



Queen Elizabeth National Spinal Injuries Unit for Scotland



Opened in 1992 by Queen Elizabeth II

ANNUAL REPORT 2011-12

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A1: Queen Elizabeth National Spinal injuries Unit for Scotland

A2: Aim and Date of Designation of Service

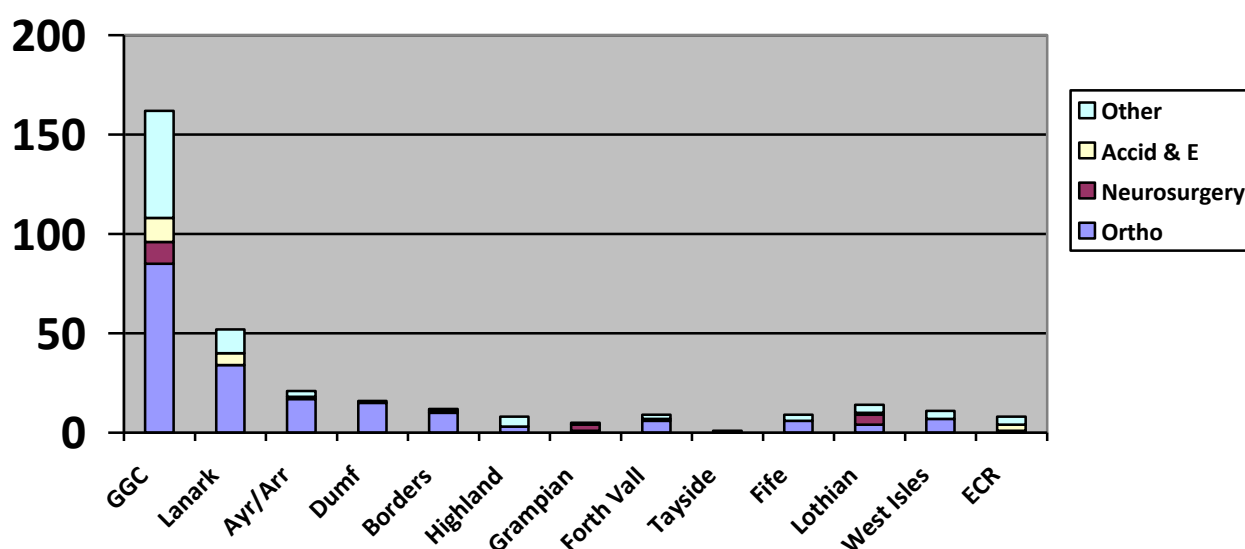
The Queen Elizabeth National Spinal Injuries Unit is responsible for the management of all patients in Scotland who have a traumatic injury to the spinal cord. Since commissioning in 1992 it has continued to develop the management of the acute injury and life time care of all of its patients to maximise function and to prevent the complications of paralysis. Its facilities include a combined Admission Ward and HDU (Edanhall) and a Rehabilitation Ward (Philipshill). In addition there is a custom built Step-Down Unit and Research Mezzanine (GU). Clinical Services are provided at the Glasgow centre and appropriate outreach clinics or services 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

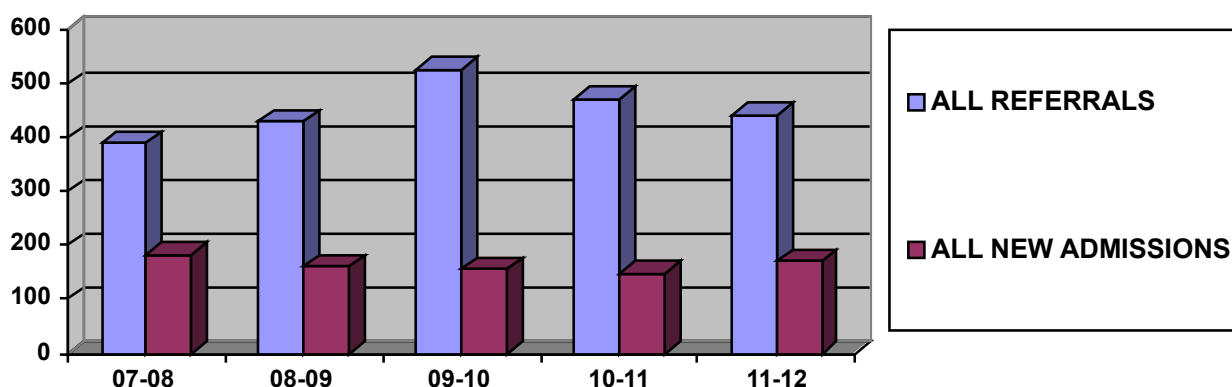
The unit accept all patients who are injured or domiciled in Scotland and are referred with a traumatic spinal cord injury. In addition complex fractures without neurological injury but who are at risk of neurological compromise or require expert assessment and treatment are admitted. Multiple pathways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

Fig One



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



prevent complications. Life expectancy without proper treatment is limited (24 months) but should approach normal with appropriate immediate care and life long follow up. All patients referred with a neurological injury (99) were admitted as soon as clinically indicated. The total number of patients (441) referred to the unit fell slightly, presumably following discussions, regarding the large number of referrals outside the target group, in previous years.

The number of neurological injured patients has remained stable over the last five years and is consistent with the population size. There was a significant increase in the number of non-neurological injured spinal fractures (71) admitted, principally from District General Hospitals.

A small increase in the number of neurological injured patients significantly reduces the number of beds available for shorter stay patients. Three hundred and twenty four patients referred were not admitted and managed in the base hospital with appropriate advice.

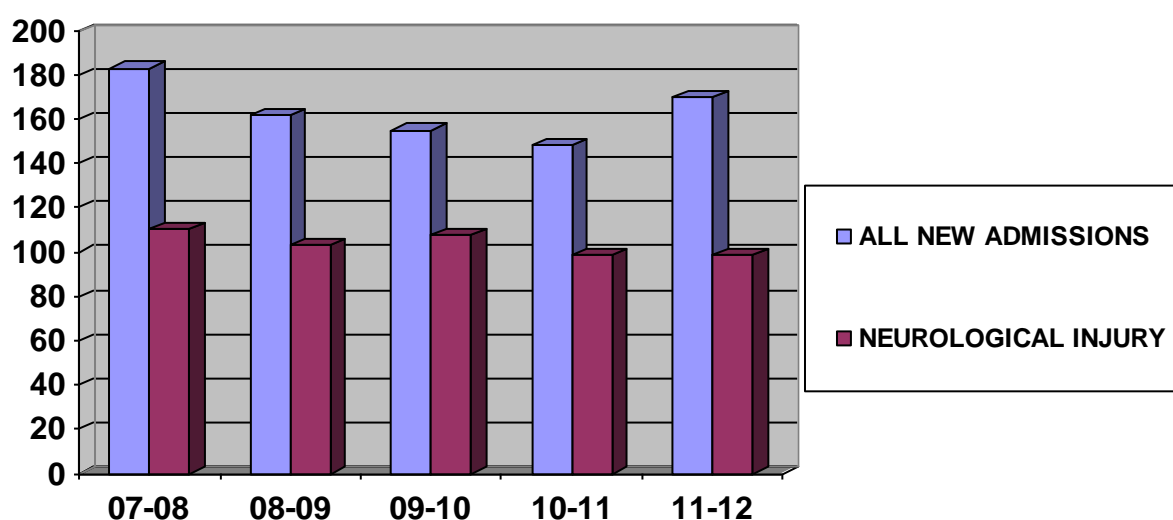


Table One

	07/08	08/09	09/10	10/11	11/12	92-12
ALL NEW ADMISSIONS	183	162	155	148	170	3161
Neurological	110	103	108	99	99	1625
Non-neurological	73	59	47	49	71	1536

The number of patients with a neurological deficit is stable (103-110 median 104). The number of referrals related to spinal fractures without neurology continues cause concern. These patients are referred, because of the severity of the fracture or seeking admission for conservative care. Opportunity to admit the full spectrum of fractures is limited because of the number of available beds and the varying case-mix amongst the neurological injuries. Orthopaedic consultants or neuro-surgeons managed over two hundred and seventy one patients without neurological deficit in the referral hospital. A number of patients were managed in the Neuro-surgical and Orthopaedic wards of the Southern General Hospital by the unit staff because of concomitant injuries.

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 Four: New Admissions by Case-Mix Complexity

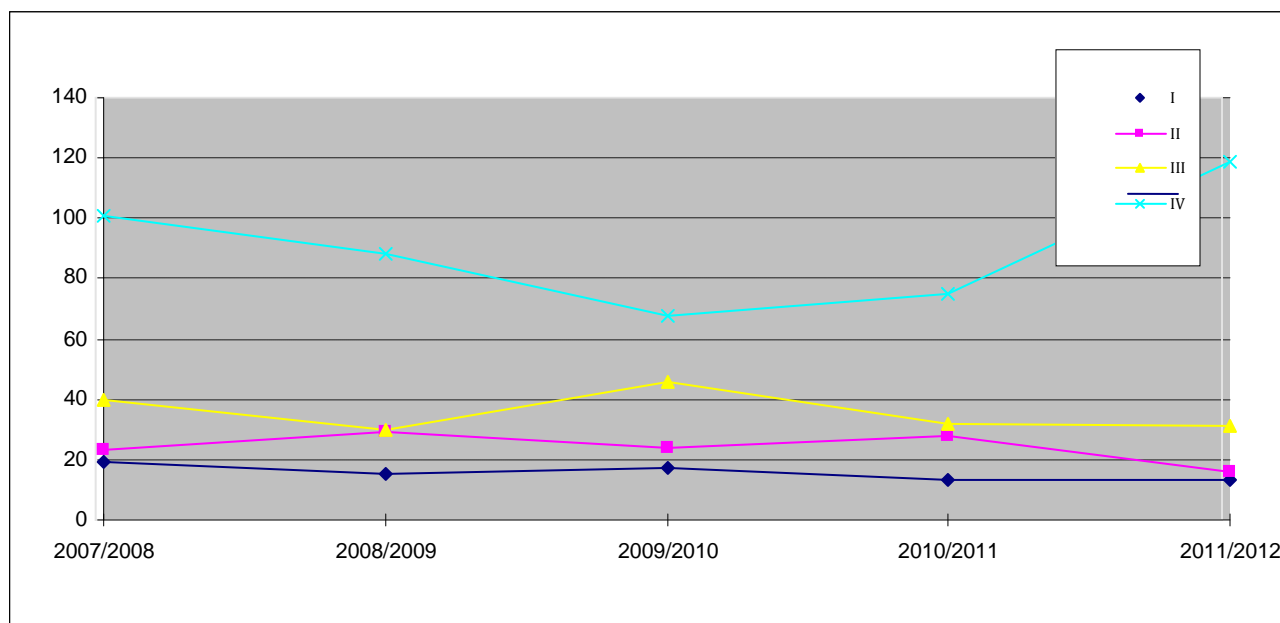


Table Two:

GROUP	07/08	08/09	09/10	10/11	11/12	92/12
I	19	15	17	13	13	235
II	23	29	24	28	16	498
III	40	30	46	32	31	700
IV	101	88	68	75	110	1728
Total	183	162	155	148	170	3161

Group II patients decreased compared with the previous year. There was no change in the other highly dependent group I and a decrease in Group III. The number of patients admitted with no neurology rose.

