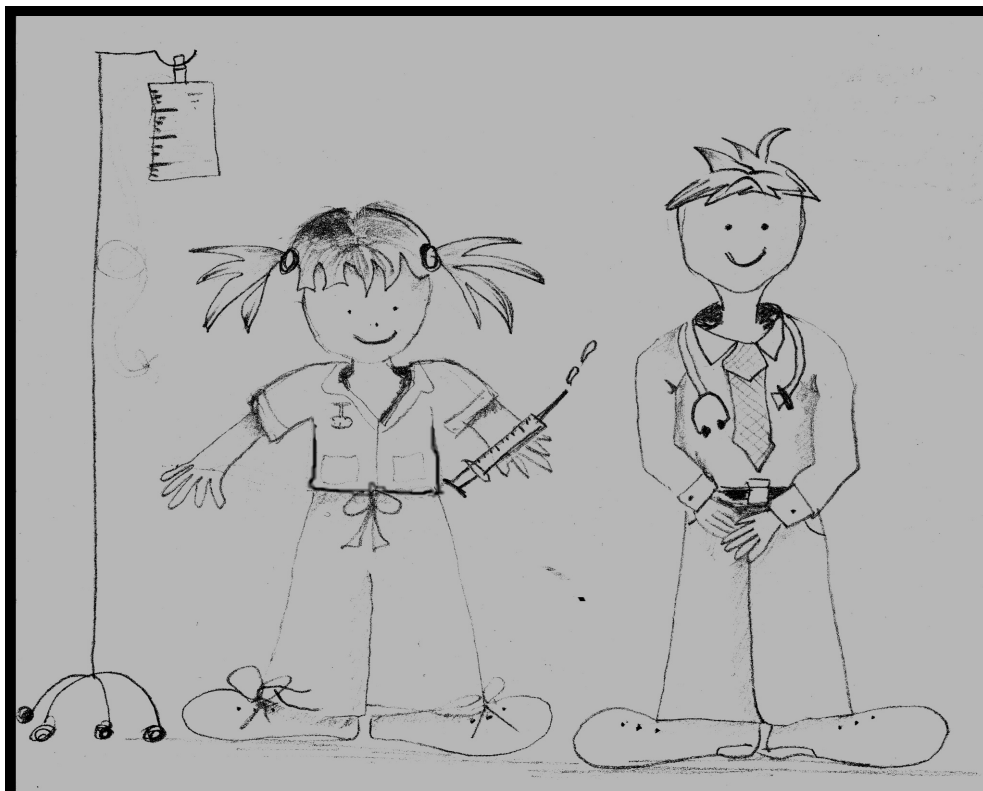


**Queen Elizabeth  
National Spinal Injuries Unit for  
Scotland**

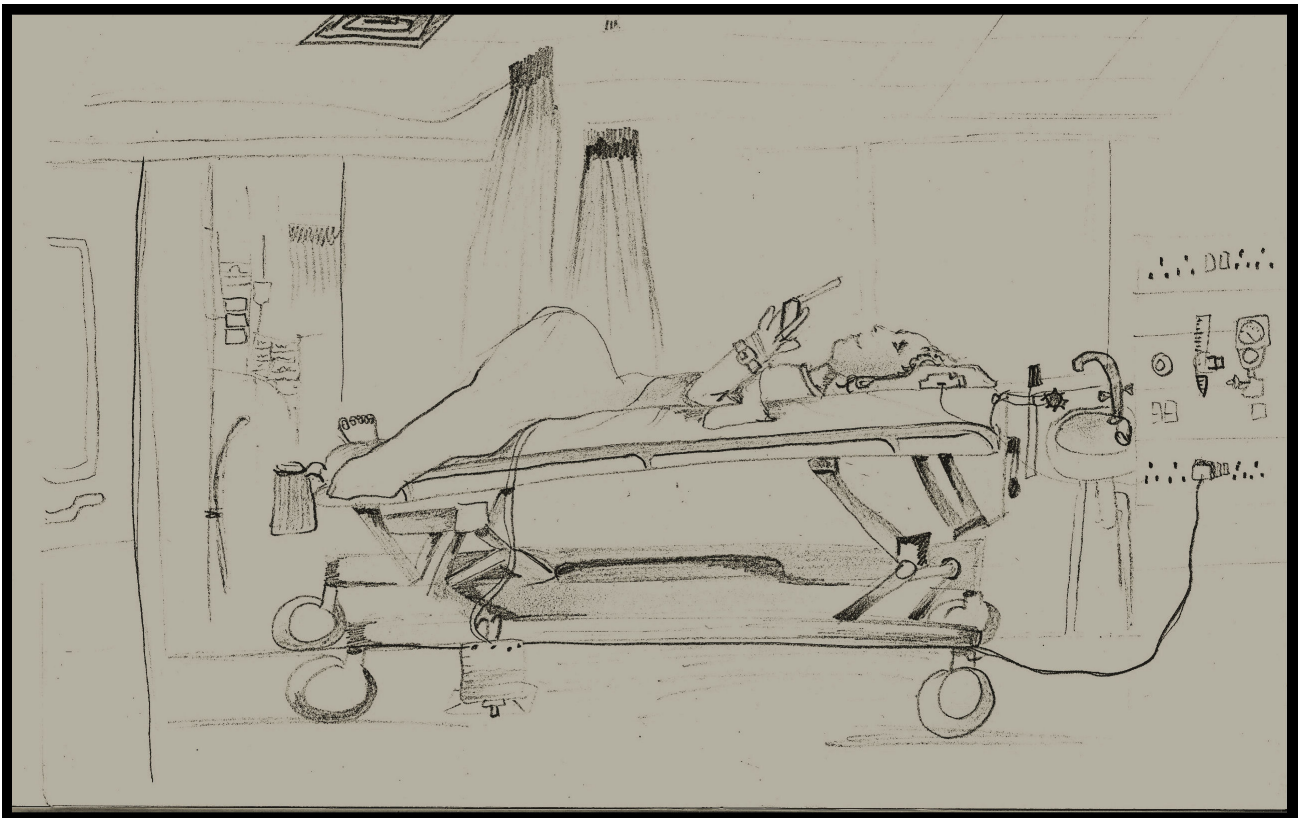
**Annual Report  
2010-2011**



**Greater Glasgow and Clyde Health Board**  
**Queen Elizabeth National spinal Injuries Unit**  
**Acute Services Division**

**NHS Greater Glasgow and Clyde  
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Frontispiece and inside cover by Emily Mclean mother of Kyra

Report dedicated to the present and future patients of the

## **Section A: Introduction**

A1 Name of Programme

A2 Aim and Date of Designation of programme

A3 Description of Patient Pathway

A3: A1 Target Group for Service or Programme

A3 : B1 Abbreviated Care Pathway for Service or Programme

## **Section B: Quality Domains**

### **B1 Efficiency**

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## **Section C: Looking Ahead / Expected Change/Developments**

## **Section D: Summary of Highlights (Celebration and Risk)**

## **Section A Introduction**

## A1: Queen Elizabeth National Spinal injuries Unit for Scotland

### A2: Aim and Date of Designation of Service

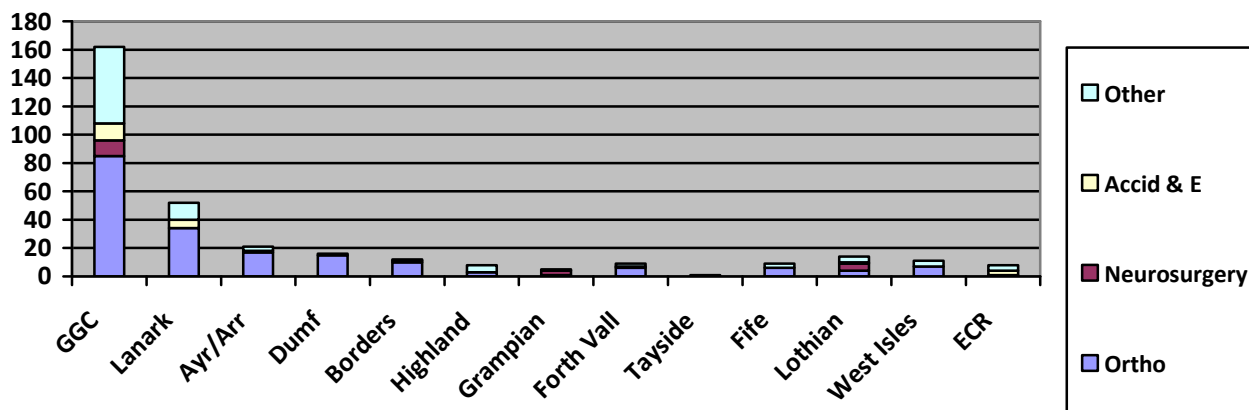
The Queen Elizabeth National Spinal Injuries Unit is responsible for the management of all patients in Scotland who have a traumatic injury to the spinal cord. Since commissioning in 1992 it has continued to develop the management of the acute injury and life time care of all of its patients to maximise 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

