical services are provided at the Glasgow centre and appropriate outreach clinics as required.

This annual report and its associated appendices contain a comprehensive analysis of the Spinal Injury Unit's activity and the individual reports of each department or associated body.

A3 Description of Patient Pathways and Clinical Process

The unit accept all patients who are injured or domiciled in Scotland and are referred with a spinal cord injury. In addition complex fractures without neurological injury but who are at risk of neurological compromise or require expert assessment and treatment are admitted. Multiple pathways exist for the differing aetiologies and source of referrals. Patients are primarily referred from Acute Orthopaedic Services but referrals are received from Accident and Emergency Medicine, General Medicine, Neurosurgical, Vascular and Cardiovascular units throughout Scotland.

A3 A1 Target Group

Traumatic spinal cord injury is relatively uncommon but can result in a devastating disability. It requires highly specialised multidisciplinary care to maximise the chances of recovery and reduce complications. Life expectancy outside specialised units is limited (36 months) but should approach normal with appropriate immediate care and life long follow up.

Figure One

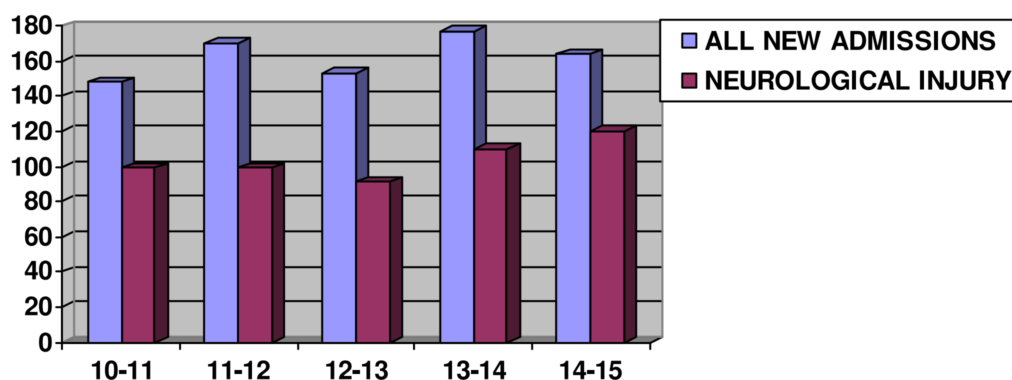


Table One

	10/11	11/12	12/13	13/14	14/15	92-15
ALL NEW ADMISSIONS	148	170	153	177	**164**	**3655**
Neurological	99	99	91	110	**120**	**1946**
Non-neurological	49	71	62	67	**44**	**1709**

All patients referred with a neurological injury (120) were admitted as soon as clinically indicated.

The number of neurological injured patients rose within expected variation with a concommitant fall in non-neurological injured spinal fractures.The increase in the number of neurological injured patients reduced the number of beds available for shorter stay patients.

Four hundred and twenty-two non-neurologically injured patients were referred but not admitted as they fell outside the scope of the service and were not identified as being of a risk of neurological compromise. They were managed in the referral hospital with appropriate advice and support from consultant medical staff. (see section A3:B1)

A number of patients were seen by consultant staff both in the neurosurgical and orthopaedic wards of the Southern General Hospital. and outside SGH. These patients did not require admission but merited detailed advice on management.

A3 A2 New Admissions: Case Mix Complexity

The severity of a Spinal Cord Injury is dependent on the anatomical level of and the extent of neurological damage. This has considerable bearing on the type and extent of rehabilitation each patient requires. This case mix complexity has been classified as follows.

	Anatomy	Neurology
GROUP I	Cervical Injury 1 - 4	High Tetraplegia
GROUP II	Cervical Injury 5 - 8	Low Tetraplegia
GROUP III	Thoracic, Lumbar and Sacral Injury	Paraplegia
GROUP IV	All levels of Injury with	Incomplete or no Paralysis

Group I Patients with the most severe neurological injuries. They are the most dependant. The numbers are expected to vary considerably each year.

Group II and **Group III** Patients with a significant neurological loss and high dependency. They require the longest period of rehabilitation.

Group IV Includes all patients with spinal fractures and incomplete or no paralysis. Many require significant input during their rehabilitation.

Fig Two New Admissions by Case-Mix Complexity

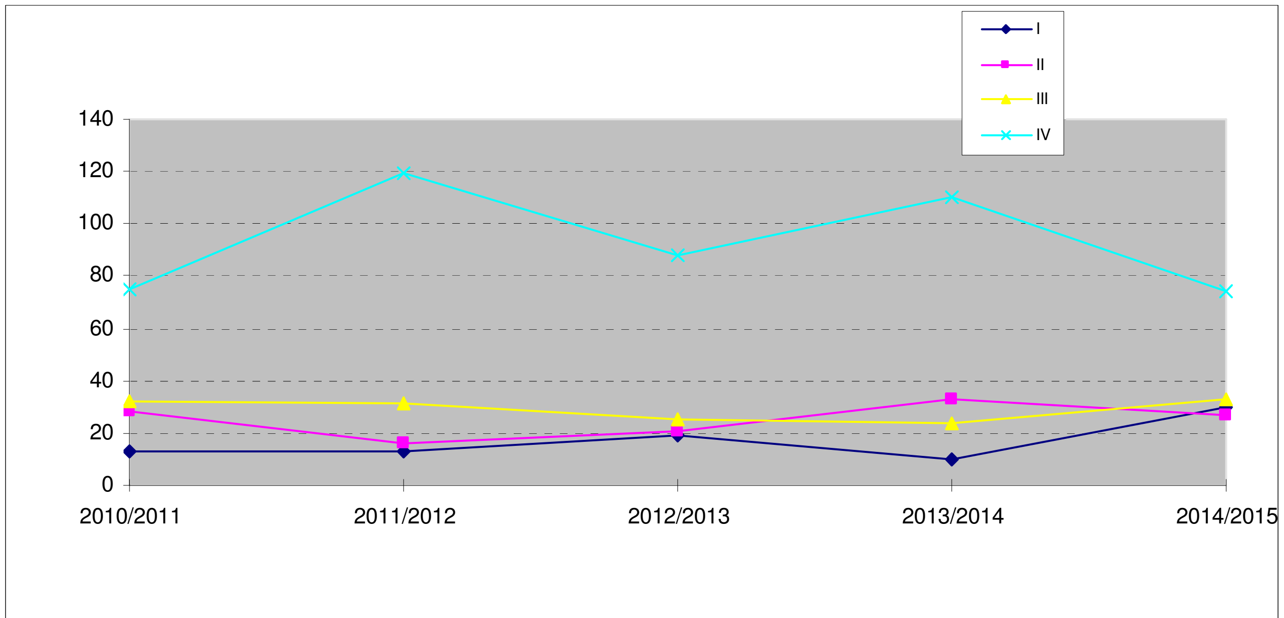


Table Two

GROUP	10/11	11/12	12/13	13/14	14/15	92/15
1	13	13	19	10	**30**	**294**
II	28	16	21	33	**27**	**579**
III	32	31	25	24	**33**	**782**
IV	75	110	88	110	**74**	**2000**
Total	**148**	**170**	**153**	**177**	**164**	**3655**

There was a significant increase in Group 1, the high tetraplegic patients. These patients have injury levels from C1-C4 (above the shoulders) with severe paralysis on admission. These are the most clinically demanding group. Some patients improved but many were left with severe permanent paralysis. We hope this is a temporary rise within normal variation and will review this at the six-monthly report. We have been unable to identify a common theme for these injuries. Numbers of low tetraplegic (C5-C8) and paraplegic patients were stable

A3: A3 New Admissions by ASIA, Impairment Level

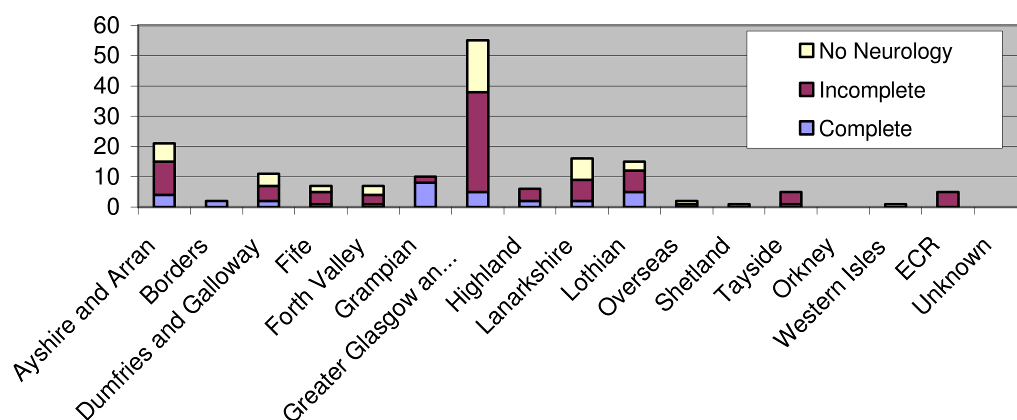
A	Complete: No motor or sensory function
B	Incomplete: Sensory but not motor function is preserved below the neurological level and includes S4-5
C	Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a motor grade less than three
D	Incomplete: Motor function is preserved below the neurological level, and at least half of the key muscles below the neurological level have a grade more than three
E	Normal: Motor and sensory function is normal

The ASIA grading system is recognise internationally as a measure of dependency and can be used to classify improvements over time.