The variation in complexity in Group IV is better demonstrated by ASIA grades. The rate of throughput appears comparable to other spinal injury units in the UK

A3:A3 New Admissions by ASIA, Impairment Level. Age & Health Board

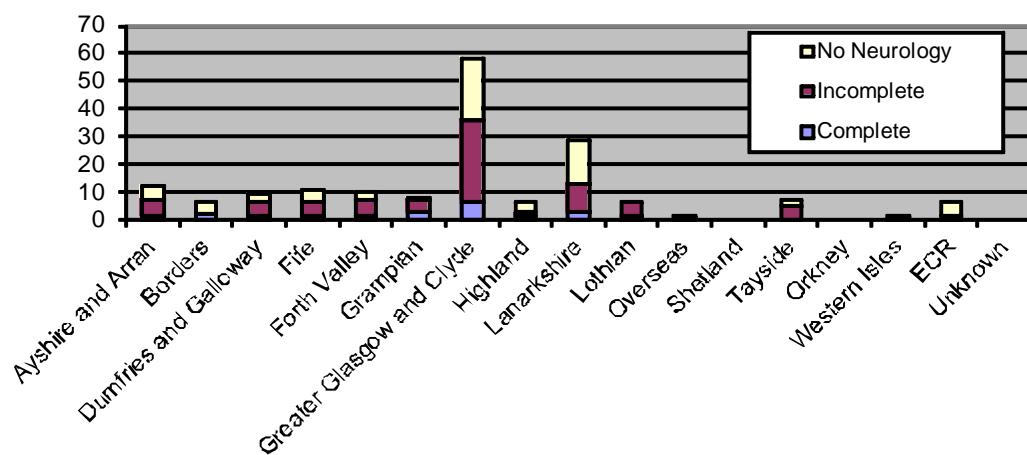
A	Complete: No motor or sensory function
B	Incomplete: Sensory but not motor function is preserved below the neurological level and includes S4-5
C	Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a motor grade less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

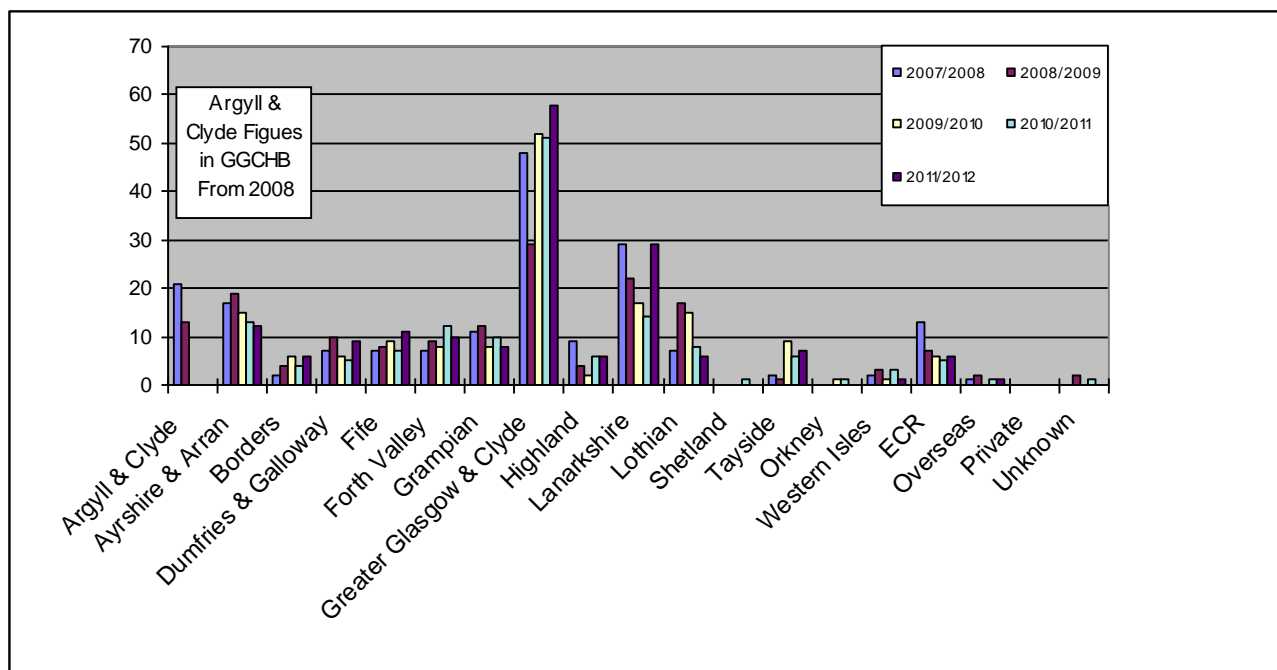
2011/2012	A	B	C	D	E	Total
Ayrshire & Arran	1	0	2	6	3	12
Borders	2	0	0	0	4	6
Dumfries & Galloway	1	0	2	3	3	9
Fife	2	1	2	1	5	11
Forth Valley	1	0	3	3	3	10
Grampian	4	1	1	2	0	8
Greater Glasgow Clyde	8	3	7	18	22	58
Highland	1	0	1	1	3	6
Lanarkshire	3	0	4	7	15	29
Lothian	2	0	2	2	0	6
Overseas	0	0	0	0	1	1
Shetland	0	0	0	0	0	0
Tayside	0	0	2	3	2	7
Orkney	0	0	0	0	0	0
Western Isles	0	0	0	0	1	1
ECR	0	0	0	1	5	6
Unknown	0	0	0	0	0	0
TOTAL	25	5	26	47	67	170

Fig Five: Admissions by Neurological Deficit and Health Board



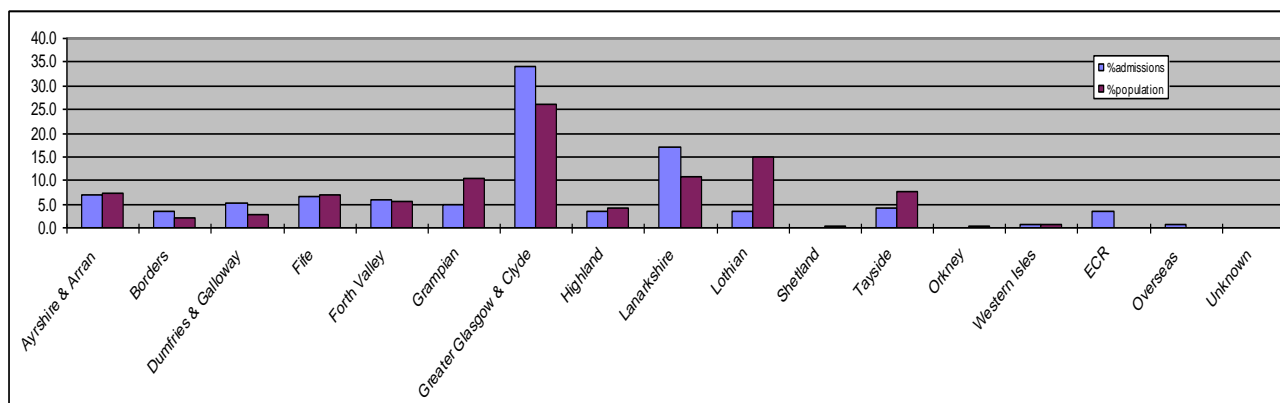
GGC is responsible for the largest number of complete and incomplete spinal cord injuries. The number of non-neurological injuries admitted from all regions and particularly from GGC has stabilised. The distribution of complete and incomplete injuries varies by year. All areas except Orkney and Shetland referred one or more patients with a neurological deficit. The distribution of admissions and the annual variation since the unit opened justifies the economic benefits of a national service.

Fig Six: New Admissions by Health Board of Residence 2007-2012



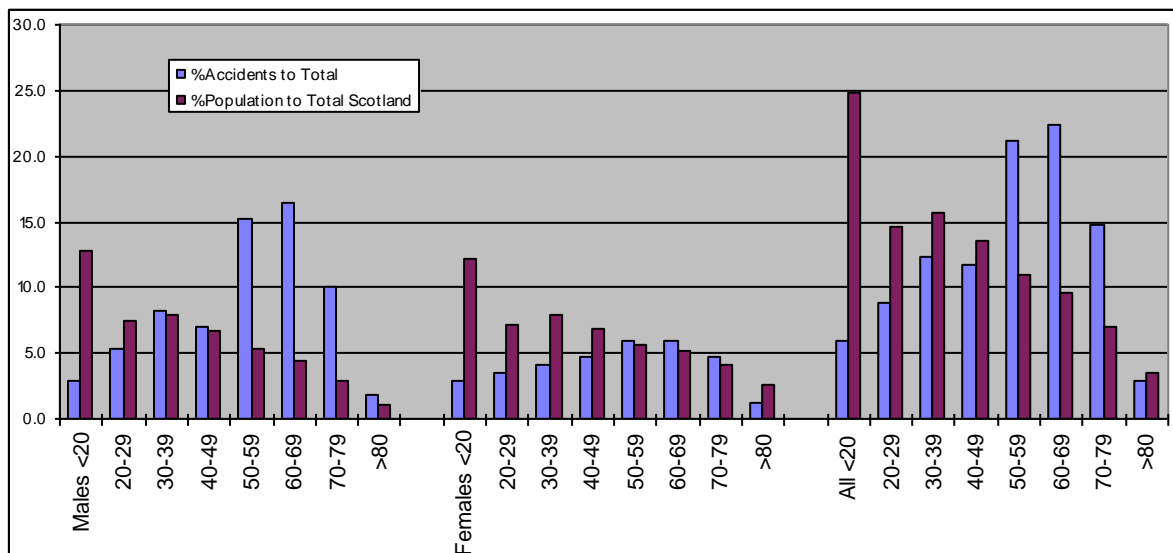
An increased referral pattern from some health boards reflects leisure-related accidents. Patients domiciled in Scotland but who are injured abroad are repatriated when clinically indicated and then recorded under their own health board.