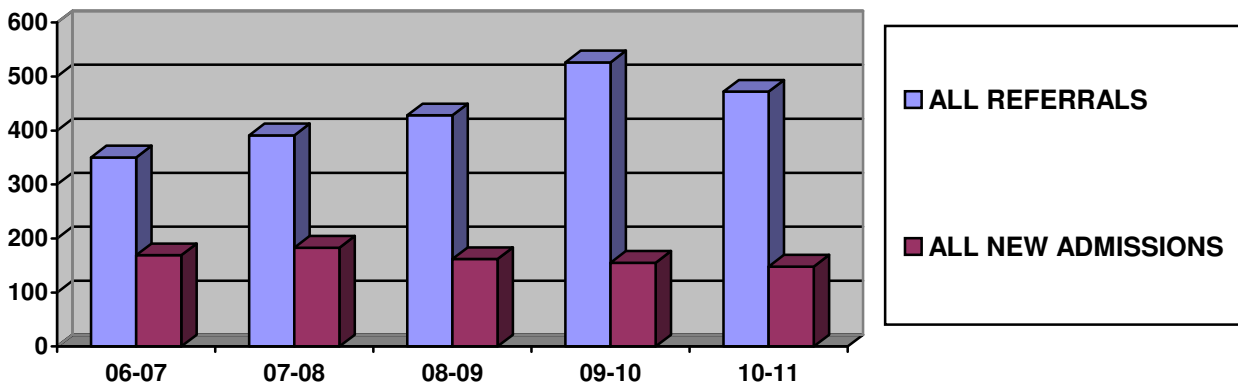
The unit accept all patients who are injured or domiciled in Scotland and are referred with a traumatic spinal cord injury. In addition complex fractures without neurological injury but who are at risk of neurological compromise or require expert assessment and treatment are admitted. Multiple pathways 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 1



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) are admitted as soon as clinically



indicated. The total number of patients (472) 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 no significant change in the number of non-neurological injured spinal fractures (49) admitted.

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.

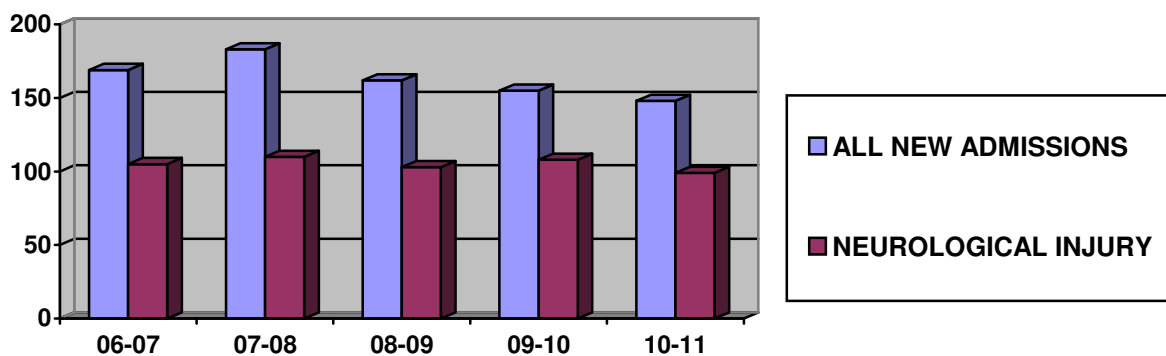


Table One

	06/07	07/08	08/09	09/10	10/11	92-11
<b>NEW ADMISSIONS</b>	169	183	162	155	148	2991
<b>Neurological</b>	105	110	103	108	99	1526
<b>Non-neurological</b>	64	73	59	47	49	1465

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 three hundred and twenty four 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.

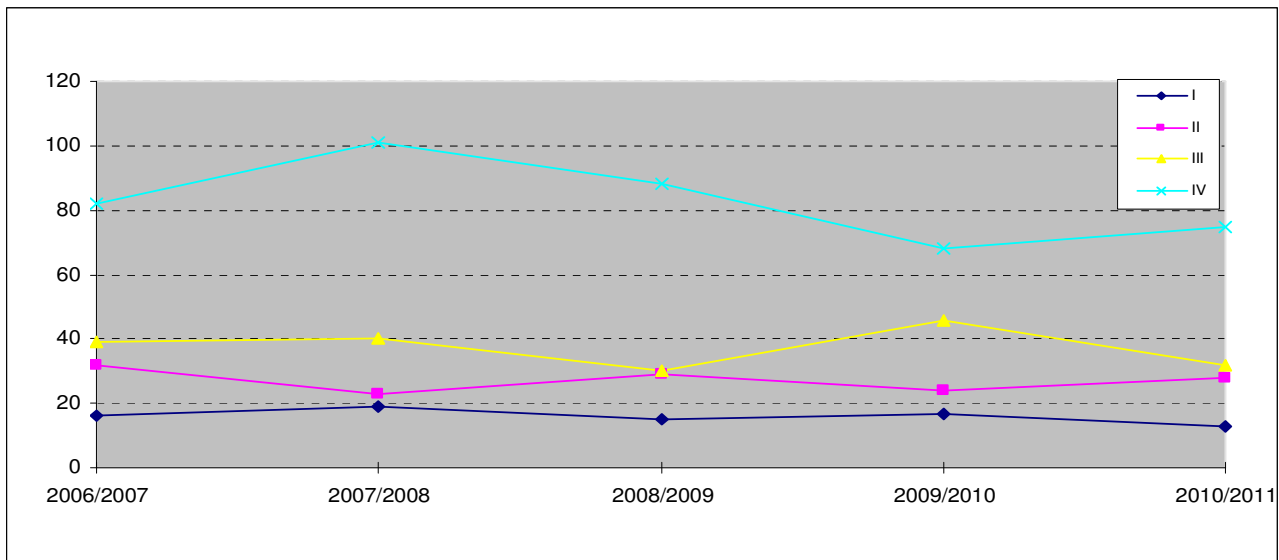
	Anatomy	Neurology
<b>GROUP I</b>	<b>Cervical Injury 1 - 4</b>	<b>High Tetraplegia</b>
<b>GROUP II</b>	<b>Cervical Injury 5 - 8</b>	<b>Low Tetraplegia</b>
<b>GROUP III</b>	<b>Thoracic, Lumbar and Sacral Injury</b>	<b>Paraplegia</b>
<b>GROUP IV</b>	<b>All levels of Injury with</b>	<b>Incomplete or no Paralysis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

**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	06/07	07/08	08/09	09/10	10/11	92/11
I	16	19	15	17	13	222
II	32	23	29	24	28	482
III	39	40	30	46	32	669
IV	82	101	88	68	75	1618
<b>Total</b>	<b>169</b>	<b>183</b>	<b>162</b>	<b>155</b>	<b>148</b>	<b>2991</b>

Group I patients decreased compared with the previous year. There was an increase in the other highly dependent group II and a decrease in Group III. The number of patients admitted with no neurology fell to the median level.