Table Three:New Admissions by Asia Impairment Level & Health Board

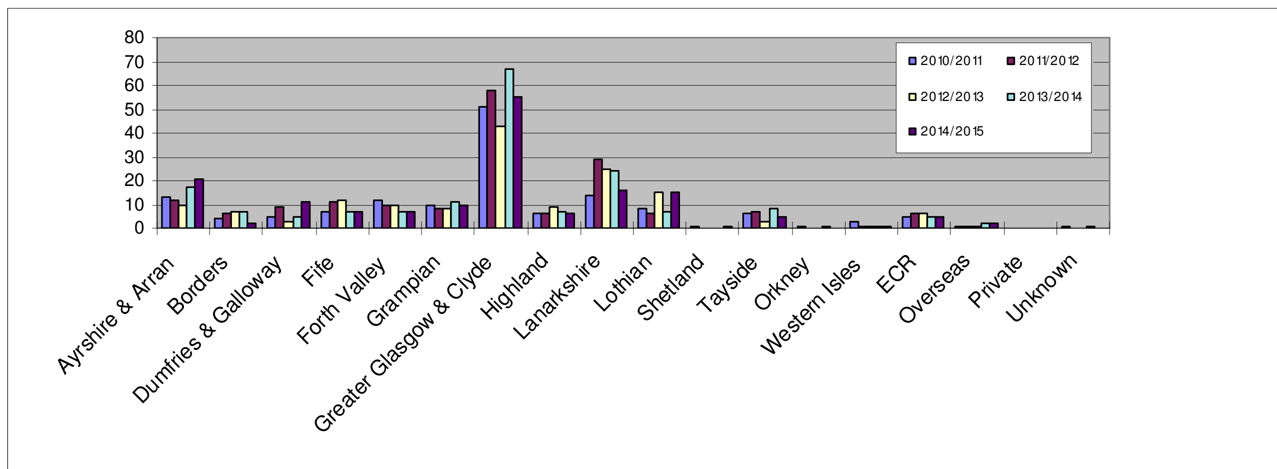
2014/2015	A	B	C	D	E	Total
Ayrshire & Arran	4	1	5	5	6	**21**
Borders	2	0	0	0	0	**2**
Dumfries & Galloway	2	1	1	3	4	**11**
Fife	1	1	2	1	2	**7**
Forth Valley	1	1	1	1	3	**7**
Grampian	8	0	1	1	0	**10**
Greater Glasgow Clyde	5	3	10	18	19	**55**
Highland	2	2	2	0	0	**6**
Lanarkshire	2	1	2	4	7	**16**
Lothian	5	2	3	2	3	**15**
Overseas	0	0	0	1	1	**2**
Shetland	1	0	0	0	0	**1**
Tayside	1	0	4	0	0	**5**
Orkney	0	0	0	0	0	**0**
Western Isles	0	0	0	0	1	**1**
ECR	0	0	0	5	0	**5**
Unknown	0	0	0	0	0	**0**
TOTAL	**34**	**12**	**31**	**41**	**46**	**164**

Fig Three Admissions by Neurological Deficit and Health Board



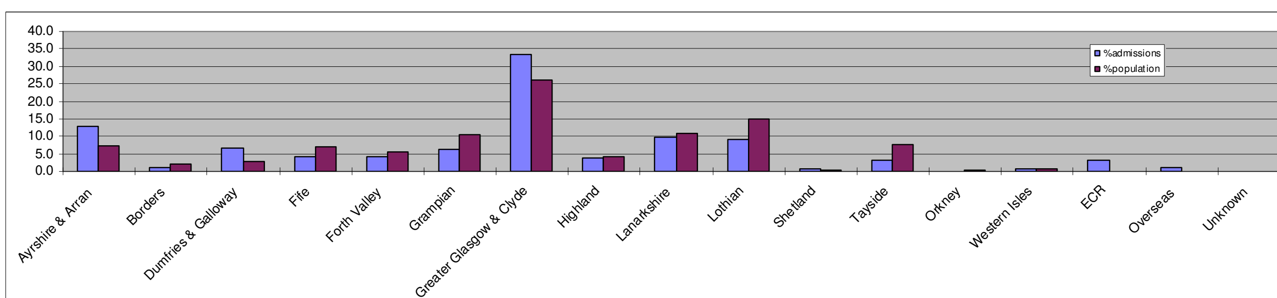
GGC remains responsible for the largest number of spinal cord injuries. The number of non-neurological injuries admitted from all regions and particularly from GGC has reduced. The distribution of complete and incomplete injuries varies by year. The Unit admitted patients from all areas of Scotland. The distribution of admissions and the annual variation since the unit opened justifies the clinical and economic benefits of a national service.

Fig Four New Admissions by Health Board of Residence 2010-2015



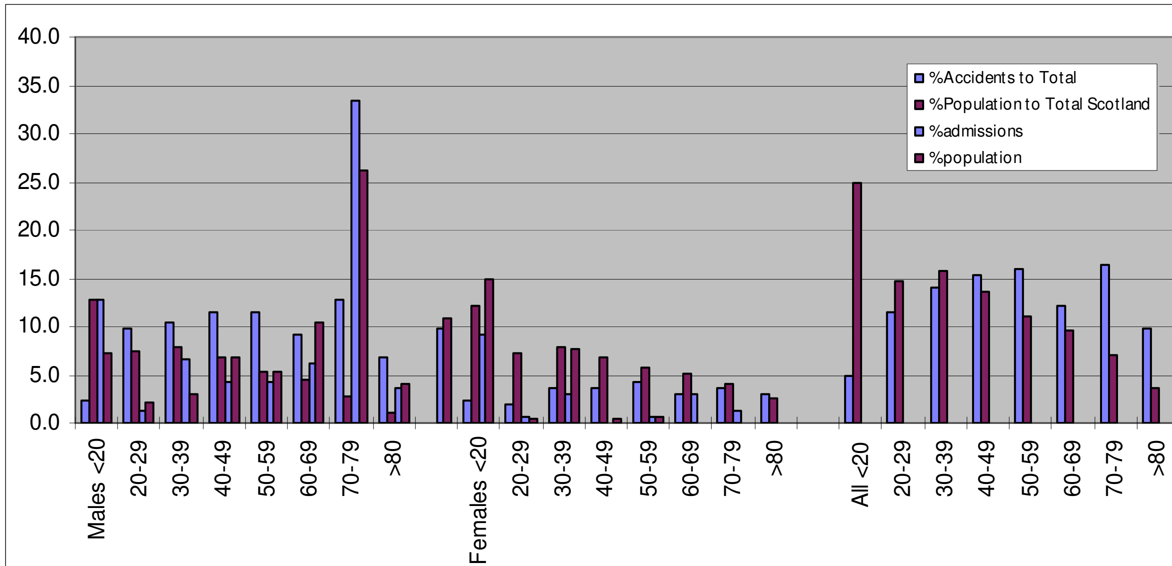
There is acceptable variation in year to year admissions by Health Board. No trend is observed. A small number of non-Scottish patients are admitted while on holiday or working in Scotland (ECR) according to need and repatriated when their condition allowed. Numbers have been constant in this group. The Unit did not admit any private patients.

Fig Five Admissions by Health Board compared with Population Size



There is a more equitable distribution of percapita admissions within Health Boards. In particular Glasgow and Lanarkshire had admission numbers more in keeping with their population sizes compared to previous years.

Fig Six **New Admissions by Age Group**



There is now an established preponderance of middle-aged patients. The rise in injuries in older (>50) patients is recognised internationally. Males predominate and this reflects the tendency of males to engage in risky behaviour. The number of injuries in those under twenty remains low.

Fig Seven

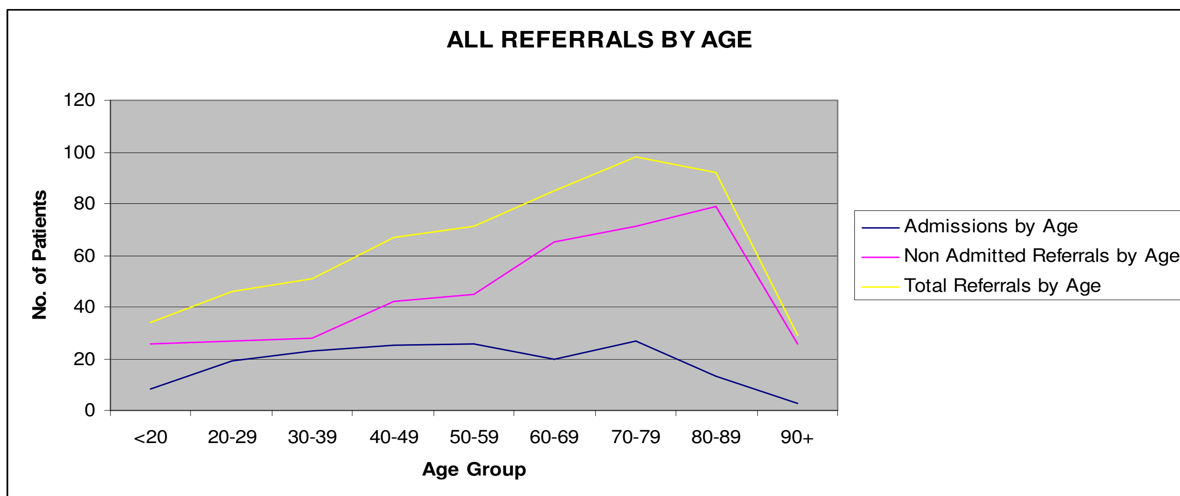


Fig Eight

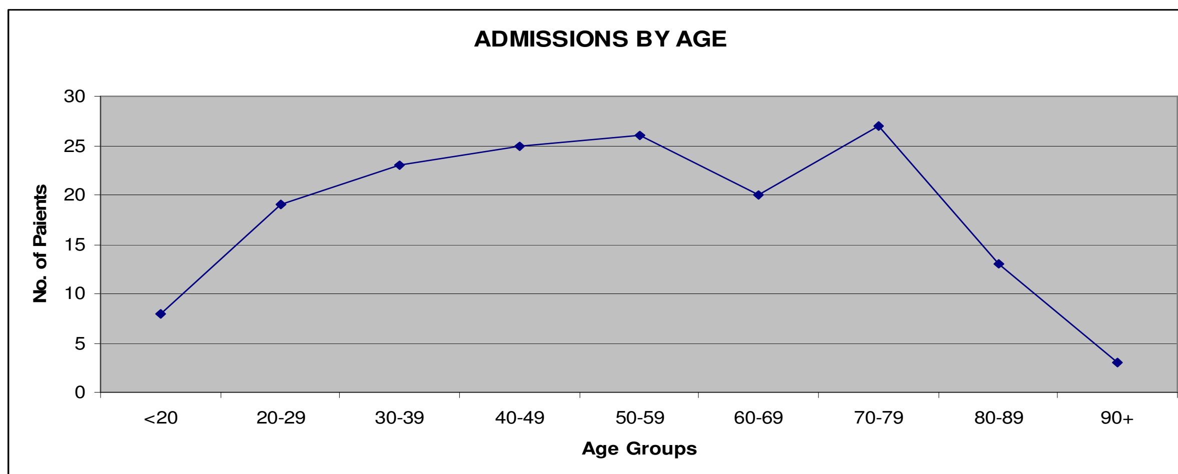


Figure eight shows the age admission profile in more detail and confirms the gradual increase (move to the right) of the age profile of new admissions.