Fig Seven: Admissions by Health Board compared with Population Size



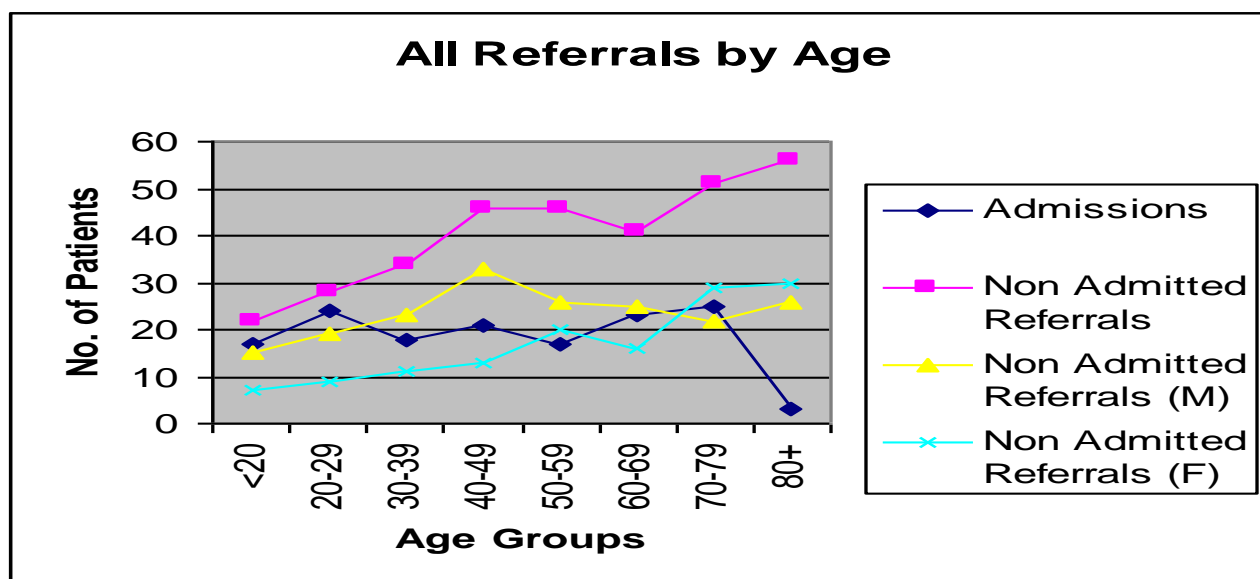
There has been positive encouragement for consultant medical staff in Lothian, Tayside and Grampian to develop services for those patients with no neurological injury. This leads to a dis-proportionate number of admissions from other areas compared with population size Support is always available from the unit in the management of these patients.

Fig Eight: New Admissions by Age Group



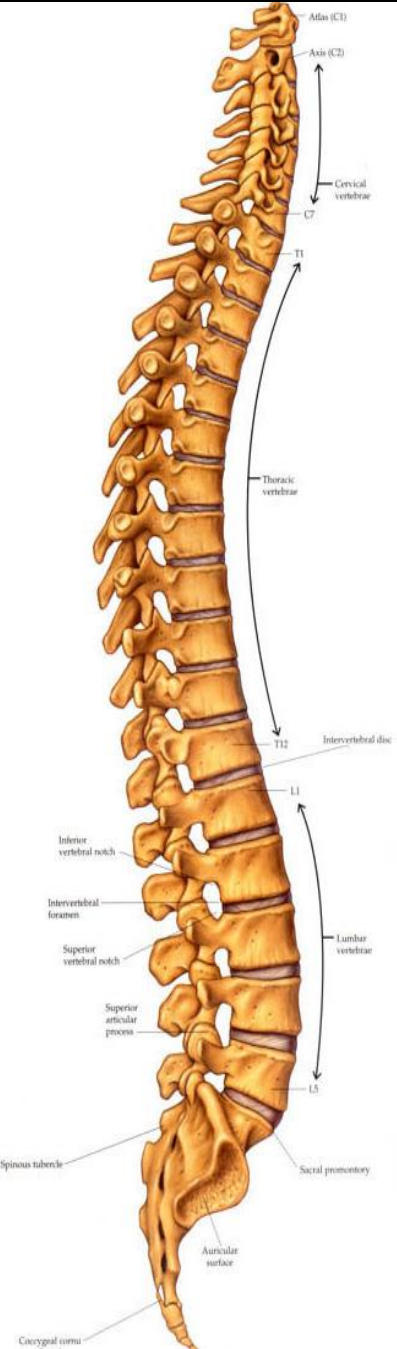
The age distribution is as expected. There is a disproportionate preponderance of males in all age groups. The number of injuries in those under twenty remains low. The increase in age-related degenerative spinal fractures continues. The management of an increasing number of elderly patients with cervical injuries with no neurological deficit are managed as outpatients, and not reflected in admission figures but in the figures for referrals.

Fig Nine:



In 2010 an audit demonstrated an increasing number of referrals from non-neurologically injured elderly cervical fractures. These can be managed in the referral hospital but are resource hungry and ultimate placement is often problematic.

Table Four: Admissions by Anatomical Level and Severity

	Level	Complete	Incomplete	No Neurology	Total
	C 1	0	2	4	6
	2	1	4	16	21
	3	1	9	5	15
	4	4	10	0	14
	5	3	13	1	17
	6	1	5	6	12
	7	1	1	3	5
	8	0	1	0	1
	Sub-total	11	45	35	91
	T 1	0	0	1	1
	2	1	1	0	2
	3	0	0	0	0
	4	0	2	1	3
	5	0	1	2	3
	6	1	1	1	3
	7	1	2	2	5
	8	0	1	0	1
	9	0	0	2	2
	10	1	0	0	1
	11	2	4	1	7
	12	0	6	8	14
	Sub-total	6	18	18	42
	L 1	1	4	10	15
	2	2	3	6	11
	3	0	5	1	6
	4	0	2	1	3
	5	0	0	0	0
	Sub-total	3	14	18	35
	S1-5	0	2	0	2
	Sub-total	0	2	0	2
	TOTAL	20	79	71	170

Higher level counted in five multi level injuries

A3: B Care Pathway for Service or Programme

The unit is commissioned to care for all cases of traumatic spinal cord injury in Scotland. Immediate care, comprehensive rehabilitation and life long care is provided at the centre in Glasgow and appropriate 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. Some degree of filtering is inevitable and welcome to ensure that all appropriate need is met. Unrestricted demand or inappropriate referral can distort the system and increase the risk of appropriate care not being provided timeously. There is an increasing recognition of weaknesses in the provision of spinal services in Scotland and moves to rationalise the neurosurgical and orthopaedic components. A further pressure is the increasing referral of elderly patients with cervical fractures not requiring specialised acute management or rehabilitation. These lie out with the remit of the National Service and in many areas are managed extremely well locally, in close contact with their family. Many of these issues are illustrated in the patterns of referral seen in the last year.

Table Five: Health Board Referrals and Outcome

Referring Board	Total Referrals	Admissions	Not Admitted	% Admitted	Complex Advice Given
GGC	196	58	138	30%	35
Lanarkshire	75	29	46	39%	8
Ayr/Arran	33	12	21	36%	2
Dumfries	23	9	14	39%	
Borders	9	6	3	67%	
Highland	13	6	7	46%	1
Grampian	10	8	2	80%	
Forth Valley	26	10	16	38%	2
Tayside	11	7	4	64%	1
Fife	14	11	3	79%	2
Lothian	15	6	9	40%	4
Western Isles	4	1	3	25%	1
ECR	9	6	3	67%	2
Overseas	3	1	2	33%	35
Total	441	170	271	39%	8

The number of referral mirrors the population density and presence of local spinal services. All patients with a spinal cord injury are admitted as soon as practicable. All non admissions had no significant neurology. The number of patients referred remains high and in 128 (27%) cases detailed advice was given regarding management in the local hospital.

Table Six: Health Board Referrals and Referring Speciality; Non Admissions

Referring Board	Level of Injury		Referring Speciality				Total
	Cervical	Thor/Lum	Ortho	Neurosurgery	A&E	Other	
GGC	78	60	69	3	14	52	138
Lanarkshire	21	25	27		5	14	46
Ayr/Arran	11	10	16		2	3	21
Dumfries	11	3	13		1		14
Borders	2	1	3				3
Highland	6	1			2	5	7
Grampian	1	1		2			2
Forth Valley	10	6	11		2	3	16
Tayside	2	2	1	2		1	4
Fife		3	2			1	3
Lothian	5	4	1	6	1	1	9
Western Isle	2	1				3	3
ECR	3		1	1		3	3
Overseas	2						2
Total	154	117	144	14	27	86	271

Orthopaedics (58%) remains the principle user of the service. Neurosurgery and Accident and Emergency refer relatively small numbers (6%) but “Others” (28%) including medicine. Neurology, Care of the Elderly etc. is a growing number.

Section B : Quality Domains

B1 Efficiency

B1: A Actual v Planned activity

B1: A1 In-patient Activity

	Plan or 09-10	Actual
New admissions	160	170
New outpatients	300	188

B1: A2 Out-patient activity

	07/08	08/09	09/10	10/11	11/12
Return	2283	2182	2182	2193	2293
New	319	307	192	229	188

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.

B1: A3 Summary of Out-patient activity

	07/08	08/09	09/10	10/11	11/12	%
Return	2283	2182	2182	2193	2293	
DNA Return	-	-	-	804	527	23%
New	319	307	192	229	188	
DNA New	0	0	0	0	33	18%

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 of the follow up and the population.

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	Huntly

B1: A5 New Out-Patient Activity by Health Board

Fig 10

	07/08	08/09	09/10	10/11	11/12
Ayrshire & Arran	18	20	18	21	15
Borders	3	3	3	1	2
Dumfries & Galloway	7	12	8	7	3
Fife	8	9	1	7	4
Forth Valley	23	20	16	17	14
Grampian	15	8	4	3	3
Greater Glasgow Clyde	169	160	91	136	105
Highland	6	4	2	4	4
Lanarkshire	40	49	32	20	27
Lothian	18	11	11	8	3
Shetland	0	0	0	1	0
Tayside	7	6	4	3	8
Orkney	0	0	0	0	0
Western Isles	2	4	1	0	0
ECR	3	0	1	1	0
Unknown	0	1	0	0	0
Total	319	307	192	229	188

B1: A7 Out -Patient Activity by Centre

Fig11

	07/08	08/09	09/10	10/11	11/12	CHANGE YEAR	TOTAL 1992-2012
New QENSIU	307	307	192	229	188	(17.9%)	2241
Return QENSIU	1905	1830	1825	1861	1876	+ 0.8%	30059
Edinburgh	212	169	168	162	174	+ 7.4%	3189
Inverness	60	62	45	49	62	+ 26.5%	788
Aberdeen	59	62	68	61	85	+ 39.3%	742
Dumfries & Galloway	18	28	14	9	27	+ 200%	225
Borders	17	9	36	19	15	(21.1%)	183
Arbroath	24	22	26	14	31	+ 121.4%	192
Huntly	0	0	0	18	23	+ 27.8%	41
Total	2602	2489	2374	2422	2481	+ 2.4%	37660

Table Nine: Outpatient Activity by Specialty at QENSIU

		07/08	08/09	09/10	10/11	11/12
Orthopaedics	DBA	147	107	128	126	163
Neurosurgery	LA	54	39	52	41	70
Neurosurgery	JB	63	50	53	46	25
Urology	GC / VG	407	467	475	541	390
Skin Care		86	75	68	52	59
Pain / Spasm		29	26	29	19	16
Neuroprosthetics	TH/MF	20	19	23	22	32
Sexual Dysfunction		29	36	19	28	19
Respiratory		6	9	7	8	9
Fertility		6	0	8	3	11
Spinal Injury Annual Review	TOTAL	1058	1002	963	975	1082
	MEDICAL	673	632	638	595	690
	NURSING	385	370	325	380	392
Total		1905	1830	1825	1861	1876

Table Nine: Outpatient Activity by Specialty at QENSIU

The Consultant Clinics in Orthopaedics and Neurosurgery see new and return patients until they can be discharged or referred to the annual review clinics. The Spinal Injury Annual Review clinics are a large component of the commitment to life- long care. These are nurse led with only thirty six percent 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.