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**

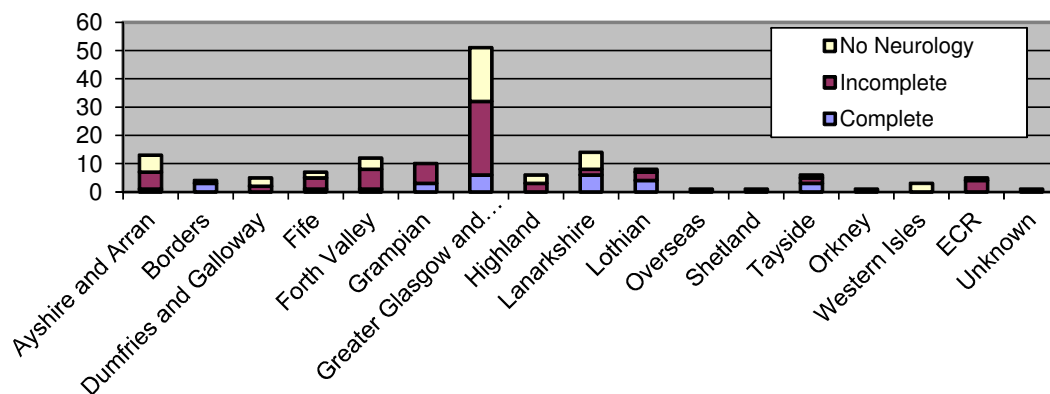
<b>A</b>	Complete: No motor or sensory function
<b>B</b>	Incomplete: Sensory but not motor function is preserved below the neurological level and includes S4-5
<b>C</b>	Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a motor grade less than three
<b>D</b>	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
<b>E</b>	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: Admissions by Neurological Deficit and Health Board**

2010/2011	A	B	C	D	E	Total
Ayrshire & Arran	1	0	4	2	6	13
Borders	3	1	0	0	0	4
Dumfries & Galloway	0	0	0	2	3	5
Fife	1	0	2	2	2	7
Forth Valley	2	1	1	4	4	12
Grampian	3	3	2	2	0	10
Greater Glasgow Clyde	5	1	12	14	19	51
Highland	0	0	1	2	3	6
Lanarkshire	5	2	1	0	6	14
Lothian	4	0	2	1	1	8
Overseas	0	0	1	0	0	1
Shetland	0	0	1	0	0	1
Tayside	3	0	1	1	1	6
Orkney	0	0	1	0	0	1
Western Isles	0	0	0	0	3	3
ECR	0	0	3	1	1	5
Unknown	0	1	0	0	0	1
<b>TOTAL</b>	<b>27</b>	<b>9</b>	<b>32</b>	<b>31</b>	<b>49</b>	<b>148</b>

**Fig Five: Admissions by Neurological Deficit and Health Board**

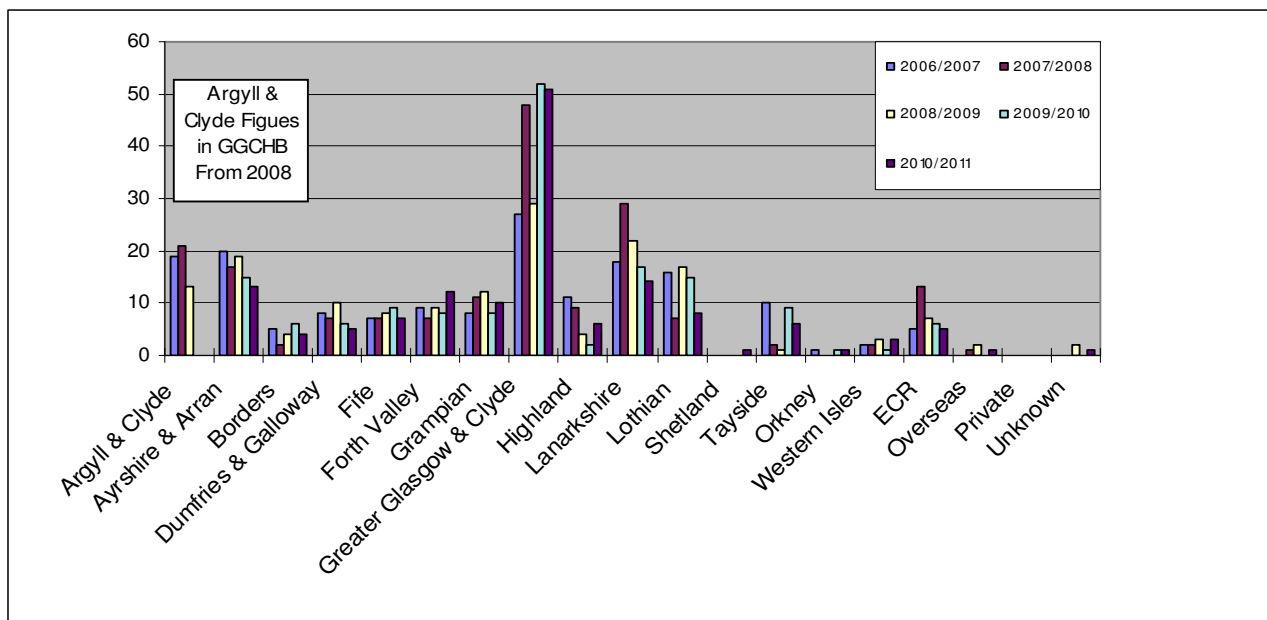


GGHB is responsible for the largest number of complete and incomplete spinal cord injuries. The number of non-neurological injuries admitted from all regions and particularly from GGHB has



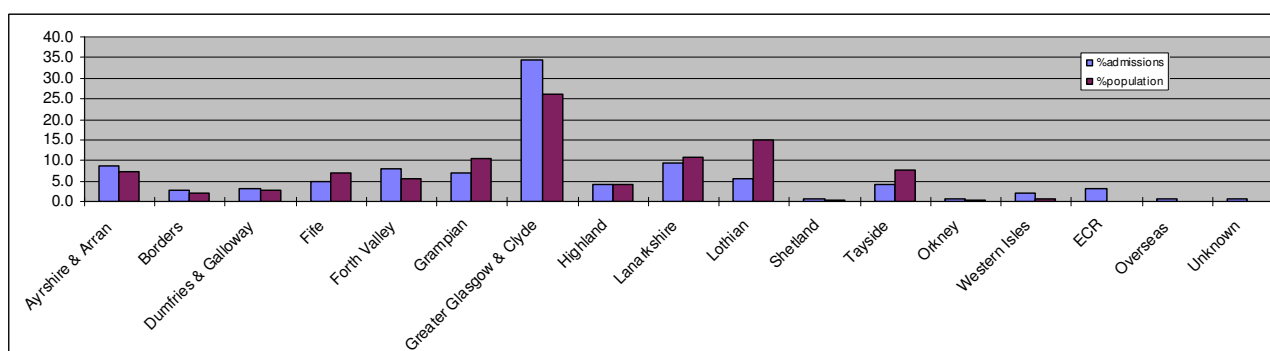
stabilised. The distribution of complete and incomplete injuries varies by year. All areas except Orkney and Shetland referred one or more patients with a neurological deficit. The distribution of admissions and the annual variation since the unit opened justifies the economic benefits of a national service.

**Fig Six: New Admissions by Health Board of Residence 2000-2008**



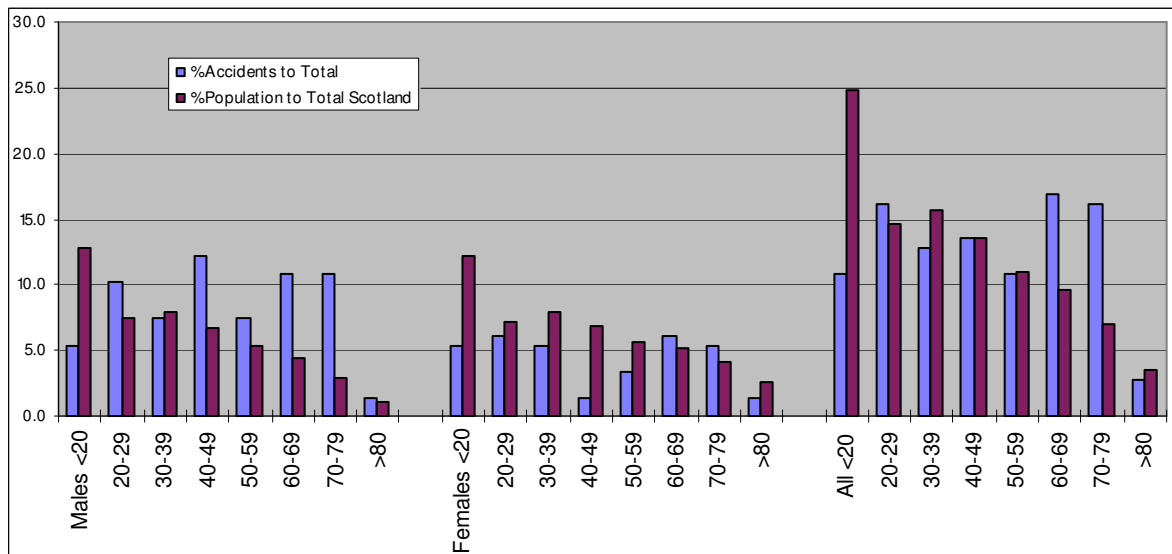
An increased referral pattern from some health boards reflects leisure-related accidents. Patients domiciled in Scotland but who are injured abroad are repatriated when clinically indicated and then recorded under their own health board.