Table Four Admissions by Anatomical Level and Severity

Level	Complete	Incomplete	No Neurology	Total
C 1	1	0	0	1
2	1	4	7	12
3	2	14	0	16
4	3	16	1	20
5	6	14	6	26
6	4	11	3	18
7	0	2	3	5
8	0	0	0	0
Sub-total	17	61	20	98
T 1	0	0	0	0
2	1	0	1	2
3	1	0	0	1
4	0	0	0	0
5	1	1	0	2
6	2	1	2	5
7	0	3	0	3
8	1	0	2	3
9	0	1	0	1
10	0	1	3	4
11	2	3	0	5
12	5	2	6	13
Sub-total	13	12	14	39
L 1	0	4	5	9
2	2	3	3	8
3	0	4	1	5
4	0	2	1	3
5	2	0	0	2
Sub-total	4	13	10	27
S1-5				
Sub-total				
TOTAL	34	86	44	164

Vertebral Column
(Right Lateral View)

(Multi-level injuries were counted from the highest level)

A3 B Care Pathway for Service or Programme

The unit is commissioned to care for all cases of non-progressive spinal cord injury in Scotland. The vast majority of these are traumatic injuries. Immediate care, comprehensive rehabilitation and life-long care is provided at the centre in Glasgow and followed by visits at appropriately geographically located outreach clinics. If appropriate an integrated service is provided with local medical, nursing and paramedical services. Close cooperation is sought with social services and voluntary groups to ensure that the difficult transition to secondary care either at home or a care establishment is achieved.

A3 B1 Details of Referral and Admission by Region

The service has a clearly defined target group based on need and specialisation. The Unit takes referrals for all patients with cord injury or complex fractures with risk of cord damage but there continue to be a large number of referrals for patients outwith this group who do not require admission. The referral itself is not a neutral process and referrals have lead to delays in management locally.

The total number of referrals has stabilised (586). The national referral/admission ratio (RAR) is 28% but in the West of Scotland the RAR is only 23% (16% in Lanarkshire) and this may reflect lack of confidence or training issues in orthopaedic and neurosurgical services in the WoS.

There continue to be many referrals for elderly patients, especially from GGC, with cervical fractures who do not require specialised acute management or rehabilitation. These lie out with the remit of the National Service and are managed locally, in close contact with their family.

Table Five Health Board Referrals and Outcome

Referring Board	Total Referrals	Admissions	Not Admitted	% Admitted	Complex Advice Given
GGC	251	60	191	24%	48
Lanarkshire	101	16	85	16%	20
Ayr/Arran	66	21	45	32%	7
Dumfries	27	6	21	22%	5
Borders	5	2	3	40%	1
Highland	20	7	13	35%	4
Grampian	11	10	1	91%	
Forth Valley	21	7	14	33%	4
Tayside	7	5	2	71%	2
Fife	23	7	16	30%	4
Lothian	31	15	16	48%	7
Western Isles	9	1	8	11%	4
ECR	14	7	7	50%	4
Total	586	164	422	28%	110

The number of patients not admitted but requiring complex advice has increased to 26% (110 patients). In occasional cases of complex but neurologically intact patients it was appropriate for consultants to assist the local team but it is not possible for the National Spinal Injuries Unit staff to micromanage all the referred patients and there remain concerns over the provision of spinal services for neurologically intact patients in some areas served.

Table Six Health Board Referrals and Referring Speciality: Non Admissions

Non Admitted referrals

Referring Board	Level of Injury		Referring Specialty				Total
	Cervical	Thor/Lum	Ortho	Neurosurgery	A&E	Other	
GGC	120	71	89	3	33	66	191
Lanarkshire	50	35	55		10	20	85
Ayr/Arran	23	22	29		8	8	45
Dumfries	8	13	16		2	3	21
Borders	2	1	2			1	3
Highland	8	5	1			12	13
Grampian		1				1	1
Forth Valley	5	9	8		2	4	14
Tayside		2		2			2
Fife	2	14	9		4	3	16
Lothian	6	10	3	1		12	16
Western Isles		8	1		1	6	8
ECR		7	2			5	7
Total	224	198	215	6	60	141	422

The Departmental sources of these non-admitted referrals remain stable. Orthopaedics (50%) remains the principle user of the service. Neurosurgery (8%) and Accident and Emergency (17%) small numbers but “Others” (35%) including Medicine. Neurology, Care of the Elderly etc. provided increasing numbers of referrals.

Section B Quality Domains

B1 Efficiency

B1 A Actual v Planned Activity

B1 A1 In-patient Activity: Table Seven A

	12/13	13/14	14/15
New admissions	153	177	**164**
New outpatients	232	271	**290**

B1 A2 Out-patient activity: Table Seven B

	10/11	11/12	12/13	13/14	14/15
Return	2193	2293	2243	2389	**2378**
New	229	188	232	271	**290**

The out-patient activity of the unit is focused on the post discharge management of acute injuries and lifelong long term follow up. Dedicated clinics in Orthopaedics, Neurosurgery, Urology, Rehabilitation and Pain Management supplement the nurse led Annual Review Clinics for those patients with a neurological deficit. Increasingly efficient clinical management limits annual increases in return patients.

B1 A3 Summary of Out-patient activity: Table Seven C

	10/11	11/12	12/13	13/14	14/15	%
Return	2193	2293	2243	2389	**2378**	**N/A**
DNA Return	804	527	665	642	**610**	**26%**
New	229	188	232	271	**290**	**N/A**
DNA New	0	33	49	49	**58**	**20%**

The number of return outpatients is stable and reflects the prevalence of the spinal cord injured population in Scotland. The DNA rate reflects the nature and length of follow up and the fragility of the population, the rates have both reduced this year.

B1 A4 Out-patient Clinic Location and Frequency

Table Eight

Frequency	Location			
Weekly	QENSIU New, Skin Respiratory	QENSIU Return, Halo, Fertility	Orthopaedics, Neurosurgery Urology	
Monthly	Edinburgh			
Three Monthly	Aberdeen	Inverness		
Six Monthly	Dumfries	Borders	Arbroath	
Annually				Huntly

The location and frequency of out-patient clinics and outreach services are based on the demographic data held on the National Database. Medical, nursing and paramedical staff attend the clinics accompanied by Spinal Injuries Scotland for peer group support.

B1 A5 New Out-patient Activity by Health Board

Table Nine

	10/11	11/12	12/13	13/14	14/15
Ayrshire & Arran	21	15	16	16	26
Borders	1	2	2	1	1
Dumfries & Galloway	7	3	6	6	5
Fife	7	4	2	2	4
Forth Valley	17	14	4	11	9
Grampian	3	3	0	2	0
Greater Glasgow Clyde	136	105	154	193	197
Highland	4	4	0	9	7
Lanarkshire	20	27	35	21	33
Lothian	8	3	7	8	6
Shetland	1	0	0	0	0
Tayside	3	8	4	0	1
Orkney	0	0	0	0	0
Western Isles	0	0	1	2	1
ECR	1	0	1	0	0
Unknown	0	0	0	0	0
Total	**229**	**188**	**232**	**271**	**290**

New out-patient attendances by Health Board are stable.

B1 A6 Out-patient Activity by Centre

Table Ten

	10/11	11/12	12/13	13/14	14/15	CHANGE YEAR	TOTAL 1992-2015
New QENSIU	229	188	232	271	290	+ 7%	3034
Return QENSIU	1861	1876	1878	2014	1995	(0.9%)	35946
Edinburgh	162	174	148	154	157	+ 1.9%	3648
Inverness	49	62	60	63	63	No Change	974
Aberdeen	61	85	66	74	76	+ 2.7%	958
Dumfries & Galloway	9	27	20	17	19	+ 11.8%	281
Borders	19	15	26	24	25	+ 4.2%	258
Arbroath	14	31	26	29	27	(6.9%)	274
Huntly	18	23	19	14	16	+ 14.3%	90
Total	**2422**	**2481**	**2475**	**2660**	**2668**	**+ 0.3%**	**45463**

Out-patient attendances by centre are stable.

B1 A7 Out-patient Activity by Specialty at QENSIU

Table Eleven

		10/11	11/12	12/13	13/14	14/15
Orthopaedics*		126	163	144	139	**85**
Thoracolumbar*		0	0	0	0	**18**
Neurosurgery	**LA / JB / CM / CB**	87	95	74	94	**148**
Urology	**GC / VG**	541	390	450	524	**490**
Skin Care		52	59	68	64	**75**
Pain / Spasm		19	16	13	17	**20**
Neuroprosthetics	**TH / LW**	22	32	21	25	**25**
Sexual Dysfunction		28	19	14	22	**22**
Respiratory		8	9	28	21	**15**
Fertility		3	11	3	8	**4**
Spinal Injury Annual Review	TOTAL	975	1082	1063	1100	**1093**
	MEDICAL	595	690	680	698	**715**
	NURSING	380	392	383	402	**378**
Total		**1861**	**1876**	**1878**	**2014**	**1995**

The Spinal Injury Annual Review clinics are a large component of the commitment to life-long care. These are nurse led with only sixty four per cent of patients requiring medical input. There is an open door policy for patients and inevitable some activity remains under-reported. Urology clinics are available to investigate or treat bladder dysfunction at any stage. Neuro-prosthetics includes assessment and surgery for upper limb problems principally in tetraplegics.