B1: A7 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: A8 Day Case Attendances by Reason For Admission**Table Ten:**

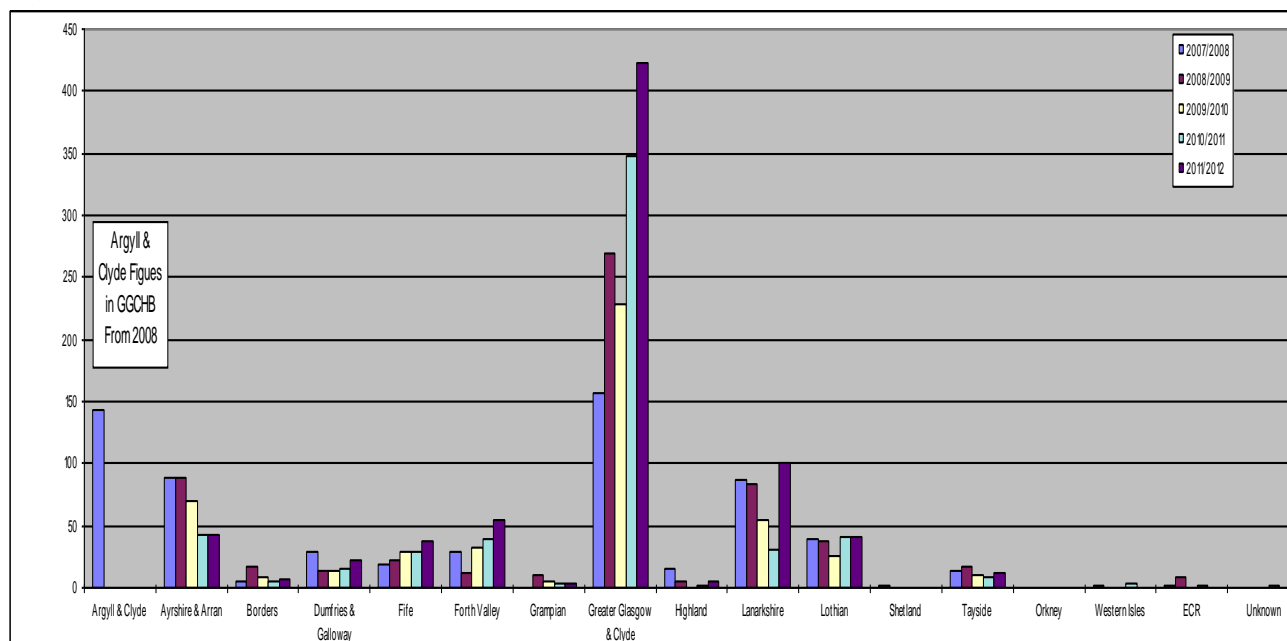
	07/08	08/09	09/10	10/11	11/12
Urology / Urodynamics	26	37	27	27	40
Halo Fixation	216	120	99	99	247
Skin	26	29	13	17	14
Orthopaedic / Neurosurgery	0	0	0	0	0
Acupuncture / Pain / Spasm	340	370	311	363	429
Sexual Dysfunction	4	4	3	6	2
Fertility	19	20	21	28	16
Other	0	3	3	28	1
Total	631	583	477	568	749

The activity remains stable over the last few years except for a significant increase in pain and acupuncture interventions. It is appreciated that sexual dysfunction remains an under resourced area and suitable for development.

B1: A8 Day Case Attendances by Health Board

Day Case activity remains limited by geographical constraints. 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 Twelve



B1: A9 Waiting Times

B1: A10 Waiting Times Outpatient Clinics

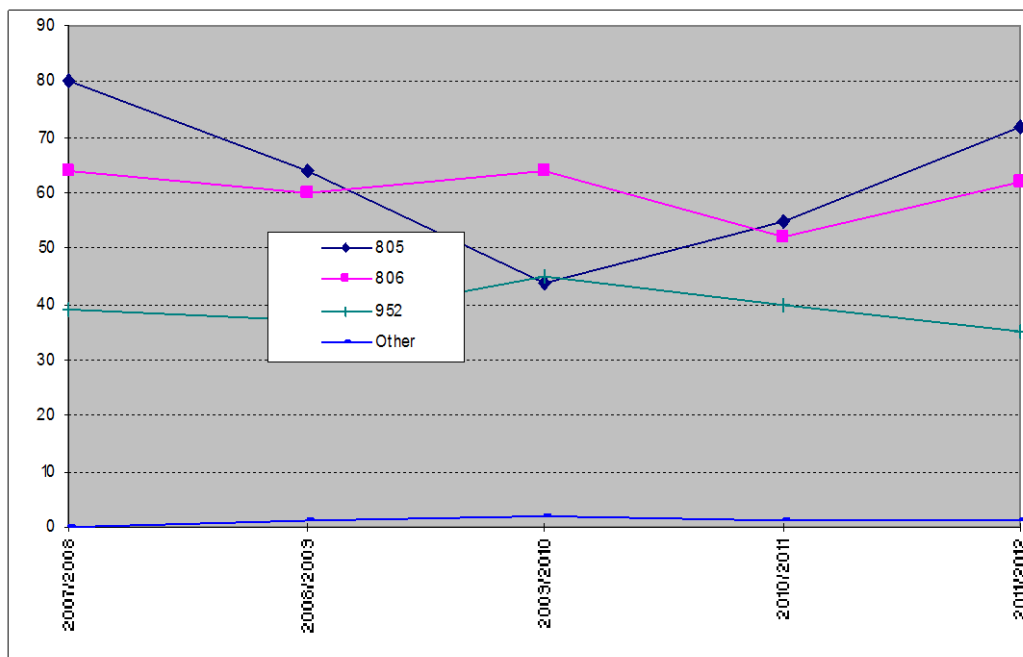
There is an open door policy to the Nurse Led Clinics. Medical advice is always available and was requested in thirty six per cent of patients. Patient satisfaction remains high with this team approach. The maximum waiting time for new elective outpatient appointments is four weeks.

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 changing demands in acute care may result in shorter transfer times of bed occupancy allows. 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.

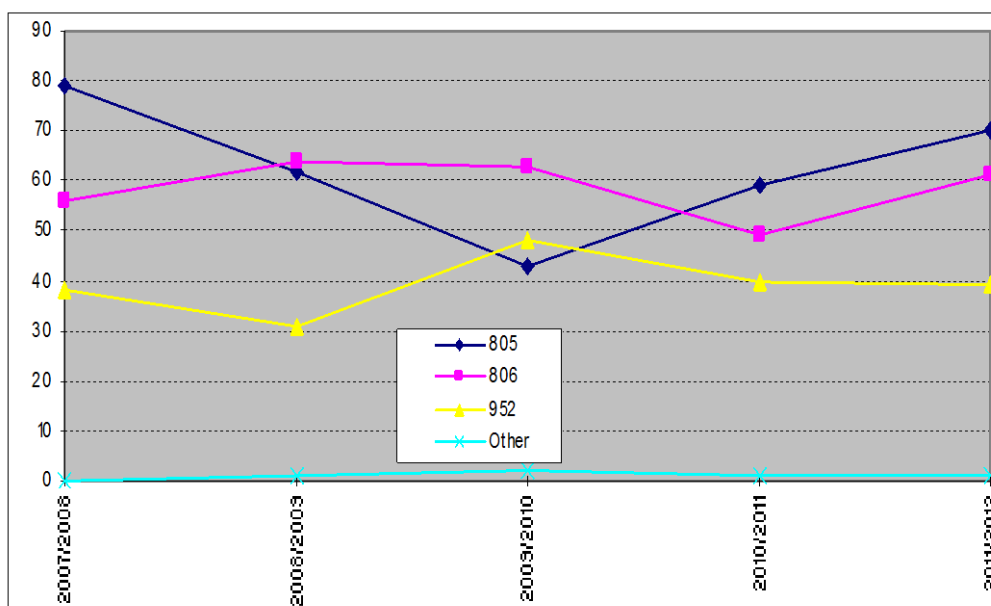
B1: B2 Admissions by Degree of Injury

Fig Thirteen:



B1: B3 Discharges by Degree of Injury

Fig Fourteen:



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

This includes eligible admissions who do not sustain a bony traumatic injury and whose cord injury is non-progressive and suitable for rehabilitation.

Table Eleven:

2011/2012	Admissions	Discharges
Central Cord Lesion	19	20
Infection	1	2
Vascular	8	8
Tumour	2	3
Surgical	0	0
Non-specific Lumbar Lesions	3	4
Penetrating Wounds gun/stab	2	2
Other	0	0
Total	35	39

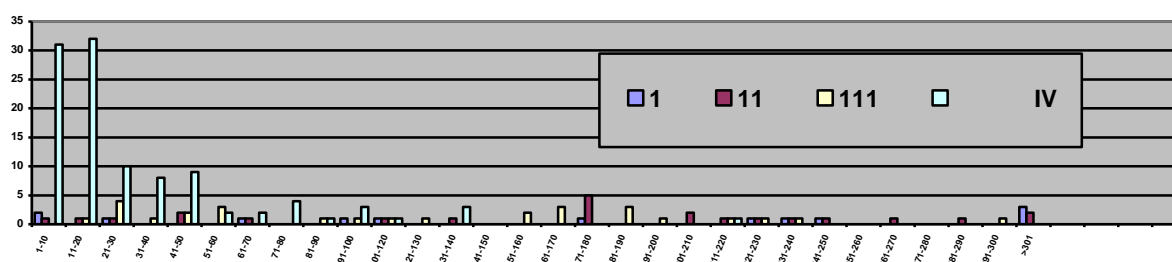
B1: B5 Length of Stay by Level of Spinal Cord Injury

Case Mix	No. of Patients	Mean L.O.S.	Range of L.O.S.
I	13	172	4 - 434
II	23	167	7 - 320
III	28	119	16 - 293
IV	107	31	1 - 218
All	171	74	1 - 434

Throughout the last ten years there has been significant effort spent on reducing the 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. The non-neurological group has a significant lower length of stay and lesser impact on the service.

Fig Fifteen:



Over seventy five percent of Group iv (no neurology) were discharged within four weeks, fifty percent within ten days. The distribution follows the predicted dependence and rehabilitation needs of the respective injuries.