**Fig Seven: Admissions by Health Board compared with Population Size**



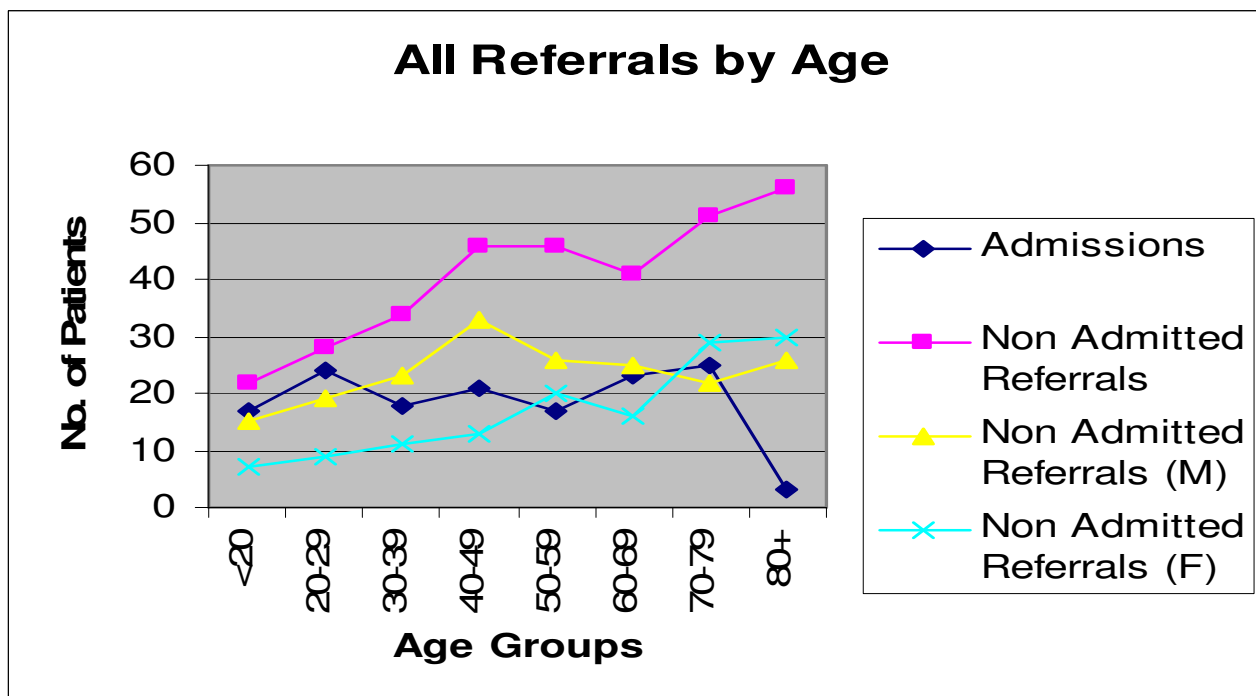
There has been positive encouragement for consultant medical staff in Lothian, Tayside and Grampian to develop services for those patients with no neurological injury. This leads to a dis-proportionate number of admissions from other areas compared with population size Support is always available from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



There is an increasing number of referrals from non-neurologically injured elderly cervical fractures. These are easily managed in the referral hospital but are resource hungry and ultimate placement is difficult.

**Table Four: Admissions by Anatomical Level and Severity**

	Level	Complete	Incomplete	No Neurology	Total
<p>Vertebral Column (Right Lateral View)</p>	<b>C 1</b>	0	1	5	6
	<b>2</b>	0	2	9	11
	<b>3</b>	2	7	1	10
	<b>4</b>	2	8	0	10
	<b>5</b>	7	13	3	23
	<b>6</b>	1	7	2	10
	<b>7</b>	1	3	2	6
	Sub-total	<b>13</b>	<b>41</b>	<b>22</b>	<b>76</b>
	<b>T 1</b>	1	0	0	1
	<b>2</b>	1	2	0	3
	<b>3</b>	1	1	0	2
	<b>4</b>	1	1	1	3
	<b>5</b>	2	0	0	2
	<b>6</b>	0	1	2	3
	<b>7</b>	0	2	1	3
	<b>8</b>	1	2	0	3
	<b>9</b>	1	2	1	4
	<b>10</b>	1	0	1	2
	<b>11</b>	1	2	1	4
	<b>12</b>	0	2	9	11
	Sub-total	<b>10</b>	<b>15</b>	<b>16</b>	<b>41</b>
	<b>L 1</b>	2	6	9	17
	<b>2</b>	1	4	0	5
	<b>3</b>	1	1	1	3
	<b>4</b>	1	2	1	4
	<b>5</b>	0	1	0	1
	Sub-total	<b>5</b>	<b>14</b>	<b>11</b>	<b>30</b>
	<b>S1-5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
	<b>TOTAL</b>	<b>28</b>	<b>71</b>	<b>49</b>	<b>148</b>

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**

<b>Referring Board</b>	<b>Total Referrals</b>	<b>Admissions</b>	<b>Not Admitted</b>	<b>% Admitted</b>	<b>Complex Advice given</b>
<b>Greater Glasgow &amp; Clyde</b>	213	51	162	24%	57
<b>Lanarkshire</b>	66	14	52	21%	18
<b>Ayrshire/Arran</b>	34	13	21	38%	7
<b>Dumfries</b>	21	5	16	24%	9
<b>Borders</b>	16	4	12	25%	6
<b>Highland</b>	15	7	8	47%	2
<b>Grampian</b>	17	12	5	71%	5
<b>Forth Valley</b>	21	12	9	57%	4
<b>Tayside</b>	7	6	1	86%	
<b>Fife</b>	16	7	9	44%	5
<b>Lothian</b>	22	8	14	36%	9
<b>Western Isles</b>	14	3	11	21%	4
<b>ECR</b>	10	6	4	60%	2
<b>Total</b>	472	148	324	31%	128

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 Specialty				Total
	Cervical	Thor/Lum	Orthopaedic	Neurosurgery	A&E	Other	
Great Glasgow & CI	83	79	85	11	12	54	162
Lanarkshire	25	27	34		6	12	52
Ayrshire/Arran	11	10	17		1	3	21
Dumfries	10	6	15			1	16
Borders	6	6	10		1	1	12
Highland	5	3	3			5	8
Grampian	2	3	1	3		1	5
Forth Valley	9		6		1	2	9
Tayside	1			1			1
Fife	1	8	6			3	9
Lothian	5	9	4	5	1	4	14
Western Isles	4	7	7			4	11
ECR	2	2	1			3	4
<b>Total</b>	<b>164</b>	<b>160</b>	<b>189</b>	<b>20</b>	<b>22</b>	<b>93</b>	<b>324</b>

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	<b>148</b>
New outpatients	300	<b>229</b>

#### B1: A2 Out-patient activity

	06/07	07/08	08/09	09/10	10/11
Return	2042	2283	2182	2182	<b>2193</b>
New	122	319	307	192	<b>229</b>

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

	06/07	07/08	08/09	09/10	10/11
<b>Return</b>	2042	2283	2182	2182	<b>2193</b>
<b>DNA Return</b>	-	-	-	-	<b>804</b>
<b>New</b>	122	319	307	192	<b>229</b>
<b>DNA New</b>	0	0	0	0	<b>0</b>

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. The majority of the new patients are tertiary referrals involving complex medical investigation and assessment.