*Following the retiral of Mr Allan, Consultant Orthopaedic Surgeon, the orthopaedic clinic has been redesignated as a Thoracolumbar Clinic to ensure the appropriate follow-up of patients with primary thoracolumbar fractures. The clinic continues to run under consultant cover by spinal injury consultants with involvement of the neurosurgical team where appropriate. These patients are then either discharged or filtered into the most appropriate long-term review clinic.

B1 A8 Day Case Attendances by Reason

Table Twelve

	10/11	11/12	12/13	13/14	14/15
Urology /Urodynamics	27	40	36	41	**54**
Halo Fixation	99	247	146	232	**175**
Skin	17	14	14	18	**8**
Orthopaedic/Neurosurgery	0	0	0	0	**0**
Acupuncture / Pain / Spasm	363	429	429	374	**413**
Sexual Dysfunction	6	2	3	2	**3**
Fertility	28	16	24	12	**19**
Other	28	1	0	1	**5**
Total	**568**	**749**	**652**	**680**	**677**

The activity remains stable over the last few years.

B1 A9 Day Case Activity

Day case activity continues to offer an important service for minor surgical procedures, medical interventions and nursing care. The level of Day Case activity is self-limited due to the finite population of spinal injured patients.

B1 A10 Day Case Attendances by Health Board

Day Case activity remains limited by geographical constraints. No trend is observed. Some patients who could be managed as a day-case require in-patient stay due to difficulties in travelling. If indicated procedures are arranged in the patients local hospital either by staff from the unit or appropriate specialists.

Fig Nine

	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015
Ayrshire & Arran	42	43	87	80	**52**
Borders	5	6	8	8	**6**
Dumfries & Galloway	15	23	9	16	**21**
Fife	29	38	27	25	**22**
Forth Valley	39	54	61	78	**45**
Grampian	4	3	2	4	**3**
Greater Glasgow & Clyde	347	423	367	355	**370**
Highland	1	5	4	7	**12**
Lanarkshire	31	101	36	46	**84**
Lothian	41	41	40	43	**49**
Shetland	0	0	0	0	**0**
Tayside	8	12	11	17	**12**
Orkney	0	0	0	0	**0**
Western Isles	3	0	0	0	**0**
ECR	2	0	0	1	**1**
Unknown	1	0	0	0	**0**
Total	**568**	**749**	**652**	**680**	**677**

B1 A11 & A12 Waiting Times Out-patient Clinics

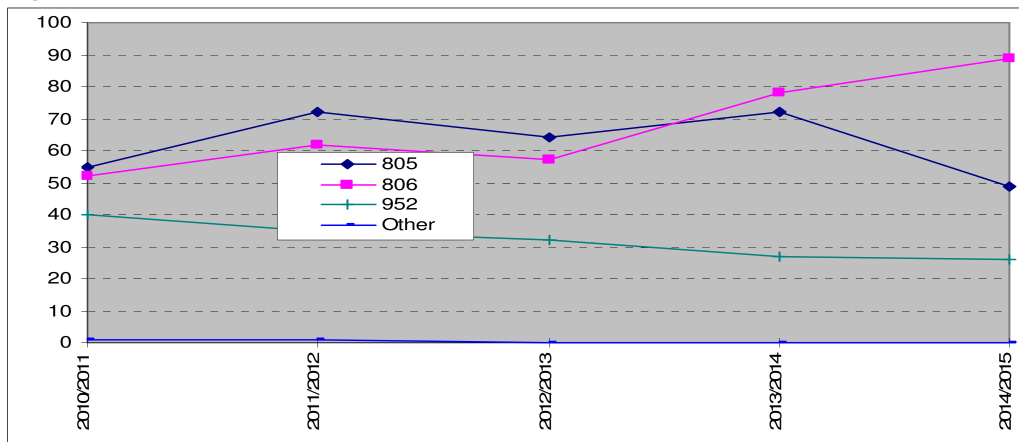
There is an open door policy to the Nurse Led Clinics. Medical advice is always available. The maximum waiting time for new elective outpatient appointments is four weeks.

B1: B1 Use of Resources

The unit admits on clinical priority and safety of transfer. Appropriate support facilities are available in the majority of hospitals in Scotland but international and regional data support early transfer if possible. The recent Asubio intervention study established that the NHS in Scotland could admit, triage and transfer patients to QENSIU within a twelve hour window but this was very labour intensive and not sustainable with current manpower. Current national policy is to transfer patients to QENSIU as soon as clinically stable and this has proved a robust admission policy. Bed availability is dependent on the case mix presenting over time and the length of stay of each patient. The more severe injuries but not the most severe have the longest length of stay because of the complexity of their rehabilitation. The degree of injury is important in determining throughput. The increased number of the most highly dependent patients (Groups 1 & 2) made extra demands on resources but time to admission was unaffected.

B1 B2 Admissions by Degree of Injury

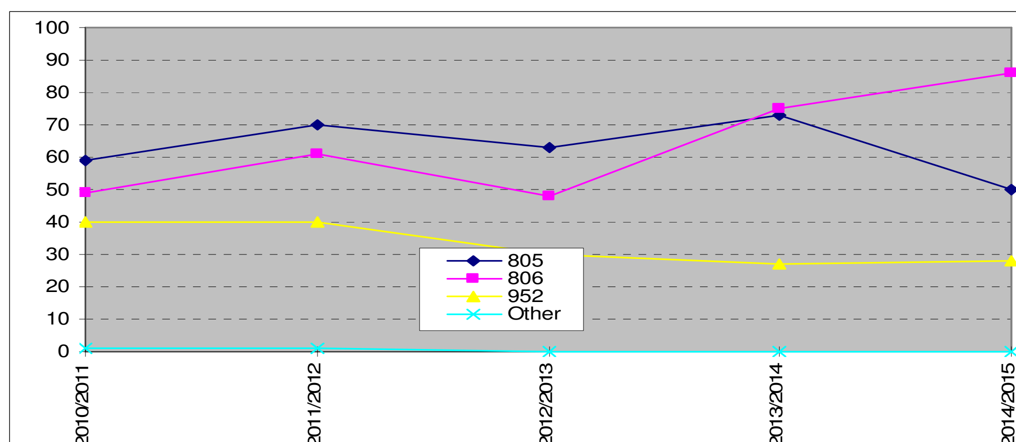
Fig Ten



806: patients with spinal fracture and paralysis
805: patients with spinal fracture but no paralysis
952: patients with paralysis but no fracture. This group includes patients with central cord syndrome (paralysis due to severe cord bruising) and patients with medical cause of paralysis such as stroke. Although these patients do not have fractures some are very badly paralysed. See B4 for details.

B1 B3 Discharges by Degree of Injury

Fig Eleven



B1 B4 Admissions and Discharges for Non Traumatic Spinal Cord Injury (ICD 9 Code 952)

The "non-traumatic" title is misleading but has been kept to ensure accuracy of comparison with historical data. See B2. This is a group of patients who have sustained paralysis without traumatic bony damage although some in this group will have sustained very severe ligamentous injury. The largest group of patients are those with central cord damage, characterised by predominantly weak arms.

Table Thirteen

2014/2015	Admissions	Discharges
Central Cord Lesion	21	22
Infection	1	0
Vascular	2	4
Tumour	0	0
Surgical	0	0
Non-specific Lumbar Lesions	0	0
Penetrating Wounds gun/stab	0	0
Assault	1	1
Other	1	1
Total	26	28

The Unit continues to admit a small number of patients with non-progressive spinal paralysis due to medical causes such as spinal stroke.

B1 B5 Length of Stay by Level of Spinal Cord Injury

Table Fourteen: Discharged Patients

Case Mix	No. of Patients	Mean L.O.S.	Range of L.O.S.
I	21	98	6 - 182
II	38	129	6 - 416
III	26	118	22 - 209
IV	79	29	2 - 161
All	164	75	2 - 416

Throughout the last ten years there has been significant effort spent on reducing the mean length of stay within the unit. The wide variation of length of stay within each classification is indicative of the variation in the rehabilitation needs within each group.
There is a significant variation in the resources used by each group as has previously been demonstrated.

B1 B6 Bed Utilisation

Table Fifteen

National Spinal Injuries Unit Edenhall HDU 12		Philipshill 36
Bed Compliment	Actual Occupied Bed Days	% Occupied
48	14354	82.6%

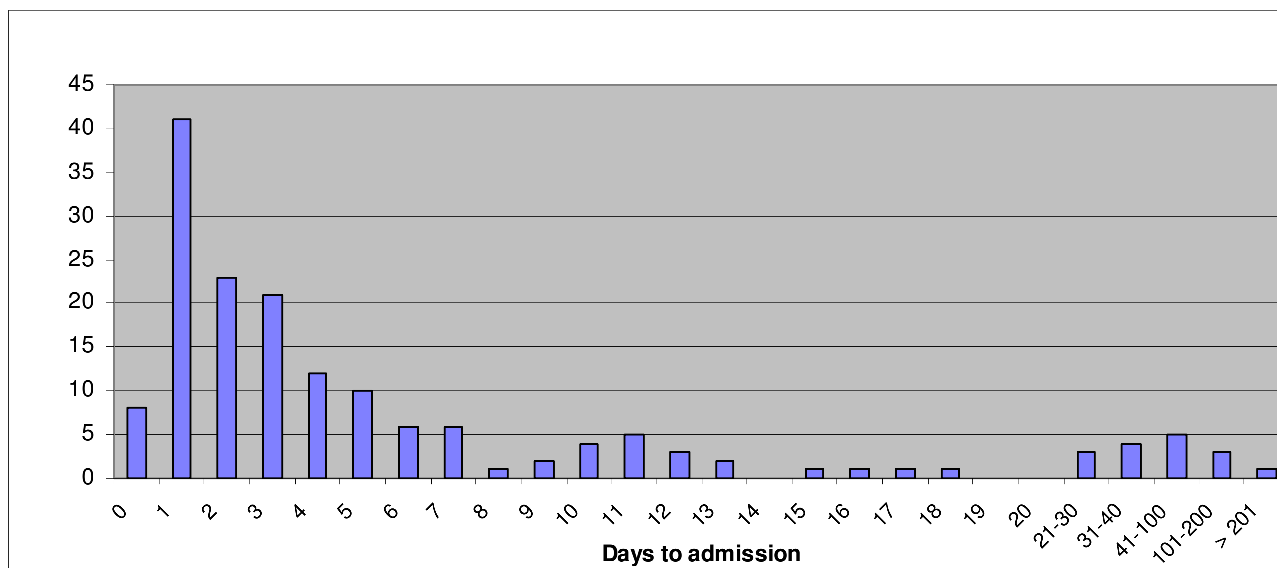
Occupancy figures are stable and allow flexible and efficient use of beds.