B1: B6 Bed Utilisation

Table Twelve:

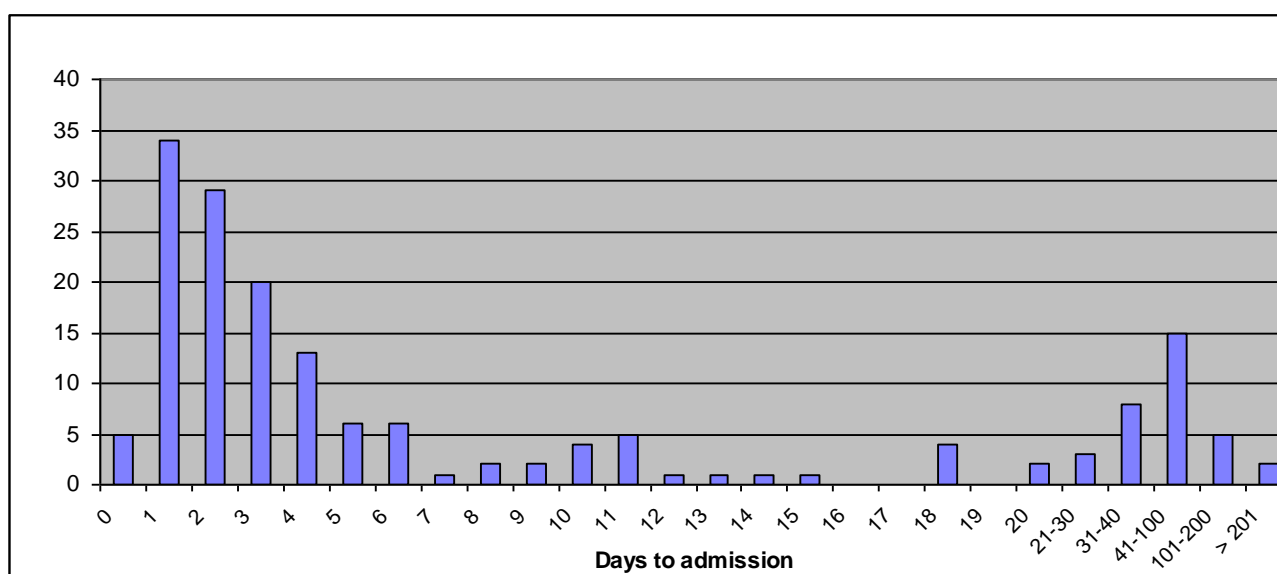
Spinal Injury Unit									
Edenhall HDU		12	Philipshill			36			
Bed Comp	Alloc staffed	Borrowed	Lent	Temp	Available staffed	Total Occ Bed Days	Pats on Pass	Actual Occ Bed Days	% Occupied
48	17568	0	0	37	17605	13742	132	13610	78%
Discharged		239	Avr LOS		46.0	Turnaround		12.9	

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. In 2011-12 thirty per cent of patients were admitted within twenty-four hours of referral. Forty per cent were admitted within forty-eight hours and fifty-one per cent within four days. Sixty-seven percent were admitted within one week. This time pattern is consistent with previous years and early admission was achieved wherever possible. This provides immediate support to the patient and family and prevents 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.

Fig Sixteen A :



Early referral and co-operation between the staff in the Unit and the referral hospital ensures immediate admission if clinically indicated. Telephone advice is always available 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.

Direct admission to orthopaedic or neurosurgical wards for surgical stabilisation may increase the time to admission but may be appropriate to reduce transfers of potentially unstable patients.

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 five days have conditions that do not require immediate treatment or have 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

Table Thirteen: Days to Admission by Range

	No. of Patients	Mean Time (Days)	Range of Time
2007-2008	183	19	0 - 637
2008-2009	162	81	0 - 9582
2009-2010	155	15	0 - 265
2010-2011	148	258	0 -19749
2011-2112	170	19	0 - 438

* includes admissions years after injury managed elsewhere

Fig Sixteen B:Days to Admission by Grade

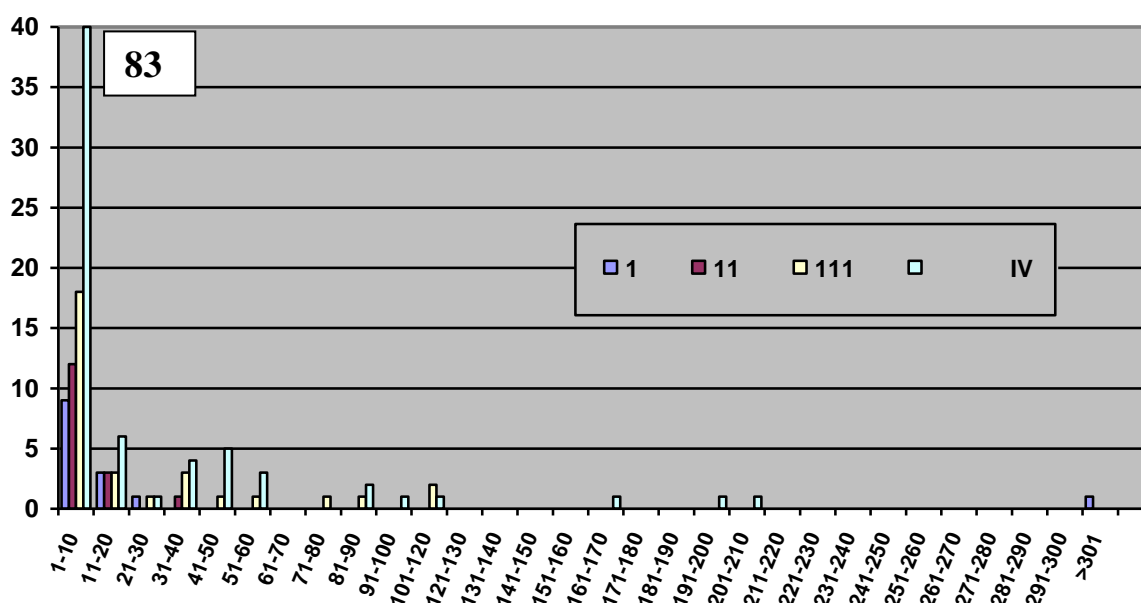


Table Fourteen:

	No. of Patients Discharged	No. of Patients Delayed	Mean delay (days)	Range of Delay (days)	NO DELAY
2007/2008	173	14	96	8 – 957	92%
2008/2009	158	5	178	35 – 489	97%
2009/2010	156	3	92	29 – 151	98%
2010/2011	149	2	52	2 – 101	99%
2011/2012	171	2	37	35 - 38	98.8%

The philosophy of the unit is to set, as early as possible, realistic targets for each patient in their rehabilitation. One such target is a discharge date.

B1: B9 Re-admissions to the unit

The majority of neurologically injured patients discharged from the unit never require re-admission. They attend annually or bi-annually as out-patients for lifelong follow up. In some ways readmission at any time must be regarded as a failure.

There were seventy three readmissions to the unit during the year, a significant shortfall on the contract estimate of 200. Skin problems predominate.

B1: B10 Ventilated Bed Days

An essential component in the management of spinal cord injury is respiratory support in both the acute and chronic management. The appointment of a Respiratory Consultant to the Rehabilitation team and a appointment of a Respiratory care sister allows us to provide an exceptional service with the aid of the consultant neuro-anaesthetic service.

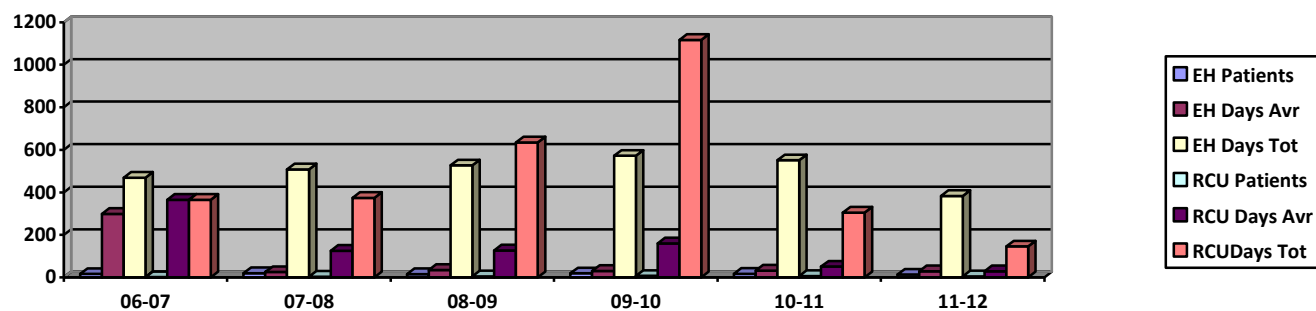
Table Fifteen:

		No. Patients	Ave. Ventilated Days	Total Ventilated Days
07-08	Edenhall	20	25	508
	RCU	3	125	374
08-09	Edenhall	15	35	527
	RCU	5	127	635
09-10	Edenhall	19	30	572
	RCU	7	160	1117
10-11	Edenhall	17	32	551
	RCU	6	51	305
11-12	Edenhall	13	29	383
	RCU	5	29	146

Each patient is counted only once but may be responsible for multiple episodes of care or inter ward transfers if their condition varies. The variable number of patients requiring

ventilation and the increasing importance of RCU mirrors changes in the age and type of patient needing respiratory support.

Fig Seventeen:



B1: C1 Finance Report 2011-2012

	AfC Band		2011/12 Value	Budget YTD	Actual YTD	Variance YTD	Year End Forecast	Year End Variance
		WTE	£	£	£	£	£	
Dedicated Staff Costs								
Administrative	4	6.50	153,892	153,892	160,255	-6,363	160,255	-6,363
Administrative	3	0.14	3,134	3,134	3,145	-11	3,145	-11
Administrative	2	2.49	54,946	54,946	49,915	5,031	49,915	5,031
Medical		9.19	935,199	935,199	985,767	-50,568	985,767	-50,568
Senior Manager		0.50	34,258	34,258	38,487	-4,229	38,487	-4,229
Nursing	7	7.80	332,658	332,658	325,716	6,942	325,716	6,942
Nursing	6	9.36	415,064	415,064	416,726	-1,663	416,726	-1,663
Nursing	5	52.30	1,731,415	1,731,415	1,746,281	-14,866	1,746,281	-14,866
Nursing	2	23.88	531,856	531,856	501,419	30,437	501,419	30,437
Housekeepers	2	2.00	54,662	54,662	55,100	-437	55,100	-437
Paramedical	7	13.26	568,366	568,366	567,241	1,125	567,241	1,125
Total Staff		127.42	£ 4,815,450	£ 4,815,450	£ 4,850,051	- £ 34,601	£ 4,850,051	- £ 34,601
Supplies Costs								
Administrative			108,465	108,465	117,160	-8,695	117,160	-8,695
Medical			4,139	4,139	4,139	0	4,139	0
Nursing			11,771	11,771	13,429	-1,658	13,429	-1,658
Paramedical			18,802	18,802	19,169	-367	19,169	-367
Pharmacy			607,765	607,765	549,280	58,485	549,280	58,485
Surgical Appliances			104,541	104,541	116,120	-11,580	116,120	-11,580
Direct Supplies			£ 855,482	£ 855,482	£ 819,297	£ 36,185	£ 819,297	£ 36,185
Allocated Costs								
Medical Records			101,505	101,505	107,837	-6,331	107,837	-6,331
Building Costs			198,230	198,230	202,274	-4,044	202,274	-4,044
Domestic Services			66,367	66,367	70,507	-4,140	70,507	-4,140
Catering			182,600	182,600	193,991	-11,391	193,991	-11,391
Laundry			65,272	65,272	66,605	-1,333	66,605	-1,333
Neuroradiology			76,035	76,035	80,778	-4,743	80,778	-4,743
Laboratories			87,681	87,681	93,151	-5,470	93,151	-5,470
Anaesthetics			36,300	36,300	38,564	-2,264	38,564	-2,264
Portering			70,687	70,687	75,096	-4,409	75,096	-4,409
Phones			47,918	47,918	48,896	-978	48,896	-978
Scottish Ambulance Service			8,898	8,898	9,078	-180	9,078	-180
General Services			27,442	27,442	29,154	-1,712	29,154	-1,712
Allocated Costs			£ 968,936	£ 968,936	£ 1,015,930	- £ 46,994	£ 1,015,930	- £ 46,994
Total Supplies			£ 1,824,418	£ 1,824,418	£ 1,835,227	- £ 10,810	£ 1,835,227	- £ 10,810
Overhead Costs								
Fixed costs								
Rates			58,247	58,247	58,247	0	58,247	0
Capital Charge			435,774	435,774	435,774	0	435,774	0
Trust Overheads			148,525	148,525	148,525	0	148,525	0
Total Overheads			£ 642,546	£ 642,546	£ 642,546	£ 0	£ 642,546	£ 0
Total Expenditure		127.4	£ 7,282,414	£ 7,282,414	£ 7,327,825	- £ 45,411	£ 7,327,825	- £ 45,411
Postgraduate Dean Funding			-119,142	-119,142	-119,142	0	-119,142	0
Total Expenditure net of Postgraduate								
Dean Funding			£ 7,163,272	£ 7,163,272	£ 7,208,683	- £ 45,411	£ 7,208,683	- £ 45,411
Income from non-Scottish resident patients				0	-25,950	25,950	-25,950	25,950
Total Net Expenditure			£ 7,163,272	£ 7,163,272	£ 7,182,733	- £ 19,461	£ 7,182,733	- £ 19,461