**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 Started 2011

**B1: A5 New Out-Patient Activity by Health Board**

Fig 10

	06/07	07/08	08/09	09/10	10/11
<b>Ayrshire &amp; Arran</b>	8	18	20	18	<b>21</b>
<b>Borders</b>	1	3	3	3	<b>1</b>
<b>Dumfries &amp; Galloway</b>	6	7	12	8	<b>7</b>
<b>Fife</b>	3	8	9	1	<b>7</b>
<b>Forth Valley</b>	9	23	20	16	<b>17</b>
<b>Grampian</b>	3	15	8	4	<b>3</b>
<b>Greater Glasgow Clyde</b>	58	169	160	91	<b>136</b>
<b>Highland</b>	4	6	4	2	<b>4</b>
<b>Lanarkshire</b>	19	40	49	32	<b>20</b>
<b>Lothian</b>	8	18	11	11	<b>8</b>
<b>Shetland</b>	0	0	0	0	<b>1</b>
<b>Tayside</b>	2	7	6	4	<b>3</b>
<b>Orkney</b>	0	0	0	0	<b>0</b>
<b>Western Isles</b>	0	2	4	1	<b>0</b>
<b>ECR/Unknown</b>	1	3	0	1	<b>1</b>
<b>Total</b>	122	319	307	192	<b>229</b>

**B1: A7 Out -Patient Activity by Centre**

Fig11

	06/07	07/08	08/09	09/10	10/11	CHANGE YEAR	TOTAL 92-11
<b>New QENSIU</b>	122	307	307	192	<b>229</b>	<b>+ 19.3%</b>	<b>2053</b>
<b>Return QENSIU</b>	1690	1905	1830	1825	<b>1861</b>	<b>+ 2.0%</b>	<b>28183</b>
<b>Edinburgh</b>	187	212	169	168	<b>162</b>	<b>(3.6%)</b>	<b>3015</b>
<b>Inverness</b>	55	60	62	45	<b>49</b>	<b>+ 8.9%</b>	<b>726</b>
<b>Aberdeen</b>	63	59	62	68	<b>61</b>	<b>(10.0%)</b>	<b>657</b>
<b>Dumfries &amp; Galloway</b>	16	18	28	14	<b>9</b>	<b>(35.7%)</b>	<b>198</b>
<b>Borders</b>	17	17	9	36	<b>19</b>	<b>(47.2%)</b>	<b>168</b>
<b>Arbroath</b>	14	24	22	26	<b>14</b>	<b>(46.2%)</b>	<b>161</b>
<b>Huntly</b>	0	0	0	0	<b>18</b>	<b>New</b>	<b>18</b>
<b>Total</b>	<b>2164</b>	<b>2602</b>	<b>2489</b>	<b>2374</b>	<b>2422</b>	<b>+ 2.0%</b>	<b>35179</b>

Table Nine: Outpatient Activity by Specialty at QENSIU

		06/07	07/08	08/09	09/10	10/11
<b>Orthopaedics</b>	<b>DBA</b>	99	147	107	128	<b>126</b>
<b>Neurosurgery</b>	<b>LA</b>	60	54	39	52	<b>41</b>
<b>Neurosurgery</b>	<b>JB</b>	50	63	50	53	<b>46</b>
<b>Urology</b>	<b>GC/ VG</b>	336	407	467	475	<b>541</b>
<b>Skin Care</b>		57	86	75	68	<b>52</b>
<b>Pain / Spasm</b>		138	29	26	29	<b>19</b>
<b>Neuroprosthetics</b>	<b>TH/MF</b>	20	20	19	23	<b>22</b>
<b>Sexual Dysfunction</b>		10	29	36	19	<b>28</b>
<b>Respiratory</b>			6	9	7	<b>8</b>
<b>Fertility</b>			6	0	8	<b>3</b>
<b>Spinal Injury Annual Review</b>	<b>TOTAL</b>	920	1058	1002	963	<b>975</b>
	<b>MEDICAL</b>	581	673	632	638	<b>595</b>
	<b>NURSING</b>	339	385	370	325	<b>380</b>
<b>Total</b>		<b>1690</b>	<b>1905</b>	<b>1830</b>	<b>1825</b>	<b>1861</b>

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. Neuroprosthetics 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:**

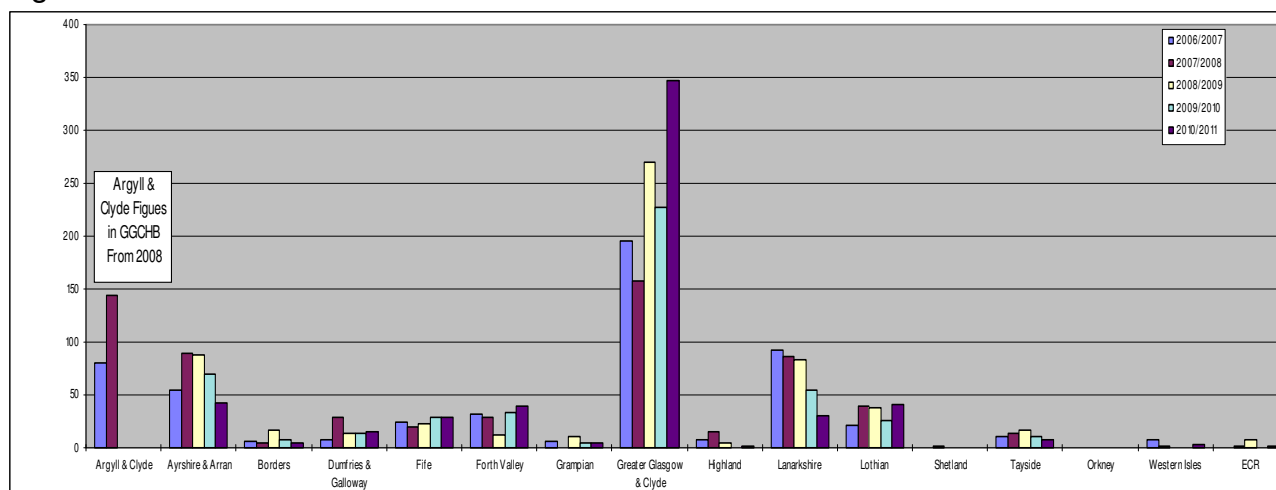
	06/07	07/08	08/09	09/10	10/11
Urology /Urodynamics	18	26	37	27	27
Halo Fixation	129	216	120	99	99
Skin	18	26	29	13	17
Orthopaedic/Neurosurgery	1	0	0	0	0
Acupuncture / Pain / Spasm	375	340	370	311	363
Sexual Dysfunction	4	4	4	3	6
Fertility	0	19	20	21	28
Other	0	0	3	3	28
<b>Total</b>	<b>545</b>	<b>631</b>	<b>583</b>	<b>477</b>	<b>568</b>

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

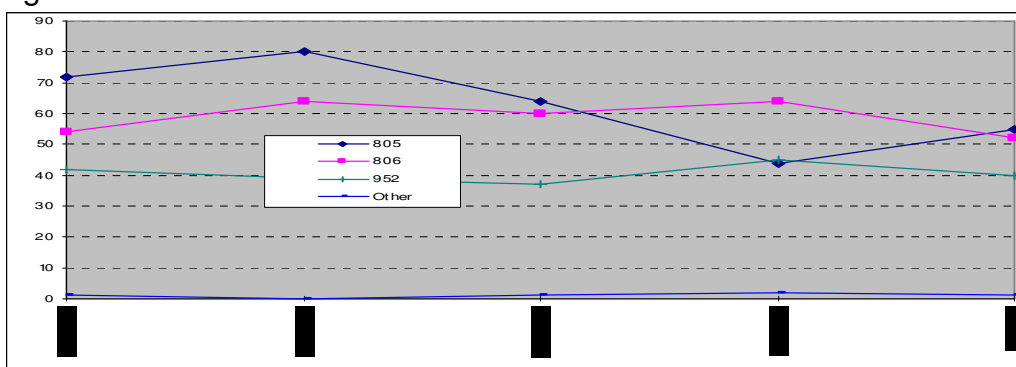
There is an open door policy to the Nurse Led Clinics. Medical advice is always available and was requested in thirty six per cent of patients. Patient satisfaction remains high with this team approach. The maximum waiting time for new elective outpatient appointments is four weeks.