B1 B7 Time to Admission, Length of Stay and Delay in Discharge

B1 B8 Time from injury to Admission

The policy is of early admission for neurological injury with non-neurological injury admitted as beds became available. Most patients are referred within twenty-four hours of injury. Early referral is encouraged. In 2014-15 29% of patients were admitted within twenty-four hours of referral and 44% were admitted within forty-eight hours. 77% were admitted within one week. A ”long tail” of patients were admitted weeks and months following injury. This time pattern is consistent with previous years. The emphasis remains on early admission to provide immediate support to the patient and family and to prevent complications. A previous audit of acute admissions indicated that in only one third of patients the time of admission was related to bed issues with the rest related to severity of injury, transport difficulties or delay in diagnosis or presentation. The introduction of early intervention strategies will increase pressure for earlier admission.

Fig Twelve



Early referral and co-operation between the staff in the Unit and the referral hospital ensures immediate admission if clinically indicated. Telephone advice is available 24/7 for those patients who are not immediately transferred. The referral proforma, transfer documentation and admission form continues to be successful in facilitating and auditing the process. It has been internationally recognised and copied.

Approximately twenty-per cent of patients have associated orthopaedic injuries. Co-operation between Surgical Intensive Therapy (SGH), the referring hospital and other specialised units can be required (Plastic Surgery, Burns Unit, Maxilla-Facial, Renal etc).

Most patients admitted after seven days, the long tail, have conditions that do not require immediate treatment or have had additional co-morbidities that require medical intervention in the referring hospital prior to transfer. A few new patients have undergone initial rehabilitation in another centre and are admitted to the unit for reassessment or treatment of complications many months or even years post injury.

Table Sixteen Days to Admission by Range

	No. of Patients	Mean Time (Days)	Range of Time
2010-2011	**148**	**258**	**0 - 19749**
2011-2112	**170**	**19**	**0 - 438**
2012-2013	**153**	**185**	**0- 10598**
2013-2014	**177**	**151**	**0 - 8478**
2014-2015	**164**	**11**	**0 - 206**

Table sixteen includes some patients who were initially managed outside QENSIU and admitted years after injury. The mean time to admission is often skewed by these old injuries but in the current report all patients were admitted within their first year of injury.

Table Seventeen **Delayed Discharge**

	No. of Patients Discharged	No. of Patients Delayed	Mean delay (days)	Range of Delay (days)	NO DELAY
2010/2011	149	2	52	2 – 101	99%
2011/2012	171	2	37	35 – 38	98.8%
2012/2013	141	2	130	62 – 197	98.6%
2013/2014	175	7	34	1 – 91	96%
2014/2015	**164**	**5**	**38**	**10 - 104**	**97%**

Although discharges are planned weeks or months ahead a small number of patients continue to have delays in discharge usually due to lack of suitable accommodation. If accommodation is unavailable patients are transferred back to the referring hospital once they have completed their rehabilitation.

B1 B9 Re-admissions to the unit

Most neurologically injured patients discharged from the unit never require re-admission. They attend annually as out-patients for lifelong follow up. In some ways readmission at any time must be regarded as a failure.
There were forty seven readmissions to the unit during the year, a significant shortfall on the contract estimate of two hundred readmissions, skin problems predominate.

B1 B10 Ventilated Bed Days

High-level spinal cord injury often requires temporary or permanent ventilator support. The Respiratory Care Team consists of a Consultant Respiratory Physician and a Respiratory Care Sister who work closely with the neuro-anaesthetic service providing in-patient care and a domiciliary ventilation service throughout Scotland.

Table Eighteen

		No. Patients	Ave. Ventilated Days	Total Ventilated Days
10/11	Edenhall	17	32	551
	RCU	6	51	305
11/12	Edenhall	13	29	383
	RCU	5	29	146
12/13	Edenhall	16	14	229
	RCU	7	22	151
13/14	Edenhall	21	25	529
	RCU	6	79	472
14/15	**Edenhall**	**24**	**25**	**609**
	RCU	**5**	**66**	**331**

Each patient is counted only once but may be responsible for multiple episodes of care or inter ward transfers if their condition varies. RCU has proved its worth in continuing to provide step-down ventilation within the rehabilitation ward and freeing up acute ventilator beds in Edenhall ward.

B1: C: Finance Report 2014-2015

	AfC Banding	WTE	Contract Value 2014/15 £	Contract Value YTD £	Actual YTD £	Variance YTD £	Year End Forecast £	Year End Forecast Variance £
Dedicated Staff Costs								
Medical		9.19	953,997	953,997	974,768	-20,771	974,768	-20,771
Administrative	4	6.50	156,985	156,985	133,555	23,430	133,555	23,430
Administrative	3	0.14	3,197	3,197	3,280	-83	3,280	-83
Administrative	2	2.49	56,050	56,050	67,864	-11,813	67,864	-11,813
		9.13	*216,232*	*216,232*	*204,699*	*11,534*	*204,699*	*11,534*
Senior Manager		0.50	34,947	34,947	28,406	6,541	28,406	6,541
Nursing	7	7.80	339,344	339,344	369,897	-30,552	369,897	-30,552
Nursing	6	9.36	423,406	423,406	417,200	6,206	417,200	6,206
Nursing	5	52.30	1,766,216	1,766,216	1,900,936	-134,719	1,900,936	-134,719
Nursing	2	23.88	542,546	542,546	517,241	25,305	517,241	25,305
Housekeepers	2	2.00	55,761	55,761	50,769	4,992	50,769	4,992
		95.84	*3,162,220*	*3,162,220*	*3,284,449*	*-122,228*	*3,284,449*	*-122,228*
Psychologist	8B	1.00	63,458	63,458	52,999	10,459	52,999	10,459
Paramedical	7	12.26	536,066	536,066	525,644	10,422	525,644	10,422
		13.26	*599,524*	*599,524*	*578,643*	*20,881*	*578,643*	*20,881*
Total Staff		**127.42**	**£4,931,974**	**£4,931,974**	**£5,042,558**	**- £ 110,584**	**£5,042,558**	**-£110,584**
Supplies Costs								
Administrative				0		0	0	0
Medical				0		0	0	0
Nursing				0		0	0	0
Paramedical				0		0	0	0
Pharmacy				0		0	0	0
Surgical Appliances				0		0	0	0
Drugs			162,720	162,720	172,879	-10,159	172,879	-10,159
Surgical Sundries			480,675	480,675	475,333	5,342	475,333	5,342
CSSD/Diagnostic Supplies			4,468	4,468	6,252	-1,784	6,252	-1,784
Other Therapeutic Supplies *			120,293	120,293	170,276	-49,983	170,276	-49,983
Equipment/Other admin supplies			55,350	55,350	39,532	15,818	39,532	15,818
Hotel Services			40,531	40,531	40,194	337	40,194	337
Direct Supplies			**£ 864,037**	**£ 864,037**	**£ 904,466**	**- £ 40,429**	**£ 904,466**	**- £ 40,429**
Charges from other Health Boards								
Lothian Spinal Clinic			5,122	5,122	5,000	122	5,000	122
Charges from other Health Boards			**£ 5,122**	**£ 5,122**	**£ 5,000**	**£ 122**	**£ 5,000**	**£ 122**
Allocated Costs								
Medical Records			103,546	103,546	107,916	-4,371	107,916	-4,371
Building Costs			202,214	202,214	202,396	-182	202,396	-182
Domestic Services			67,701	67,701	70,559	-2,858	70,559	-2,858
Catering			186,271	186,271	194,134	-7,863	194,134	-7,863
Laundry			66,584	66,584	66,645	-61	66,645	-61
Neuroradiology			77,563	77,563	80,820	-3,257	80,820	-3,257
Laboratories			89,444	89,444	93,200	-3,756	93,200	-3,756
Anaesthetics			37,029	37,029	38,584	-1,555	38,584	-1,555
Portering			72,108	72,108	75,151	-3,043	75,151	-3,043
Phones			48,397	48,397	48,925	-528	48,925	-528
Scottish Ambulance Service			8,987	8,987	9,084	-97	9,084	-97
General Services			27,717	27,717	29,175	-1,459	29,175	-1,459
Allocated Costs			**£ 987,560**	**£ 987,560**	**£1,016,591**	**- £ 29,031**	**£1,016,591**	**- £ 29,031**
Total Supplies			**£1,856,719**	**£1,856,719**	**£1,926,057**	**- £ 69,338**	**£1,926,057**	**- £ 69,338**
Overhead Costs								
Fixed costs								
Rates			58,830	58,830	58,830	0	58,830	0
Capital Charge			435,774	435,774	435,774	0	435,774	0
Trust Overheads			150,011	150,011	150,011	0	150,011	0
Total Overheads			**£ 644,614**	**£ 644,614**	**£ 644,614**	**£ 0**	**£ 644,614**	**£ 0**
Total Expenditure		**127.42**	**£7,433,307**	**£7,433,307**	**£7,613,229**	**- £ 179,922**	**£7,613,229**	**-£179,922**
Postgraduate Dean Funding			-120,334	-120,334	-120,334	0	-120,334	0
Total Expenditure net of Postgraduate Dean Funding			**£7,312,973**	**£7,312,973**	**£7,492,896**	**- £ 179,922**	**£7,492,896**	**-£179,922**
Income from non-Scottish resident patients				0	-103,230	103,230	-103,230	103,230
Total Net Expenditure			**£7,312,973**	**£7,312,973**	**£7,389,666**	**- £ 76,692**	**£7,389,666**	**- £ 76,692**