B1: D1 Key Performance Indicators Summary

	Plan or 09-10	Actual
New admissions	160	148
New outpatients	300	229

<i>Key Performance Indicators</i>	Plan or 10/11	Actual	
Referrals			
All patients referred	472	441	
Telephone advice ¹	324	271	
New inpatient activity²			
All patients admitted with neurological injury	99	100	
All patients admitted with non-neurological injury	49	70	
Surgical stabilisations:			
- Thoraco lumbar fixations	33	28	
- Cervical fixations	23+	23+	
- Halo immobilizations	9	39	
Spinal injury specific surgery:			
- Theatre lists	29	33	
- Individual procedures	55	46	
- Surgical specialties	7	4	
Implant pain control:			
- New pumps implanted	1	0	
- Revision pumps	0	1	
- Operational pumps	23	21	
- Pump Refill QENSIU	18	14	
- Pump Refill Local	7	7	
Step down unit:			
- Episodes of care	30	32	
- Number of families/people	30	14 / 93	
- Number of days (nights)	172	80	
New inpatient occupied bed days			
Total Available (new & return)	17,447	18097	17605
Actual	15,566	14695	13610
Bed Occupancy %	90%	81%	78%
Mean length of stay			
I	161	172	
II	154	167	
III	130	119	
IV	24	31	

¹ Patients managed in referral hospital with non-neurological deficit

² To provide breakdown of: case complexity and new admissions by ASIA impairment level; admissions by neurological deficit; admissions by non-neurological deficit; reason for admission, population size; age group; and health board

<i>Key Performance Indicators</i>	Plan or 10/11	Actual
All	84	74
median length of stay	MM	MM
Range of length of stay	1-355	1-434
Delays in discharge (actual v's intended)		
Number of patients discharged	149	171
Number of patients with delayed discharged	2	2
Length of delay (mean/mode)	52	37
% with no delay	98%	98.8%
Re-admissions – Return inpatient activity		
by NHS Board of Residence		NA
by reason for admission		NA
Return inpatient occupied bed days		
Total Available (new & return)		NA
Available		NA
Bed Occupancy % (target >85%)		NA
mean length of stay		NA
median length of stay		NA
range of length of stay		NA
Day case		
by NHS Board of Residence		See Table
by reason for admission		See Table
Outpatient activity		
New Patient no's Southern General		See Table
Return Patient no's Southern General		See Table
New Patient Southern General (DNAs/ % attendance)		0%
Return Patient Southern General (DNAs/ % attendance)		37%
New Outreach Clinics by Centre		NA
Return Outreach Clinics by Centre		29 (See Tables)
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
Actual / Anticipated number of patients in service		4,500
Allied Health Professionals activity ³		SEE APPENDICES
New Patient no's		A3 A
Return Patient no's		SEE TABLES
New Patient (DNAs/ % attendance)		SEE TABLES
Return Patient (DNAs/ % attendance)		SEE TABLES

³ Report for each individual profession e.g. physiotherapy, OT, psychology etc.

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 the Unit has completed 10 audits and also participates in the National Scottish Patient's Safety programme which requires continuing re-auditing of care. Publications of National Outcomes from this audit will allow us to benchmark ourselves against other Scottish wards.

Recent changes to practice resulting from audit include optimising time of referral to social work, reduction in skin marks and faster mobilisation of paralysed patients. Details are include in relevant sections.

B2: A2 Mechanism of Injury

The mechanism of injury of all admissions reflects changes seen in other areas of social activity and change. Medical causes, domestic and Para suicide remain stable. The number of sporting injuries has reduced but two rugby injuries required in-patient care and two out-patient care.

Table Sixteen

	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012
Fall	101	73	77	72	93
RTA	45	40	40	34	36
Motor vehicle	36	27	19	22	21
Motorcyclist	4	8	12	6	7
Bicyclist	4	3	9	4	4
Pedestrian	1	2	0	2	4
Secondary to Medical Diagnosis	18	18	15	21	16
Industrial Injury	3	1	6	2	5
Assault	1	1	0	2	3
Penetrating Injuries	1	3	3	2	0
Sporting Injury	13	19	10	11	13
Domestic Injury	0	1	1	3	1
Self Harm	1	1	3	1	3
Other	0	5	0	0	0
Total	183	162	155	148	170

B2: A3 Clinical Governance

Senior medical and nursing staff meets quarterly with colleagues in the Health Board Clinical Governance programme. Outstanding 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. Some patients have sustained very severe trauma or complications of paralysis and it is not possible to prevent all deaths. All have been reviewed and no risk factors or adverse events identified.

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 a identified goal in SCI management. The unit is the only UK contributor to the European EMSCI database. Last year the North of England and separate South of England database were launched and became partially active. Enrolling in the UK data set is currently premature. The Scottish database combines management and clinical information and enables good service management and development.

B2 C1 Service Improvement

The service is subject to continual review.

B2 D1 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. 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, brain computer interfaces, robotic exercise, FES cycling and FES respiratory support.

A detailed research profile for the inauguration of the **Scottish Centre for Innovation In Spinal Cord Injury (SCI²)** is available at www.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 **SCI²**. 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. Organised by David Allan FRCS the current Director of Research is Professor Conway and includes researchers from four universities.

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

The unit acts as a embedded research micro site within the NHS to promote research and provide access and stimulation for clinicians, patients and researchers to work together

Papers and Presentations and Authorship

Papers and Authorship

SCI² Oct 1999 - March 2012

Year	Papers	NHS	NHS G U	NHS S U	NHS C U	NHS Stir U	GU	SU	NHS SU GU
2012	2	0	1	0	0	1	0	0	0
2011	10	3	2	2	1	0	1	0	1
2010	12	2	3	1	0	2	4	0	0
2009	14	1	7	0	0	0	4	2	0
2008	19	2	6	0	1	1	9	0	0
2007	10	2	4	1	0	0	2	1	0
2006	6	2	2	1	0	0	0	1	0
2005	5	2	1	0	0	0	1	1	0
2004	9	3	1	0	1	0	3	1	0
2003	4	2	1	0	0	0	1	0	0
2002	9	5	1	0	0	0	2	1	0
2001	6	1	1	0	0	0	3	1	0
2000	2	0	0	0	0	0	1	1	0

Only papers with direct involvement with mezzanine or SCI

NHS- National Health Service, **GU-**Glasgow University, **SU** -Strathclyde University, **CU-**Caledonian University, **Stir U** -Stirling University

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

In Progress 2012

Galen SS, Clarke CJ, Mclean, AN, Allan DB, Conway BA, Changes in Muscle strength in key lower limb muscles following Robot Assisted Gait Training Spinal Cord 2011 **In review**

Coupaud S., Mclean A.N., Lloyd S., Allan D.B., "Predicting patient specific rates of bone loss at fracture prone sites after spinal cord injury" Disability Rehabil 2012 **In press**

Brydone A.S., Smith F.W., Allan D.B. "Instrumented postero-lateral fusion for thoraco-lumbar spinal trauma using silicate-substituted calcium phosphate bone substitute" **In review**

Brydone A.S., Allan D.B., Spinal Injuries in Scottish Youth Rugby" **In review**

Papers 2012

Dickson A, O'Brien G, Ward R, Flowers P, Allan DB, O'Carroll R. "Adjustment and coping in spousal caregivers following a traumatic spinal cord injury; an interpretive phenomenological analysis". J Health Psychology 2012 Mar;17 (2):247-57 Epub 2011

Papers 2011

Fang J., Gollee H., Galen S., Allan D. B. Conway B.A. Vuckovic " Kinematic Modelling of a Robotic Gait Device for early rehabilitation of Walking" J. Engineering in Medicine: 2011 vol 255 no 12 1177-1187

Anderson J., Allan D.B., "Vertebral fractures secondary to suicide attempts: Demographic and patient outcomes in a Scottish Rehabilitation Unit" J Spinal Cord Med 2011;34(4):380-7

Coulter E.H., Dall P.M., Rochester L., Hasler J.P., Granat M.H. "Development and Validation of a Physical Activity Monitor for use on a wheelchair" Spinal Cord 2011 Mar;49(3):445-5

Jack, L.P., Purcell M.P., Allan D.B., Hunt K.J. "The metabolic cost of passive walking during robotics assisted treadmill exercise," Technol. Health Care, 2011, vol 19, no 1, pp 21-27

Ellaway PH, Kuppuswamy AV, Basasubramaniam R, Maksimovic R, Gall A, Craggs M, Mathias CJ, Bacon M, Prochazka A, Kowalczewski J, Conway BA, Galen S, Caton CJ, Allan DB, Curt A, Wirth B, van Hedel HJA. "Development of quantitative and sensitive assessments of physiological and functional outcome during recovery from spinal cord injury": A Clinical Initiative Brain Res Bull., 2011, vol 84, no 4-5, pp 343-357

Anwar F, Al Khayer A., Joseph G., Fraser M.H., Jigajinni M.V., Allan D.B. "Delayed presentation and diagnosis of cervical spine injuries in long standing ankylosing spondylitis Eur Spine J. 2011 Mar;20(3):403-7

Gulati A. Yeo CY, Cooney A.D., McLean A., Fraser M.H., Allan D.B. "Functional outcome and discharge destination in elderly patients with spinal cord injuries". Spinal Cord 2011 vol 49, no 2, pp 215-218

Gawthrop P., Loram I., Lakie M., Gollee H., "Intermittant control: a computational theory of human control." Biol Cybern, 2011, vol 104, no 1-2 pp 31-51

Galen S., Catton CJ Allan DB Conway BA "A Portable assessment tool to assess changes in temporal gait parameters in SCI" Med. Eng. Phys., 2011, vol 33, no 5 pp 626-632

B3 Safety

B3: A1 Risk Register

The unit complies with all corporate, regional and local requirements and is actively involved in supporting and promulgating risk awareness and risk management.