### 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.

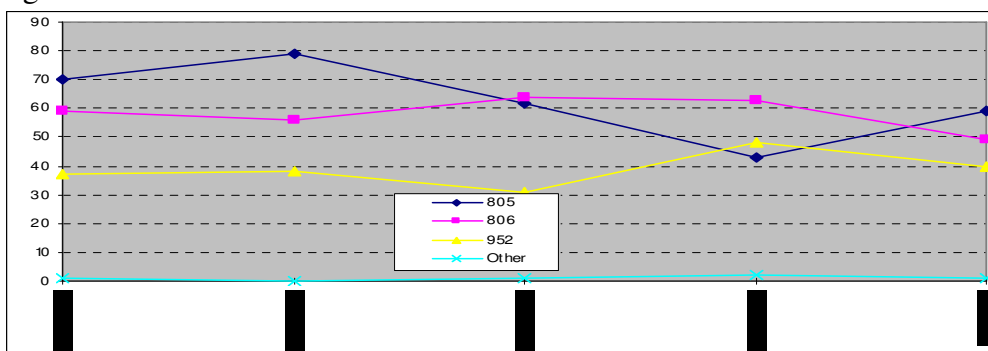
### B1: B2 Admissions by Degree of Injury

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:

2010/2011	Admissions	Discharges
<b>Central Cord Lesion</b>	<b>21</b>	<b>23</b>
<b>Infection</b>	<b>1</b>	<b>1</b>
<b>Vascular</b>	<b>7</b>	<b>6</b>
<b>Tumour</b>	<b>2</b>	<b>3</b>
<b>Surgical</b>	<b>1</b>	<b>2</b>
<b>Non-specific Lumbar Lesions</b>	<b>7</b>	<b>5</b>
<b>Penetrating Wounds gun/stab</b>	<b>1</b>	<b>0</b>
<b>Other</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>40</b>	<b>40</b>

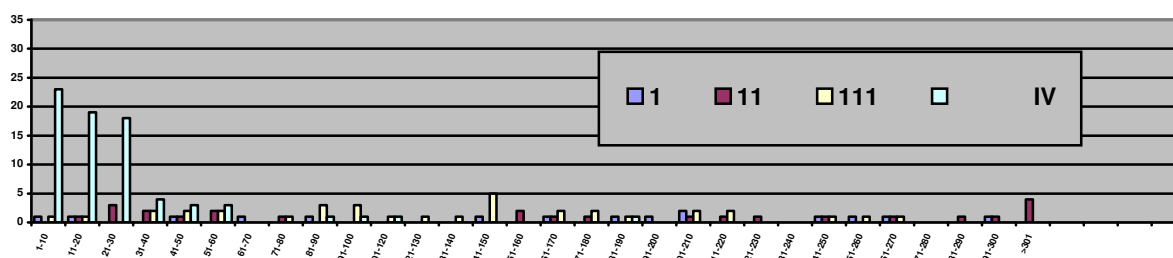
### B1: B5 Length of Stay by Level of Spinal Cord Injury

Case Mix	No.of Patients	Mean L.O.S.	Range of L.O.S.
<b>I</b>	<b>15</b>	<b>161</b>	<b>2 – 294</b>
<b>II</b>	<b>25</b>	<b>154</b>	<b>16 – 355</b>
<b>III</b>	<b>35</b>	<b>130</b>	<b>10 – 315</b>
<b>IV</b>	<b>74</b>	<b>24</b>	<b>1 – 182</b>
<b>All</b>	<b>149</b>	<b>84</b>	<b>1 - 355</b>

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:

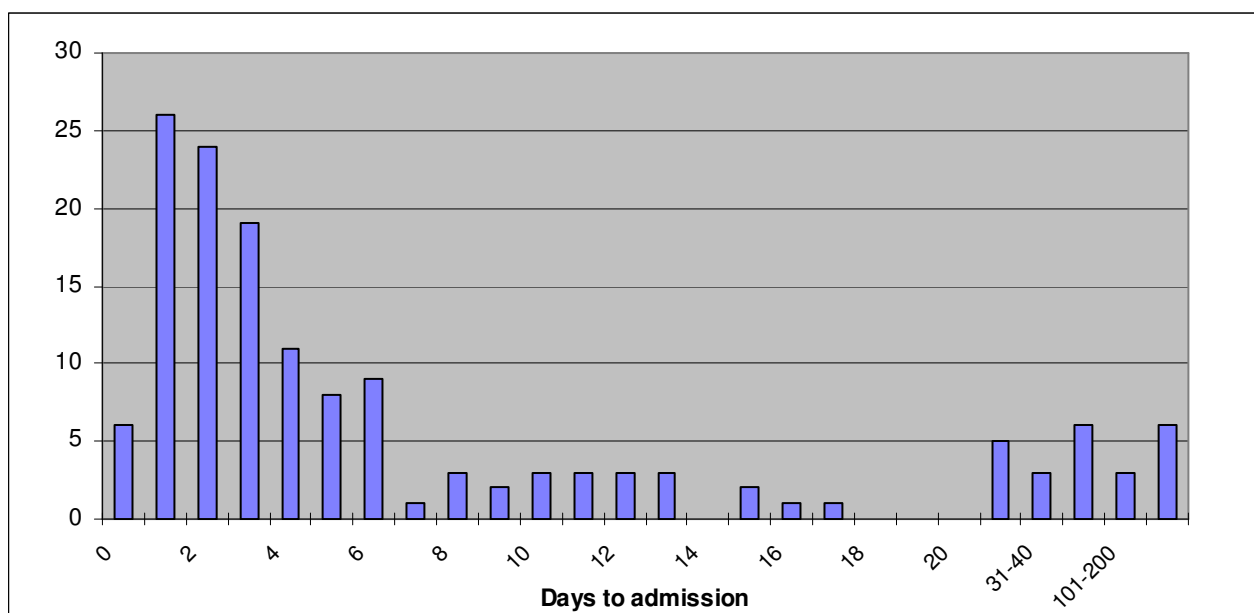
Edenhall HDU 12		Philipshill				36			
Bed Comp	Alloc staffed	Borrowed	Lent	Temp	Available staffed	Total Occ Bed Days	Pats on Pass	Actual Occ Bed Days	% Occupied
48	18096	1	0	0	18097	14754	59	14695	81%

**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 2009-10 sixteen per cent of patients were admitted within twenty-four hours of referral. Thirty seven per cent were admitted within forty-eight hours and fifty-four per cent within four days. Sixty-three per cent were admitted within one week. This time pattern is consistent with previous years. Early admission to the Spinal Injury Unit provides immediate support to the patient and family. 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. Cooperation 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

TableThirteen:

	No. of Patients	Mean Time (Days)	Range of Time
2006-2007	169	815	0 -17416
2007-2008	183	19	0 - 637
2008-2009	162	81	0 - 9582
2009-2010	155	15	0 - 265
<b>2010-2011</b>	<b>148</b>	<b>258</b>	<b>0 - 19749</b>

Fig Sixteen B:

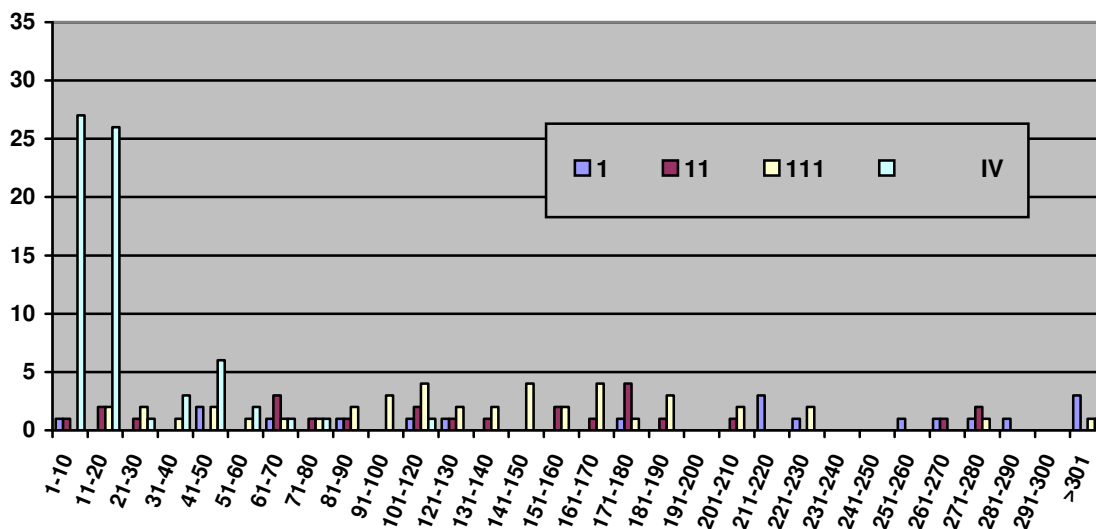


Table Fourteen:

	No. of Patients Discharged	No. of Patients Delayed	Mean delay (days)	Range of Delay (days)	NO DELAY
2006/2007	167	9	54	14 – 141	95%
2007/2008	173	14	96	8 – 957	92%
2008/2009	158	5	178	35 – 489	97%
2009/2010	156	3	92	29 – 151	98%
<b>2010/2011</b>	<b>149</b>	<b>2</b>	<b>52</b>	<b>2 – 101</b>	<b>99%</b>

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 fifty two readmissions to the unit during the year, a significant shortfall on the contract estimate of 200.