***includes £29,023 for wheelchairs**

B1 D Key Performance Indicators Summary

	12-13	13-14	14-15
New Admissions	153	177	164
New Outpatients	232	271	290
Key Performance Indicators			
Referrals			
All patients referred	430	552	586
Telephone advice	277	253	312
Complex advice with support/visit	79	122	110
New patient activity			
All patients admitted with neurological injury	91	110	120
All patients admitted with non-neurological injury	62	67	44
Surgical stabilisations:			
- Thoraco lumbar fixations	34+6	42 +4	28
- Elective removal of metalwork			3
- Cervical fixations CB,LA,CM,JB	20+	20+	40
- Halo immobilizations	20	29	27
Spinal injury specific surgery:			
- Plastic Surgery	39	UNK	16
Implant spasm and pain control:			
- New pumps implanted	0	2	1
- Revision pumps	2	4 Rem / Rev	2
- Operational pumps	16	17	16
- Pump Refill QENSIU	12	11	9
- Pump Refill Local	6	6	7
Step down unit:			
- Episodes of care	26	28	44
- Number of families/people	14 / 69	14	19
- Number of days (nights)	53	72	78
New inpatient occupied bed days			
Total Available (new & return)	17,505	NA	17,369
Actual	14,313	NA	14,354
Bed Occupancy %	81.7%	NA	82.6%
Mean length of stay			
I	**135**	126	98
II	142	138	129
III	131	159	118
IV	28	31	29
All	80	74	75
Range of length of stay	1- 414	1 - 455	2 - 416
Delays in discharge (actual v's intended)			

Number of patients discharged	141	175	**164**
Number of patients with delayed discharged	2	7	**5**
Length of delay (mean/mode)	130	34	**38**
% with no delay	98.6%	**96%**	**97%**
Re-admissions – Return inpatient activity			
by NHS Board of Residence	NA	NA	NA
by reason for admission	NA	NA	NA
Return inpatient occupied bed days	NA	NA	NA
Total Available (new & return)	NA	NA	NA
Available	NA	NA	NA
Bed Occupancy % (target >85%)	NA	NA	NA
mean length of stay	NA	NA	NA
median length of stay	NA	NA	NA
range of length of stay	NA	NA	NA
Day case			
by NHS Board of Residence	See Table	See Table	See Table
by reason for admission	See Table	See Table	See Table
Outpatient activity			
New Patient no's Southern General	See Table	See Table	See Table
Return Patient no's Southern General	See Table	See Table	See Table
New Patient Southern General (DNAs/ % attendance)	21%	18%	**20%**
Return Patient Southern General (DNAs/ % attendance)	30%	27%	**26%**
New Outreach Clinics by Centre	NA	See Table	See Table
Return Outreach Clinics by Centre	See Tables	See Table	See Table
Attendance at New Outreach Clinics by Centre (DNAs/ % attendance)	NA		
Attendance at Return Outreach Clinics by Centre (DNAs/ % attendance)	See Table		
Outpatients discharged in period	NA		
Number of patients discharged from the service	Life Long Care	Life Long Care	Life Long Care
Actual / Anticipated number of patients in service			
Allied Health Professionals activity	See Appendices	See Appendices	
New Patient no's	A3 A	A3A	
Return Patient no's			
New Patient (DNAs/ % attendance)	See Tables	See Tables	
Return Patient (DNAs/ % attendance)	See Tables	See Tables	

As a specialised national service we conform to current and past relevant HEAT targets. (Health Improvement, Efficiency, Access, Treatment Targets) These are incorporated wherever possible in the relevant sections of the report (B3: C)

B2 Effectiveness

B2 A1 Clinical Audit Program

There is a multidisciplinary audit programme overseen by senior medical and nursing staff. Meetings and presentations are held monthly. In the last year Unit staff completed eleven primary audits as well as re-auditing three previous areas. Aspects of the Scottish Patient's Safety Programme are now embedded in the unit and provide monthly mini-audits of practice including hand-washing, iv cannulation, pressure sore incidence etc. We anticipate that publication of national outcomes from SPSP will allow us to benchmark ourselves against other Scottish wards.

B2 A2 Mechanism of Injury

The mechanism of injury of all admissions reflects changes seen in other areas of social activity and change. Falls are established as the predominant mechanism of injury Medical causes, domestic and self-harm remain stable. The number of sporting injuries has reduced. Two rugby injuries required in-patient care and two out-patient care. There has been a spike in cycling injuries from all disciplines, on and off road.

Table Nineteen

	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
Fall	72	93	73	104	**95**
RTA	**34**	**36**	**43**	**28**	**40**
Motor vehicle	22	21	21	19	18
Motorcyclist	6	7	9	4	7
Bicyclist	4	4	9	1	14
Pedestrian	2	4	4	4	1
Secondary to Medical Diagnosis	21	16	13	16	**11**
Industrial Injury	2	5	8	4	**4**
Assault	2	3	0	0	**1**
Penetrating Injuries	2	0	0	0	**0**
Sporting Injury	11	13	12	14	**8**
Domestic Injury	3	1	0	0	**0**
Self Harm	1	3	4	11	**5**
Other	0	0	0	0	**0**
Total	**148**	**170**	**153**	**177**	**164**

B2 A3 Clinical Governance

Senior medical and nursing staff meets quarterly with colleagues in the Health Board Clinical Governance programme. Standing items include Clinical Incident Review, Mortality Review, Risk Register and putting audit into practice. There have been no serious (category 4 or 5) clinical incidents in the past year. The Unit continues to adopt National Management Guidelines as appropriate. In the last year three patients died in the Unit, two were in their nineties and one in their eighties. Their cases were reviewed at the Clinical Governance meeting. All had been admitted with at least the potential for rehabilitation but became unwell due to unavoidable complications of paralysis. The numbers of such elderly patients are likely to increase in keeping with the age profile.

B2 B Clinical Outcomes/complication rates / external benchmarking

The unit has provided outcome figures since 1998 in the annual report and in specialised ad hoc reviews. Substantive peer reviewed papers have been published in the literature on a number of topics. Details of publications and complication rate are outlined in Sections B1 and B3.

External benchmarking is an identified goal in SCI management. Last year national commissioning started in England and Wales and this should provide a reference database of patients but no results are available yet. The Scottish database continues to combine management and clinical information enabling service management and development.

B2 C Service Improvement

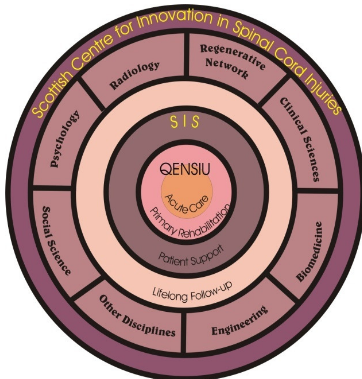
The service is subject to continual review.

B2 D Research

Morbidity and mortality following spinal cord injury was reduced dramatically following the introduction of specialised spinal cord injury units. Life expectancy has been increased from a few years to approaching normal and the complications of injury are routinely monitored for, treated or prevented. Internationally three areas remain of concern: mortality secondary to cardiovascular disease and suicide is unchanged and there has been no progress in developing primary treatments for spinal cord injury.
The unit has a portfolio of research ranging from olfactory stem cells, osteoporosis, brain computer interfaces, robotic exercise, FES cycling and FES respiratory support.

A detailed research profile of the **Scottish Centre for Innovation In Spinal Cord Injury (SCI ^{2})** Is available at www.http.scisci.org

Research in basic sciences, prevention and clinical treatment including translational approaches is a fundamental and embedded function of the unit. The ultimate aim is to act as a host and supporter of all basic scientists who can have a positive impact on the care of the traumatic spinal cord injured. We have set up **SCI ²**.The **S**cottish **C**entre for **I**nnovation in **S**pinal **C**ord **I**njury as an umbrella to support translational research in a clinical setting.



The unit is principally supported by Glasgow University whose Centre for Rehabilitation Engineering is based in the GU funded Research Mezzanine.

Papers and Authorship

A detailed explanation of **SCI²** is available @ SCISCI.ac.uk

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B3 A1 Safety Risk Register

The unit complies with all corporate, regional and local requirements and supports risk awareness and risk management.

B3 B1 Clinical Governance: Critical Incidence Reporting

A formal Critical Incident Reporting system is in place with a Clinical Incident defined as a potential or actual danger to patients, which could have been prevented by a change in practice. The unit is included in The Regional Services Directorate for reporting purposes

Table Twenty and Twenty-one

Incident reporting summary

Category	Number
Pressure Ulcer Care	33
Medication Incident	7
Clinical – other	
Contact with object	4
Infection control	
Medical Device & Equipment	7
Abscondment	1
Slips, trips and falls	**49**
Other	10
Security	1
Moving & Handling	12
Violence & Aggression	30
Contact with or exposure to hazard	3
Treatment problem	
Labs medicine	
Challenging Behaviour	
Fire Alarm actuation	4
Patient observation	
Needlestick injury	6
Patients record missing	
Transfusion incident	
Transport related	
Building fault	4
Staffing levels	2
Anaesthetic practice	1
Discharge / transfer issue	1
Total	**175**

	Slips, Trips and Falls
Fall from bed	3
Fall from chair	26
Fall from level	8
Slip / trip on level	7
Suspected fall	1
Other	4

Serious clinical incidents are investigated according to GGC policy. During the year no serious clinical incidents arose on the Unit.

Overall - Pressure Ulcer

1 - Negligible	97
2 – Minor	64
3 – Moderate	14
4 – Major	0
5 – Extreme	0
Total	**175**

The unit maintains an active CI reporting system and has encountered no level four or above incidents in the year.