B3: B1 Clinical Governance: Critical Incident 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 Eighteen Nineteen and Twenty:

Category	Number		Slips, Trips & Falls
Violence & Aggression	20	Fall from bed	6
Challenging Behaviours	2	Fall from Chair	26
Abscondment	2	Fall from level	11
Moving & Handling	9	Slip on Level	2
Building Faults	8	Suspected fall	1
Fire Alarm Activations	2	Other	2
Clinical – other	7	Total	48
Medication Incident	11		
Contact with or exposure to hazard	8		
Other	12	1- Negligible	74
Medical Devices & Equipment	3	2 – Minor	43
Slips, trips and Falls	48	3 – Moderate	49
Needlesticks / sharps injury	1	4 – Major	0
Pressure Ulcer Care	3	5 – Extreme	0
Total	137	Total	137

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 workstreams, Edanhall Ward is within the Critical care/HDU work stream and Philipshill Ward is in the general work stream.

B3: C2 Hospital Acquired Infection- Sister Paterson

The problem of MRSA continues to be monitored within the Unit and every effort is made to try and reduce the periods in isolation. Periods in isolation significantly affect the rehabilitation timetable and every attempt is made to reduce this to a minimum.

Table Twenty-one

	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012
Total patients req. Isolation	N/A	N/A	N/A	N/A	0
Salmonella	0	0	0	0	0
Clostridium Difficile	2	2	4	3	0
MRSA	32	24	15	11	4*
Streptococcus pyogenes	0	1	0	1	1
Scabies	0	0	0	0	0
TB	0	0	0	0	0
Varicella Zoster	0	0	0	0	0
Patient days in isolation	N/A	N/A	N/A	N/A	0
Ave. days in isolation	N/A	N/A	N/A	N/A	0

* Colonisation

Table Twenty-two:

2011-2012	MRSA	C.Diff	Other HIA
Edenhall	2		
Philipshill	2		1

The figures are gratifying, especially as Philipshill Ward had a full complement of beds throughout and includes long term ventilated patients. 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. It is unit policy to screen for MRSA prior to transfer but some patients require admission despite being possible MRSA positive. The low rates of infection are a tribute to the standard of nursing care and policies within the unit especially as regards bowel care

B3: C3 Clinical Quality Indicators-Sister Patterson

These indicators were identified by NHS Scotland as clinical quality measures that would support quality, safety and reliability focussing on improvement rather than performance. We are currently monitoring three CQI'S: Food, Fluid and Nutrition, Falls and Pressure Ulcer Prevention. The system allows real time reporting and is an important tool for SCN's, highlighting areas that we are doing well and areas that require further work. Compliance rating in all areas should be maintained at 95% and above.

Fig Eighteen:

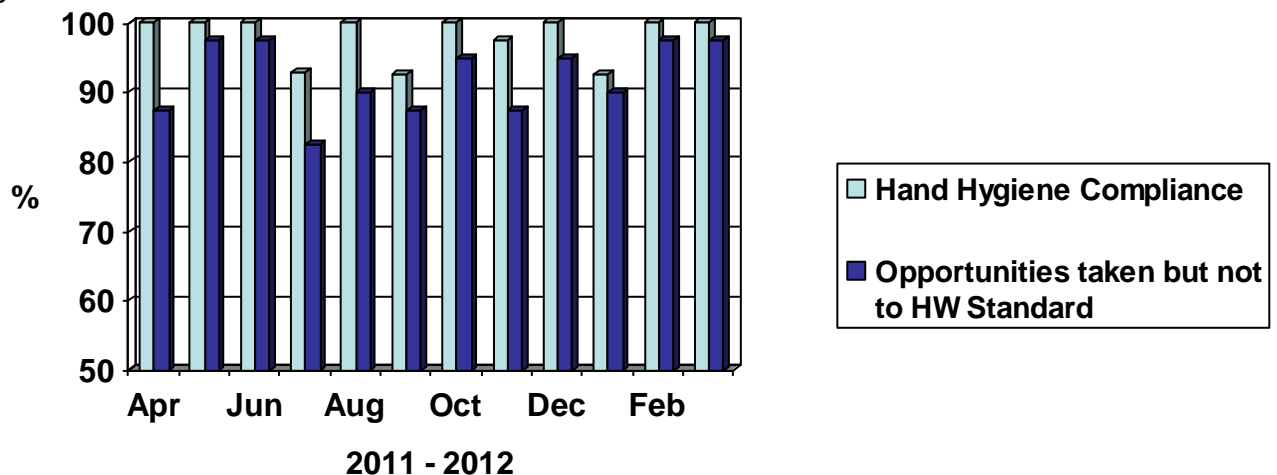
The unit follows all national guidelines and complies with local targets. Continual monitoring maintains standards.

B3: C3 Hand Hygiene Compliance

Scottish Patient Safety Programme

Hand washing is fundamental in reducing the risk of hospital acquired infection. Both wards complete monthly audits capturing 2 elements of hand washing (1) Hand washing compliance – how many staff have taken the opportunity to wash their hands at the appropriate times and (2) Hand washing standard – of the staff that did take the opportunity to wash their hands, did they meet hand washing standards.

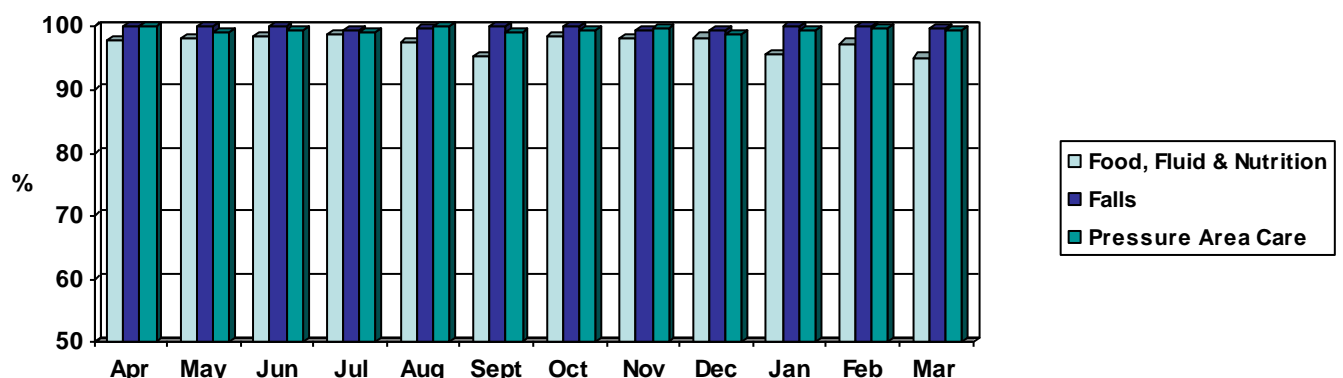
Fig Nineteen:



The average compliance with hand washing is 97.6%. Of this 97.6% the average compliance with hand washing standard is 92%. The common reasons for not meeting the standard includes turning the taps off with hands and not removing wrist watches.

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.



The average for Food, Fluid and Nutrition is 97.6% : Falls is 97.5%: and Pressure Area Care is 99.4% An emphasis has been placed on pressure ulcer prevention in the year

B3: C 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.

B 3 D Adverse Events

B3: D1 Pressure Sore Point Prevalence

Traditionally we have monitored point prevalence: Table Twenty-three

	No. of patients	No. of acquired sores	No. of admitted sores	Total number of sores	Point prevalence
2007/2008	40	7	6	13	32.5%
2008/2009	42	2	11	13	30.95%
2009/2010	42	3	5	8	19%
2010/2011	36	1	8	9	25%
2011/2012	36	2	12	14	38.8%

This tool is very useful at identifying trends in incidence of true pressure sores but has limitations as an independent assessment of the incidence of critical skin events of all types ranging from skin marks, sacral splits and full thickness skin sores.

The number of pressure sores developing within the Spinal Injuries Unit is reducing. In the six month period to the beginning of April 2011, forty-two new sores were identified. In the last year sixty six new sores were identified.

The Red Flag system for the identification and multi-disciplinary assessment of the cause of all new sores developing in the Unit continues, in this way factors contributing to the development of pressure sores are identified and problems resolved promptly.

The "Red Flag Keeping your Skin Safe" system was presented at a Regional Clinical Governance Meeting where it was highly praised and prize winning.

A Unit Wound Management Formulary is being produced at present following evidence and review of dressing products available on the GGC Formulary.

Regular staff awareness sessions along with patient and relative education sessions specific to skin care are being held.

Regular audits of the management of all sores are performed and reviewed. The Skin Group continues to meet every four months and lead the improvements in practice which

have resulted in a significant reduction in the number of pressure sores developing within the Unit.

In the last year eighteen established spinal cord injured patients were admitted to the Unit for surgical management of their pressure sores.

Their average length of stay was 85 days. Four of these patients had developed severe pressure sores while inpatients in other hospitals. The minimum length of stay required to treat the pressures sores in these patients was 117 days.

We plan to gather detailed information of sores developing in established spinal injured patients in the community and other hospital departments.(Mariel Purcell)

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 one formal complaint.

At unit level a number of useful suggestions have been made regarding catering, parking and the ambulance service. This has resulted in a number of meetings with the relevant bodies to review areas of service

B3: E2 Compliments.

The unit has been the subject of numerous newspaper, magazine and media comment, all favourable over the year. Of particular note is the long running Times column by a recent patient, which has informed, amused and provoked patients, staff and relatives. It has been of inestimable benefit in letting us see how we are perceived.

B4 Timely (Access)

B4 a) Waiting / Response Times

- 1) Waiting Times/Response Times Targets
The unit complies with its contract and details are available throughout the report.
- 2) Slippage : No slippage is recorded
- 3) Exceptional Circumstances Affecting Targets

The unit complies with all relevant targets.

B4 b) Review of Clinical Pathway

- (i) Review and Changes to Clinical Pathway
- (ii) Improvements to Local Delivery of Care

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.

Example A : Female Sexuality

The sexuality of woman with spinal cord injury receives less attention than that of men.

Educational programmes and materials distributed tend to focus on male sexuality. Women describe receiving less support and advice from professionals regarding their sexuality which is not a priority soon after injury for the majority but assumes greater importance later.

Following a literature review of the sexual rehabilitation services for women after spinal cord injury a Female Sexual Function Workshop was organised to address this issue. This workshop was organised in conjunction with Dr David Gerber, Consultant Psychiatrist Clinical Lead for Transgender and Psychosexual Services, Sandyford Initiative.

The event was held in the Step-down Unit on the afternoon of the 30th May 2011. Twenty women who had suffered spinal cord injury in the previous year or so attended.

The programme comprised informal lectures given by Dr Purcell, Consultant in Spinal Injuries, Dr Gerber, Consultant Psychiatrist and Sister McCarron, Spinal Outpatient Sister.

Lectures were followed by group discussion facilitated by the presenters.

Patients were provided with a 'patient information leaflet' covering all aspects of sexuality post spinal injury.