### **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.

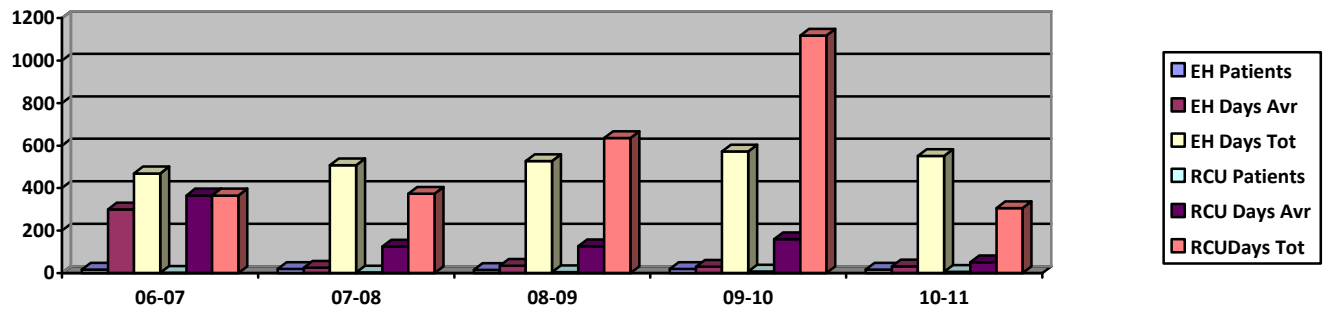
Table Fifteen:

		No. Patients	Ave. Ventilated Days	Total Ventilated Days
06-07	Edenhall	16	29	469
	RCU	1	365	365
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
<b>10-11</b>	<b>Edenhall</b>	<b>17</b>	<b>32</b>	<b>551</b>
	<b>RCU</b>	<b>6</b>	<b>51</b>	<b>305</b>

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

ventilation and the increasing importance of RCU mirrors changes in the age and type of patient needing respiratory support. The numbers are expected to vary considerably each year.

Fig Seventeen:



B1:C1 Finance	AfC Banding	Original Contract Value 2008/09		2010/11 Contract Value (interim)	Budget YTD	Actual YTD	Variance YTD
		WTE	£	£	£	£	£
<b>Dedicated Staff Costs</b>							
Administrative	4	6.50	110,718	138,677	138,677	149,561	-10,884
Administrative	3	0.14	2,543	2,594	2,594	3,103	-509
Administrative	2	2.49	39,462	40,251	40,251	53,161	-12,910
Medical		9.19	935,393	954,101	954,101	936,881	17,220
Senior Manager		0.50	32,450	33,099	33,099	36,634	-3,535
Nursing	7	7.80	287,555	340,721	340,721	329,723	10,998
Nursing	6	9.36	369,297	376,683	376,683	412,329	-35,646
Nursing	5	52.30	1,670,794	1,704,210	1,704,210	1,725,657	-21,447
Nursing	2	23.88	446,053	454,974	454,974	522,388	-67,414
Housekeepers	2	2.00		54,121	54,121	54,121	0
Paramedical	7	13.26	481,740	491,375	491,375	562,739	-71,364
<b>Total Staff</b>		<b>127.42</b>	<b>£ 4,376,005</b>	<b>£ 4,590,806</b>	<b>£ 4,590,806</b>	<b>£ 4,786,297</b>	<b>- £ 195,491</b>
<b>Supplies Costs</b>							
Administrative			106,338	108,465	108,465	137,604	-29,139
Medical			4,059	4,140	4,140	4,140	0
Nursing			11,541	11,772	11,772	6,737	5,035
Paramedical			18,432	18,801	18,801	19,787	-986
Pharmacy			595,848	607,765	607,765	542,735	65,030
Surgical Appliances			102,492	104,542	104,542	140,966	-36,424
<b>Direct Supplies</b>			<b>£ 838,710</b>	<b>£ 855,485</b>	<b>£ 855,485</b>	<b>£ 851,969</b>	<b>£ 3,516</b>
<b>Allocated Costs</b>							
Medical Records			99,515	101,505	101,505	107,809	-6,304
Building Costs			194,343	198,230	198,230	202,195	-3,965
Domestic Services			65,066	66,367	66,367	70,489	-4,122
Catering			179,020	182,600	182,600	193,942	-11,342
Laundry			63,993	65,273	65,273	66,578	-1,305
Neuroradiology			74,544	76,035	76,035	80,757	-4,722
Laboratories			85,962	87,681	87,681	93,127	-5,446
Anaesthetics			35,587	36,299	36,299	38,554	-2,255
Portering			69,301	70,687	70,687	75,077	-4,390
Phones			46,978	47,918	47,918	48,876	-958
Scottish Ambulance Service			8,723	8,897	8,897	9,075	-178
General Services			26,904	27,442	27,442	29,146	-1,704
<b>Allocated Costs</b>			<b>£ 949,936</b>	<b>£ 968,934</b>	<b>£ 968,934</b>	<b>£ 1,015,627</b>	<b>- £ 46,693</b>
<b>Total Supplies</b>			<b>£ 1,788,646</b>	<b>£ 1,824,419</b>	<b>£ 1,824,419</b>	<b>£ 1,867,596</b>	<b>- £ 43,177</b>
<b>Overhead Costs</b>							
<b>Fixed costs</b>							
Rates			57,104	58,246	58,246	58,246	0
Capital Charge			550,978	435,774	435,774	435,774	0
Trust Overheads			145,613	148,525	148,525	148,525	0
<b>Total Overheads</b>			<b>£ 753,695</b>	<b>£ 642,545</b>	<b>£ 642,545</b>	<b>£ 642,545</b>	<b>£ 0</b>
<b>Total Expenditure Postgraduate Dean Funding</b>		<b>127.42</b>	<b>£ 6,918,346</b>	<b>£ 7,057,770</b>	<b>£ 7,057,770</b>	<b>£ 7,296,437</b>	<b>- £ 238,667</b>
<b>Total Expenditure net of Postgraduate Dean Funding</b>			<b>-116,806</b>	<b>-119,142</b>	<b>-119,142</b>	<b>-119,142</b>	<b>0</b>
<b>Dean Funding Income from non-Scottish resident patients</b>			<b>£ 6,801,540</b>	<b>£ 6,938,628</b>	<b>£ 6,938,628</b>	<b>£ 7,177,295</b>	<b>- £ 238,667</b>
			0	0	0	-37,444	37,444
<b>Total Net Expenditure</b>			<b>£ 6,801,540</b>	<b>£ 6,938,628</b>	<b>£ 6,938,628</b>	<b>£ 7,139,851</b>	<b>- £ 201,223</b>