B3 C1 Scottish Patient Safety Programme (SPSP)

The Scottish Patient Safety Programme aims to improve the safety and reliability of hospital care throughout Scotland. This is achieved by using evidence based tools to improve the reliability and safety of everyday health care. The current aims are to:

- Reduce Hospital Acquired Infection
- Reduce adverse drug incidents
- Increase critical care outcomes]
- Increase organizational and leadership culture and safety
- Healthcare Associated Infection (HAI)

There are five work streams, Edenhall Ward is within the Critical care/HDU work stream and Philipshill Ward is in the general work stream.

B3 C2 Hospital Acquired Infection

Sporadic MRSA cases continue to arise within the Unit and staff work within GGC Infection Control guidelines to minimise cases. Periods in isolation significantly affect the rehabilitation timetable and every attempt is made to reduce this to a minimum.

Table Twenty-two

	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
Total patients req. Isolation	N/A	0	N/A	All	6
Salmonella	0	0	0	0	0
Clostridium Difficile	3	0	0	0	2
MRSA	11	4	4	14	5
Streptococcus pyogenes	1	1	1	1	0
Scabies/ TB /Varicella Zoster	0	0	0	0	0
MDR Acinetobacter					1
Patients treated in isolation					4
Patients not treated in isolation	N/A			8	4
Patients not suitable for isolation				3	3
No single room available				5	1

Table Twenty-three

2014-2015	MRSA	C.Diff	MDR Acinetobacter
Edenhall	2	0	1
Philipshill	3	2	0

Edenhall Ward receives patients in the early stage after multiple trauma and many come from ITU or HDU areas and are a high risk group. The relatively low rates of infection are a tribute to the standard of nursing care and policies within the unit especially as regards bowel and bladder care

B3 C3 Clinical Quality Indicators

Senior nursing staff monitor the following key quality indicators in accordance with GGC policy

Documentation Audits are carried out on alternate months. Ten sets of patients' notes are selected randomly to ensure we are adhering to GGC Record Keeping.

Sepsis Six Bundle. Both wards have implemented the Sepsis Six Bundle. This major initiative from the Scottish Patient Safety Programme is audited by evaluating data monthly. Sepsis Six ensures reliable person centred response for the deteriorating patient with reliable recognition and immediate care delivery.

Catheter Associated Urinary Tract Infection (CAUTI). Last year the SPSP team identified CAUTI as one of the priority bundles to be rolled out. Spinal injured patients have to manage their bladder in the acute stage by urethral catheterisation. We have implemented the CAUTI bundle in both wards. This has streamlined our care plans for the maintenance and insertion of a urethral catheterisation. A safety cross tool is used to identify when a CAUTI has arisen to enable recognition/improvement from the team. CAUTI is audited monthly and processed through the SPSP team, this measures compliance on maintenance and insertion ensuring documentation is accurate.

Meal Time Bundle aims to improve meal time experience by improving nutritional assessment, documentation and care planning. Improved mealtime processes therefore should reduce variation and embrace standardisation ensuring the right patient gets the right meal at the right time.
Measurement of data was gathered by mealtime observation, patient experience questionnaire and staff experience questionnaire. This was measured by collecting five per week, twenty per month to establish baseline data, then 3 monthly after this.

Active Patient Care - Active Care is a framework document which aims to embed person-centred care and to help prevent adverse events such as falls and pressure ulcers. Its aim is to be person centred using planned care timings based on clinical judgement to pre-empt the care needs of patients.

Caring Behaviours Assurance System – Both wards have been involved in the CBAS programme, each area has designated champions and have created a PCQI (person centred quality instrument) for their area. See B5.

Thanks are due to Education Sister Helena Richmond for supervising the above projects.

B3 C4 Overall CQI Compliance Trends 2011-2012

As part of Leading Better Care 3 clinical quality indicators are assessed monthly providing real time data to the wards.

B3 C5 KSF Targets

The unit is compliant with KSF (Knowledge, Skill Framework) targets. All nursing staff are up to date and have been reviewed in the last twelve months.

B3 D Adverse Events

B3 D1 Pressure Sore Prevalence

Traditionally we have monitored point prevalence but have now moved to recording total sore numbers recorded on the ward.

Table Twenty-three Overall Pressure Ulcer

Pressure Ulcer developed outwith QENSIU = **18**			Pressure Ulcer developed during stay in QENSIU= **15**		
Grade 2 = 16	Grade 3 = **2**	Grade 4 = 0	Grade 2 = 12	Grade 3 = **2**	Grade 4 = **1**

All pressure sores must be considered to be a failure of care to some extent. The best way of preventing sores outwith the unit is to continue to admit patients as soon as clinically safe to do so. The "red flag" team of unit nursing and medical staff review every sore developing on the ward and make recommendations on any necessary changes in care. When appropriate they involve the GGC Tissue Viability nurses.

B3 E Complaints / Compliments

B3 E1 Complaints

A formal complaint/suggestion system is in place at both unit and hospital level. This has proved invaluable in monitoring quality and modifying the service. The management recorded five formal complaints, two partially upheld which were fully investigated and proved useful in reviewing current practice. Assistance was given in advising regarding complaints involving management of patients out with the unit which also have relevance to in house treatment. A proactive approach is followed with Spinal Injuries Scotland, Aspire and Back Up to improve all aspects of our service.

B3 E2 Compliments

Significant contributions are received from grateful patients, families and community groups to assist in purchasing items for patient treatment and comfort.

B4 Timely (Access)

B4 a) Waiting / Response Times

QENSIU admits acutely injured spinal patients as soon as their condition allows. There is no waiting list for admission. In 2014-15 29% of patients were admitted within one day of injury and 77% within one week. The time to admission has been stable over several years. It has proven difficult to decrease this time; there is likely to be a cohort of polytrauma patients who will always require several days for resuscitation and treatment of life and limb-threatening injuries before they are fit for transfer.

B4 b) Review of Clinical Pathway

The national pathway has proven to be robust and provides a safe model for delivery of care to spinal-injured patients in Scotland.

B5 Person Centred

B5 A Patient Carer/Public Involvement

The unit is fully committed to the development of integrated care and peer review. Regular patient focus groups are used and relatives and carers events are held in house and in cooperation with Spinal Injury Scotland (SIS).We comply fully with all national and local initiatives. The patient Education and Social Integration Programme is being expanded with the help of SIS.

B5 B Example: Leading Better Care/Person Centred Care
Caring Behaviours Assurance System (CBAS)

Commissioned by the Chief Nurse for NHS Scotland the Caring Behaviours Assurance System (CBAS) is a way of exploring the perceptions of everyone involved in the delivery of healthcare with a view to enhancing understanding and co-operation, so that action can be put in place to assure greater satisfaction with the quality of care given and received.

CBAS reflects ‘the Seven Cs’ identified in the Scottish Government’s Healthcare Quality Strategy (May 2010) which states:

People in Scotland have told us that they need and want the following things from the NHS and we have built this strategy around these priorities:

- **Caring** and **Compassionate** staff and services
- Clear **Communication** and explanation about conditions and treatment
- Effective **Collaboration** between clinicians, patients and others
- A **Clean** and safe care environment
- **Continuity** of care
- Clinical excellence

Both wards have identified CBAS champions which promote and take the above priorities forward.

Person Centred Health and Care Collaborative (PCC)

This is a Scotland wide programme of work aimed at improving health and care service delivery so it is more patient/family/carer focused. The Unit is supported by the PCC who carry out "themed conversations" with inpatients on a monthly basis. By listening to the experience of people using the service, feedback can be given to teams' real time. This allows areas for improvement to be identified and acted upon.

As a result of the above initiatives patient feedback has resulted in:

- New nurse call system more compatible with patient's needs
- Introduction of a meal times coordinator to enhance the mealtime experience
- Change to way some personal care tasks are carried out
- Increased frequency of relatives support days

B5 C User Survey

The unit is fully committed to regularly obtaining feedback and responding to issues raised. Patient Stories satisfaction questionnaires are used and are included at appropriate sections of the report. **Questionnaires** are used as appropriate.

B5 D Family Unit / Step Down Unit

The specially designed patient and relative accommodation continues to support acute admissions, long stay and pre-discharge patients. The Family Suite has been occupied on 44 occasions for a total of 78 nights. This involved more than 19 families predominantly from outside the West of Scotland. The Unit has been flexible in accommodating relatives and has opened the Family and Step Down for day use when necessary.

The Family Unit was envisaged to look after families of working age patients but now will often accommodate patients in their seventies or eighties with their adult children and carers.

B6 Equitable

B6 A Fair for all: Equality & Diversity

The unit has developed to ensure equal access for all geographical areas of Scotland.