Attendees were asked to complete a patient satisfaction questionnaire covering the information provided and the overall quality of the workshop along with how appropriate, comfortable and relevant the workshop was for each participant. Feedback was very positive - 86% of those present would strongly recommend the workshop to others.

This is the first workshop of its kind in the UK and it is planned to repeat this every 1-2 years. **Dr Mariel Purcell**

Example B: Osteoporosis

World Osteoporosis Day is an annual event aimed at raising international awareness of the prevention, diagnosis and treatment of osteoporosis. The International Osteoporosis Foundation encourages global participation in the event, which takes place on 20th October every year. In October 2011, the Queen Elizabeth National Spinal Injuries Unit was keen to spread the message about the issue of osteoporosis to persons with spinal injuries who may not be aware of their increased risk of fracture due to bone loss in the paralysed limbs. The World Osteoporosis Day message this year was: “Love Your Bones: The Unbreakable Embrace Campaign”. Therefore, to coincide with World Osteoporosis Day 2011, we organised a small-scale Osteoporosis Awareness event, as part of Patient Education afternoon, on Wednesday 19th October 2011. Inpatients and outpatients were invited to attend in the Step-Down Unit of the Spinal Injuries Unit for a series of informal presentations given by Mr Fraser, Dr Purcell Consultants in Spinal Injuries and Osteoporosis/Rehabilitation Researcher Dr Sylvie Coupaud. The talks were followed by a demonstration of the Galileo Novotec *Whole Body Vibration* platform by Rehabilitation Engineering PhD student Colm Craven, and a discussion session between speakers, patients and their families, and other carers. Feedback from attendees was positive, encouraging us to organise a larger Osteoporosis Awareness Event for October 2012.

Dr Mariel Purcell

B5 B Better Together Programme Involvement

The unit has been a leader in introducing “Better Together” and “Time to Care” programmes.

Releasing time to care

Edenhall and Philipshill wards are actively involved in the RTTC programme. Both wards have implemented the 3 foundation modules to work alongside 2 other patient safety/care initiatives i.e. Scottish Patient Safety Programme (SPSP) and clinical quality indicators (CQIs).

The national average time spent in direct patient care is 40%.

To assess the amount of time spent on direct and indirect patient care an activity tracking exercise was completed in August 2011 and repeated in February 2012 following implementation of the 3 foundation modules.

Edenhall

Grade of Staff	August 2011 - Direct Care	February 2012 - Direct Care
Registered Nurses	51%	61%
Health Care Assistants	55%	47%

The decrease in direct patient care from the HCA's can be attributed to a 6% increase time spent in motion and a 1% increase time spent in other duties i.e. cleaning of equipment, patient surroundings, putting away stocks, general ward cleaning and attending to laundry . The increased time spent in motion is an area the ward will look at during the process modules.

Philipshill

Grade of Staff	August 2011 – Direct Care	February 2012 – Direct Care
Registered Nurses	45%	56%
Health Care Assistants	53%	55%

The increase in direct care time for the Registered Nurses can be attributed to a 4% reduction in motion. This is due to the ward reorganising the layout of equipment and stocks in the ward. There is also a 6% reduction in other duties. Other duties include general ward cleaning, cleaning of equipment, putting away stocks and stores and attending to laundry. Much of this of this role is now undertaken by the ward housekeepers.

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. **Questionnaire** are used as appropriate

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-one: Out- patient Services:

	07/08	08/09	09/10	10/11	11/12
Return	2283	2182	2182	2193	2293
New	319	307	192	229	188

Table Twenty-two: Outpatient Clinic Location

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

Table Twenty-three A: Activity: Out-Patient By Centre

	07/08	08/09	09/10	10/11	11/12	CHANGE YEAR	TOTAL 1992-2012
New QENSIU	307	307	192	229	188	(17.9%)	2241
Return QENSIU	1905	1830	1825	1861	1876	+ 0.8%	30059
Edinburgh	212	169	168	162	174	+ 7.4%	3189
Inverness	60	62	45	49	62	+ 26.5%	788
Aberdeen	59	62	68	61	85	+ 39.3%	742
Dumfries & Galloway	18	28	14	9	27	+ 200%	225
Borders	17	9	36	19	15	(21.1%)	183
Arbroath	24	22	26	14	31	+ 121.4%	192
Huntly	0	0	0	18	23	+ 27.8%	41
Total	2602	2489	2374	2422	2481	+ 2.4%	37660

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

Clinic	March 2011	April 2012
Inverness	71	80
Aberdeen/ Huntly	107	117
Borders	28	35
Dumfries	24	27
Arbroath	28	35
Total	258	294

Shows an increase in the patient numbers of 14% or 36 patients.

Table Twenty-four: Activity; New Out-patient Activity by Health Board

	07/08	08/09	09/10	10/11	11/12
Ayrshire & Arran	18	20	18	21	15
Borders	3	3	3	1	2
Dumfries & Galloway	7	12	8	7	3
Fife	8	9	1	7	4
Forth Valley	23	20	16	17	14
Grampian	15	8	4	3	3
Greater Glasgow Clyde	169	160	91	136	105
Highland	6	4	2	4	4
Lanarkshire	40	49	32	20	27
Lothian	18	11	11	8	3
Shetland	0	0	0	1	0
Tayside	7	6	4	3	8
Orkney	0	0	0	0	0
Western Isles	2	4	1	0	0
ECR	3	0	1	1	0
Unknown	0	1	0	0	0
Total	319	307	192	229	188

B6: B Geographical Access

B6: B1 Nationwide services

The unit accepts patients from all of Scotland. Their specialised acute care is done in the Spinal Unit but all subsequent care is either performed locally as out or inpatient. There is a life-long commitment to the patients. In order to provide this service outreach clinics have been set up to mirror patient location and demand.

There is a continued demand for nurse specialists to provide important in-patient and outpatient rolls. As well as two Liaison Sisters there is an Educational Sister, Respiratory Sister, Discharge Planner and Education Nurse. They all provide assistance to the Senior Nurse Manager. As a national service it is important to provide outpatient and domiciliary services throughout Scotland. These 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 carers.

The Spinal Nurse Specialist team continue to visit patients around Scotland at their discharge address. These visits may be post discharge visits, follow up visits or education/training. 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 113 visits covering 7,837 miles.

Sister Woods 119 visits covering 9157miles.

Total numbers of visits, clinics and meetings carried out by the liaison nurses was 595 covering 16,994 miles.

Sister Duffy 98 visits covering 7923 miles

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

Location	% Attendance 09-10	% Attendance 10-11	% Attendance 11-12
Aberdeen	96	84	91%
Inverness	87	92	92%
Dumfries	81	86	90%
Arbroath	100	82	94%
Borders	100	90	91%
Huntly	N/A	100	100%
Ave Rate	93	89	91%

Annual Review Clinics are subject to a relative high DNA rate due to morbidities and co-morbidities.

B6: B3 Table Twenty-six: Activity Liaison Sisters

Sister Prempeh	Meetings	Clinics	Visits	Miles	External Teaching
APRIL	10	0	7	302	0
MAY	10	2	9	1108	0
JUNE	6	1	9	1183	11x1
JULY	3	0	0	0	13x1
AUGUST	9	0	11	861	13x1
SEPTEMBER	7	1	10	951	8
OCTOBER	4	0	11	657	0
NOVEMBER	6	2	14	892	6
DECEMBER	7	1	12	523	5
JANUARY	8	1	10	520	4
FEBRUARY	6	2	12	584	7
MARCH	7	1	8	256	1
TOTAL	83	11	113	7837	68

Sister Woods	Meetings	Clinics	Visits	Miles	External Teaching
APRIL	7	2	7	578	0
MAY	14	4	9	401	4
JUNE	6	4	14	1342	4
JULY	9	0	8	882	0
AUGUST	8	1	13	1070	19x2
SEPTEMBER	11	2	11	905	0
OCTOBER	7	2	7	460	0
NOVEMBER	10	2	12	1087	0
DECEMBER	10	1	8	382	6
JANUARY	13	1	11	478	2
FEBRUARY	6	2	10	912	0
MARCH	12	3	9	658	0
TOTAL	113	27	119	9157	61

B6: B4 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 7923 road miles travelled and air trips to Shetland and Stornoway completed.

Table twenty-seven:

Sister Duffy	MEETINGS	CLINICS	VISITS	EXTERNAL TEACHING	Respiratory Referrals
APRIL	0	1	10	42 staff	0
MAY	2	1	7	36 staff	2
JUNE	4	1	8	21 staff	2
JULY	3	1	3	2 staff	1
AUGUST	7	1	3	4 staff	2
SEPTEMBER	4	2	5	7 staff	0
OCTOBER	3	2	4		2
NOVEMBER	2	1	11	29 staff	0
DECEMBER	2	2	10	23 staff	5
JANUARY	2	1	10	4 staff	1
FEBRUARY	2	2	5		3
MARCH	4	2	4	3 staff	0
TOTAL	35	17	80	171	18

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

Helena Richmond	Meetings	Clinics	Staff Teach*	Patients Education*	External Teaching*
APRIL	1	0	13	28	
MAY	2	1	18	47	
JUNE	3	0	23	37	
JULY	0	0	18	0	
AUGUST	4	2	48	0	
SEPTEMBER	1	0	24	35	4 PDRU Staff
OCTOBER	1	0	14	0	20 Crosshouse Hosp
NOVEMBER	2	0	21	39	16 Physio/OT
DECEMBER	4	3	9	9	0
JANUARY	3	1	5	0	6 staff Wd 23
FEBRUARY	3	0	13	28	6 staff Wd 25
MARCH	5	2	20	28	65 students (Caled)
TOTAL	29	9	226	269	

Number of individuals*

B6: B4 Location of Lothian Outreach Clinic

Considerable discussions have taken place over the last ten years regarding the location of a replacement clinic for the long standing Edanhall Clinic for patients based in Lothian. The units priority was for ease of access for the geographical distribution of the patients. A number of options were discussed within Lothian and the SMART Centre at Astley Ainslie hospital was offered. At present it is planned to offer clinics there for one year to allow time for Lothian to decide on its priorities and financial status. Alternatives would be for a clinic in Larbert, repatriation of all Lothian patients to Glasgow or a more remote site in Lothian.

Section C : Looking Ahead/Expected Change/Developments

The medical staff are fully integrated and have roles in the international Spinal Cord Injury Clinical and Research Communities. The unit is involved with cutting edge research into basic science and clinical practice. Over ten years they have positioned themselves to be at the forefront of anticipated translational research which will introduce interventional strategies to influence the final outcome in traumatic spinal cord injury. Changes in clinical practice are anticipated which will have a impact on the service from the roadside to the unit and will involve the ambulance service, paramedics and emergency medical staff. This will ensure that the patients will receive the best possible service. Nursing practice and deployment continues to evolve with the unit at the forefront of innovation.

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.

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. It is inevitable that with time the concept on which it was based needs to be constantly reinforced for the benefit of all the patients.

The spinal cord injury service continues to develop and plans significant changes in the delivery of the medical care over the next two years in response to national priorities.

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

David B Allan FRCS

Director

Queen Elizabeth National Spinal Injuries Unit May 2012

Acknowledgement is made to Ana Bewick, Irene Clark, Mariel Purcell, and Michelle Patterson for 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.