Table Twenty-four Out-patient Services

	10/11	11/12	12/13	13/14	14/15
Return	2193	2293	2243	**2389**	**2378**
New	229	188	232	**271**	**290**

Table Twenty-five Out-patient Clinic Location

Frequency	Location			
Weekly	QENSIU New x 3 QENSIU Return x4 Respiratory Care	Skin Urology Halo Fertility	Orthopaedics alt Tuesday Neurosurgery Fridays	
Monthly	Edinburgh			
Three Monthly	Aberdeen	Inverness		
Six Monthly	Dumfries	Borders	Arbroath	
Annually				Huntly

Table Twenty-six Out-patient By Centre

	10/11	11/12	12/13	13/14	14/15	CHANGE YEAR	TOTAL 1992-2015
New QENSIU	229	188	232	271	**290**	**+ 7%**	**3034**
Return QENSIU	1861	1876	1878	2014	**1995**	**(0.9%)**	**35946**
Edinburgh	162	174	148	154	**157**	**+ 1.9%**	**3648**
Inverness	49	62	60	63	**63**	**No Change**	**974**
Aberdeen	61	85	66	74	**76**	**+ 2.7%**	**958**
Dumfries & Galloway	9	27	20	17	**19**	**+ 11.8%**	**281**
Borders	19	15	26	24	**25**	**+ 4.2%**	**258**
Arbroath	14	31	26	29	**27**	**(6.9%)**	**274**
Huntly	18	23	19	14	**16**	**+ 14.3%**	**90**
Total	**2422**	**2481**	**2475**	**2660**	**2668**	**+ 0.3%**	**45463**

Table Twenty-seven: Number of patients on the Spinal Outreach clinic lists

Clinic	April 2012	April 2013	April 2014	April 2015
Inverness	80	82	77	**81**
Aberdeen/ Huntly	117	118	118	**120**
Borders	35	36	34	**39**
Dumfries	27	29	26	**30**
Arbroath	35	37	33	**39**
Edinburgh			142	**134**
Total	294	302	430	**443**

Table Twenty-eight New Out-patient Activity by Health Board

	10/11	11/12	12/13	13/14	14/15
Ayrshire & Arran	21	15	16	16	**26**
Borders	1	2	2	1	**1**
Dumfries & Galloway	7	3	6	6	**5**
Fife	7	4	2	2	**4**
Forth Valley	17	14	4	11	**9**
Grampian	3	3	0	2	**0**
Greater Glasgow Clyde	136	105	154	193	**197**
Highland	4	4	0	9	**7**
Lanarkshire	20	27	35	21	**33**
Lothian	8	3	7	8	**6**
Shetland	1	0	0	0	**0**
Tayside	3	8	4	0	**1**
Orkney	0	0	0	0	**0**
Western Isles	0	0	1	2	**1**
ECR	1	0	1	0	**0**
Unknown	0	0	0	0	**0**
Total	**229**	**188**	**232**	**271**	**290**

B6 B Geographical Access

B6 B1 Nationwide services

As a national service it is important to provide outpatient and domiciliary services throughout Scotland. This has resulted in the development of the liaison sister service and out-reach clinics in areas identified on our database as having a concentration of patients. All outreach clinics are now Medical Consultant led with Nursing and Occupational Therapy staff attending as required. Volunteers from SIS see and advise patients and carer. There is a continued demand for nurse specialists to provide important in-patient and outpatient advice to local care teams as well as patients themselves. As well as two Liaison Sisters there is an Education Sister, Respiratory Sister, and Discharge Planner. They all provide assistance to the Senior Nurse.
The Spinal Nurse Specialist team (Liaison Sisters) continue to visit patients wherever they are domiciled in Scotland. These visits may be post discharge visits, follow up visits or for education/training of families or carers. A telephone help and advice service continues to be maintained by the Spinal Nurse Specialist team taking approximately 10 - 15 telephone calls per day.

Sister Prempeh 93 visits covering 7,130 miles.

Sister Woods 130 visits covering 8,216 miles.

Sister Duffy 86 visits covering 6,471 miles.

Total numbers of visits, clinics and meetings carried out by the liaison nurses was 619 covering 21,817 miles.

B6 B2 Table Twenty–nine: Attendance and Location Outreach Clinics

Location	% Attendance 11-12	% Attendance 12-13	% Attendance 14-15	Number of Clinics	Number of Patients
Aberdeen	91%	95%	89%	5	76
Inverness	92%	95%	97%	4	64
Dumfries	90%	95%	90%	2	19
Arbroath	94%	90%	90%	3	27
Borders	91%	85%	94%	2	25
Huntly	100%	95%	95%	1	16
Ave Rate	**91%**	**92%**	**92%**	**16**	**227**

Outreach attendance remains high. Patients are contacted beforehand to confirm that the appointment is still convenient and appropriate.

B6 B3 Table Thirty Annual Activity: Liaison Sisters

Name	Meetings	Clinics	Visits	Teaching Sessions	Miles
L Woods	128	20	130	2	8216
S Prempeh	93	17	93	8	7130

B6 B4 Table Thirty-one Annual Activity: Respiratory Support Nurse

The Respiratory Support Sister has been a tremendous success in coordinating in-patient and domiciliary ventilation. All patients requiring assisted ventilation at home have been visited during the year with 6471 road miles travelled.

Name	Meetings	Clinics	Visits	Teaching Sessions	Respiratory Referrals	Miles
L Duffy	27	10	86	91	10	6471

A major role has been coordinating discharge for those requiring assisted ventilation with social services and an appropriate care and training package.

B6 B5

Table Thirty-two Annual Activity Education Sister: Helena Richmond

2014/15 Month	Meetings	Clinics	Internal Teaching	External Teaching	Outreach Clinics	Patient Education	Relatives Day
Apr	3		10	52		25	
May	5	1	14		Aberdeen	16	
Jun	3	2	25		Inverness	20	18
Jul	4	1	10			12	
Aug	3	1	62	42	Inverness		
Sept	4	1	22	68		25	
Oct	2		40	22		24	
Nov	3		48	70		22	35
Dec	4		17	22			
Jan	4		39	16			
Feb	3		32	64		12	
Mar	5		14		Aberdeen	31	
Total	**43**	**6**	**333**	**356**	**4**	**187**	**53**

B6: B6 Location of Lothian Outreach Clinic

Following closure of Edenhall Hospital the Lothian outreach clinic was relocated at the SMART Centre within Astley Ainslie hospital. The clinics are held monthly and have proved popular with the patients in the region. Astley Ainslie is due to close and there are advanced plans to move the clinics to the Royal Edinburgh Hospital which is nearby and no disruption is expected to the service. Difficulties continue to be experienced in the drive towards E.P.R., Trakcare and PACs with outreach clinics.

B6 B7 Supporting Surgical Services

Multi-disciplinary medical rehabilitation is the keystone of the workload in Spinal Cord Injury. Surgical support is required from orthopaedics, neurosurgery and Soft Tissue Pressure Sore surgery. Approximately twenty per cent of the patients have additional limb injuries.

Table Thirty-three

Service	Clinics	Patients	Acute Spinal Operations	Elective Operations
Thoraco-lumbar 2x Month	24	103	28 Thoraco-lumbar Fixations	3
Neurosurgery JB LA CM CB 4x Month	47	148	40 Cervical Fixations	
Skin Care MF	N/A		N/A	16

Following Mr Allan's retiral (Orthopaedic Spinal Surgeon) neurosurgery has provided the surgical service for thoracolumbar fractures including fixation when needed, Admissions of thoracolumbar injuries have been unaffected. Thanks are due to Mr Mathieson and Mr Barrett for seamless continuation of the service and also to orthopaedic theatres at SGH for continuing to provide facilities.
The Unit has received appropriate support from the orthopaedic service at SGH for limb fractures.
Newly appointed orthopaedic spinal surgeons have been identified in GGC and will move to the new SGH in May 2015. We anticipate joint working between orthopaedic and neurosurgical teams but await formal job planning.
Mr Fraser continues to provide expert plastic and soft tissue surgery for complex pressure sores.

Section C Looking Ahead / Expected Change/Developments

There is a slow transition to electronic records and the Unit continues to use predominantly paper-based records due to difficulties in accessing e-records from outreach clinics.

There are advanced plans to employ a Sports Therapists and Activities Co-ordinator to complement the formal rehabilitation process.

Staff in the Unit and hospital management have been working closely with the charity, Horatio's Garden to build formal landscaped and cultivated areas within the Unit grounds. These will provide welcoming, quiet and nurturing places for patients and relatives.

The unit anticipates challenges ahead and are proactively seeking solutions to cost and development pressures. We are engaged in the CRES savings assessment and have instituted a local Cost Containment Review.

At the time of writing the new Southern General Hospital (nSGH) is within weeks of opening. This 1000 bed hospital is adjacent to the National Spinal Injuries Unit and will be linked by a covered corridor. Its designation as a Major Trauma Centre is likely to attract many more injured patients who would previously have been seen in other hospitals in WoS. In turn there is likely to be increase in referrals from the nSGH

Section D Summary of Highlights (Celebration and Risk)

The original concept, funding and organisation of the care of spinal cord injury in Scotland have proved durable and flexible over the last twenty years. This is reinforced by international recognition, a successful track record in research and its influence in service planning in the UK.

The Unit recruited three patients to the international ASUBIO trial of a neuroprotective agent early in spinal cord injury. This study required a large amount of administrative and clinical work both in and out of hours. The service demonstrated that it could admit and assess study patients 24/7 with an injury to needle time of <12 hours. This has positioned the unit at the forefront of world spinal units in delivering such acute care and we anticipate this will lead to other intervention in acute SCI. Thanks are due to Dr Purcell who led the research and also to nursing staff and the Scottish Ambulance Service who arranged prompt transfer and care.

The therapy programme within the Unit (organisation of gym time etc) is essentially unchanged since 1992 and staff are exploring changes to the programme which may include rehabilitation classes as well as gym time. Total therapy time will be unchanged or increased.

Academics from the Glasgow School of Art are exploring redesign of the overall rehabilitation process using techniques from industry and business. This is the subject of a PhD programme.

The Abdominal Functional Electrical Stimulation programme to improve weaning has been developed by Glasgow University over several years. Following further publications and a successful PhD programme (Drs McCaughey/Gollee) a device has been developed and approved by Clinical Governance for routine clinical use in the Unit.

There is no doubt that the demographics, expectations and service delivery patterns are evolving and it is appropriate that the service now proceeds to a full review of the nature provision and financing of the service. Key elements in forward planning are to ensure that the unit continues to provide a necessary specialised service for an identifiable need and to produce it efficiently and equitably.

Thanks must be given to the National Services Division and NHS Greater Glasgow and Clyde for their help and support in delivering the service.

Alan McLean FRCP
Queen Elizabeth National Spinal Injuries Unit
May 2015

Acknowledgement is made to Ana Bewick and Irene McGonigle for producing the report and to Mariel Purcell, Michele Paterson and Helena Richmond for their contributions to the main report. Many thanks are due to all of the team that assisted in the maintenance of the database. The Appendix is a huge testament to the work done by all in developing and supporting the unit.

The front cover the courtyard redesign by Horatio's Garden.

The renowned garden designer James Alexander-Sinclair has been commissioned by the Charity to develop the green areas both inside and around the National Spinal Injuries Unit to provide a sanctuary for patients, relatives and staff. More information is available from www.**horatiosgarden**.org.uk