## B1: D1 Key Performance Indicators Summary

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

<i>Key Performance Indicators</i>	<b>Plan or 09/10</b>	<b>Actual</b>
<b>Referrals</b>		
All patients referred	526	472
Telephone advice <sup>1</sup>	371	324
<b>New inpatient activity<sup>2</sup></b>		
All patients admitted with neurological injury	108	99
All patients admitted with non-neurological injury	47	49
<b>Surgical stabilisations:</b>		
- Thoraco lumbar fixations	32	33
- Cervical fixations	17+	23+
- Halo immobilizations	9	26
<b>Spinal injury specific surgery:</b>		
- Theatre lists	36	29
- Individual procedures	55	42
- Surgical specialties	7	4
<b>Implant pain control:</b>		
- New pumps implanted	0	1
- Revision pumps	0	0
- Operational pumps	25	23
- Pump Refill QENSIU	18	14
- Pump Refill Local	7	9
<b>Step down unit:</b>		
- Episodes of care	40	30
- Number of families	20	30
- Number of days (nights)	103	72
<b>New inpatient occupied bed days</b>		
Total Available (new & return)	17,447	18097
Actual	15,566	14695
Bed Occupancy %	90%	81%
mean length of stay		
I	215	161
II	137	154
III	130	130
IV	24	24

<sup>1</sup> Patients managed in referral hospital with non-neurological deficit

<sup>2</sup> 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>	<b>Plan or 09/10</b>	<b>Actual</b>
All	94	84
median length of stay	MM	MM
range of length of stay	2-567	1-355
<b>Delays in discharge (actual v's intended)</b>		
Number of patients discharged	156	149
Number of patients with delayed discharged	3	2
Length of delay (mean/mode)	92	52
% with no delay	98%	99%
<b>Re-admissions – Return inpatient activity</b>		
by NHS Board of Residence		NA
by reason for admission		NA
<b>Return inpatient occupied bed days</b>		
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
<b>Day case</b>		
by NHS Board of Residence		See Table
by reason for admission		See Table
<b>Outpatient activity</b>		
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		NA
<b>Actual / Anticipated number of patients in service</b>		4,500
Allied Health Professionals activity <sup>3</sup>		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

<sup>3</sup> 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 12 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. The number of car related RTAs is decreasing with a persistent increase in the number of motorcyclist admitted .Bicycling injuries whither on or off road have decreased perhaps due to greater awareness, improved safety and the effects of publicity from this unit and others. Medical causes, domestic and Para suicide remain stable. The number of sporting injuries has reduced. Following publicity and the change in rules of schoolboy rugby no significant injuries were recorded in this sport. Industrial injuries have increased and may be due to changes in the types of industry and the relevant support.

Table Sixteen

	2006/ 2007	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011
<b>Fall</b>	<b>68</b>	<b>101</b>	<b>73</b>	<b>77</b>	<b>72</b>
<b>RTA</b>	<b>55</b>	<b>45</b>	<b>40</b>	<b>40</b>	<b>34</b>
Motor vehicle	35	36	27	19	22
Motorcyclist	8	4	8	12	6
Bicyclist	10	4	3	9	4
Pedestrian	2	1	2	0	2
<b>Secondary to Medical Diagnosis</b>	<b>17</b>	<b>18</b>	<b>18</b>	<b>15</b>	<b>21</b>
<b>Industrial Injury</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>6</b>	<b>2</b>
<b>Assault</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>Penetrating Injuries</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>
<b>Sporting Injury</b>	<b>12</b>	<b>13</b>	<b>19</b>	<b>10</b>	<b>11</b>
<b>Domestic Injury</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>Suicide</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>
<b>Other</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	
<b>Total</b>	<b>169</b>	<b>183</b>	<b>162</b>	<b>155</b>	<b>148</b>

## **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 where 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.

In 2010-11 the unit team published twenty research papers with further six submitted and gave 30 scientific presentations.

A detailed research profile for the inauguration of the **Scottish Centre for Innovation In Spinal Cord Injury (SCI<sup>2</sup>)** Is available at [www.http.scisci.org](http://www.http.scisci.org)

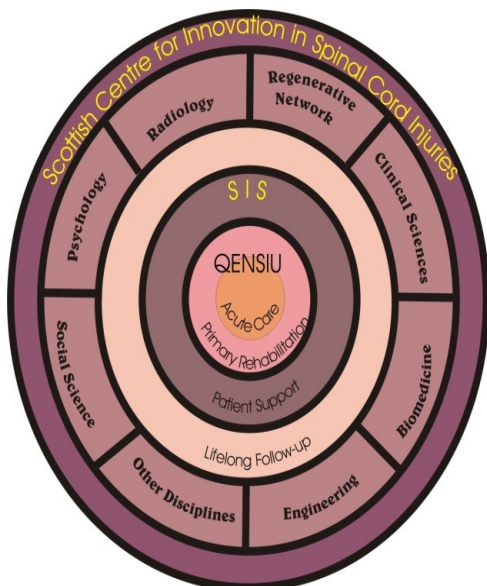


Research in basic sciences, prevention and clinical treatment including translational approaches is a fundamental and embedded function of the unit. The ultimate aim is to act as a host and supporter of all basic scientists who can have a positive impact on the care of the traumatic spinal cord injured.

We have set up **SCI<sup>2</sup>**. 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

**SCI<sup>2</sup> Oct 2000 - Oct 2010**

**Table**

Year	Papers	NHS	NHS + Glas U	NHS + Strath U	NHS + Caled U	NHS + Stir U	Glas U	Strath U
2010	15	4	3	1	1	3	3	0
2009	18	0	11	0	0	0	5	2
2008	17	2	5	0	1	1	8	2
2007	11	2	4	2	0	0	2	1
2006	5	2	2	0	0	0	0	1
2005	5	2	1	0	0	0	1	1
2004	8	2	2	0	1	0	2	1
2003	3	1	0	0	0	0	2	0
2002	8	3	2	0	0	0	2	1
2001	6	1	1	0	0	0	2	1
2000	2	0	0	0	0	0	1	1

The group conducts research in all areas of spinal cord injury from clinical review and outcome through understanding and promoting neural repair and regeneration to active intervention assessment and treatment strategies all based on basic science. The research is patient orientated and extends from harvesting and growing olfactory stem cells to robotic

walking and brain computer interfacing. Psychological studies and the impact of disability are equally important and Spinal Injuries Scotland is a collaborative partner

## Papers

Coupaud S, Mclean AN Lloyd S Allan DB Predicting patient specific rates of bone loss at fracture prone sites after spinal cord injury Disability Rehabil 2010 in press

Galen SS, Catton CJ Allan DB Conway BA A Portable assessment tool to assess changes in temporal gait parameters in SCI Medical Engineering and Physics 2010 in press

Anderson J Allan DB Vertebral fractures secondary to suicide attempts: Demographic and patient outcomes in a Scottish rehabilitation Unit Spinal Medicine in press

Coulter EH, Dall PM, Rochester L Hasler JP Granat MH Development and Validation of a Physical Activity Monitor for use on a wheelchair Spinal Cord 2010 in press

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. Psychology and Health 2010 in press

Dickson A, O'Brien G, Ward R, Allan DB and O'Carroll R The impact of assuming the primary caregiver role following traumatic spinal cord injury: an interpretative phenomenological analysis of the spouse's experience. Psychology and Health 2010 in press

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### 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:

Building Faults	1
Contact with or Exposure to Hazard	4
Moving & Handling	5
Needlesticks/Sharps (Non Medical)	1
Other Incidents	17
Security Incident	1
Slips, Trips & Falls	165
Violence & Aggression	1
<b>Totals:</b>	<b>195</b>

	Slips, Trips & Falls
Fall from Bed	33
Fall from Chair	36
Fall on Level	58
Other	1
Slip on Level	16
Suspected Fall	13
Trip on Level	8
<b>Totals:</b>	<b>165</b>

1 – Negligible	47
2 – Minor	71
3 – Moderate	49
4 – Major	1
5 – Extreme	0
<b>Totals:</b>	<b>168</b>

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

	<b>2006/ 2007</b>	<b>2007/ 2008</b>	<b>2008/ 2009</b>	<b>2009/ 2010</b>	<b>2010/ 2011</b>
Total patients req. Isolation	12	N/A	N/A	N/A	<b>N/A</b>
Salmonella	0	0	0	0	<b>0</b>
Clostridium Difficile	2	2	2	4	<b>3</b>
MRSA	31	32	24	15	<b>11</b>
Streptococcus pyogenes	0	0	1	0	<b>1</b>
Scabies	0	0	0	0	<b>0</b>
TB	0	0	0	0	<b>0</b>
Varicella Zoster	0	0	0	0	<b>0</b>
Patient days in isolation	339	N/A	N/A	N/A	<b>N/A</b>
Ave. days in isolation	28	N/A	N/A	N/A	<b>N/A</b>

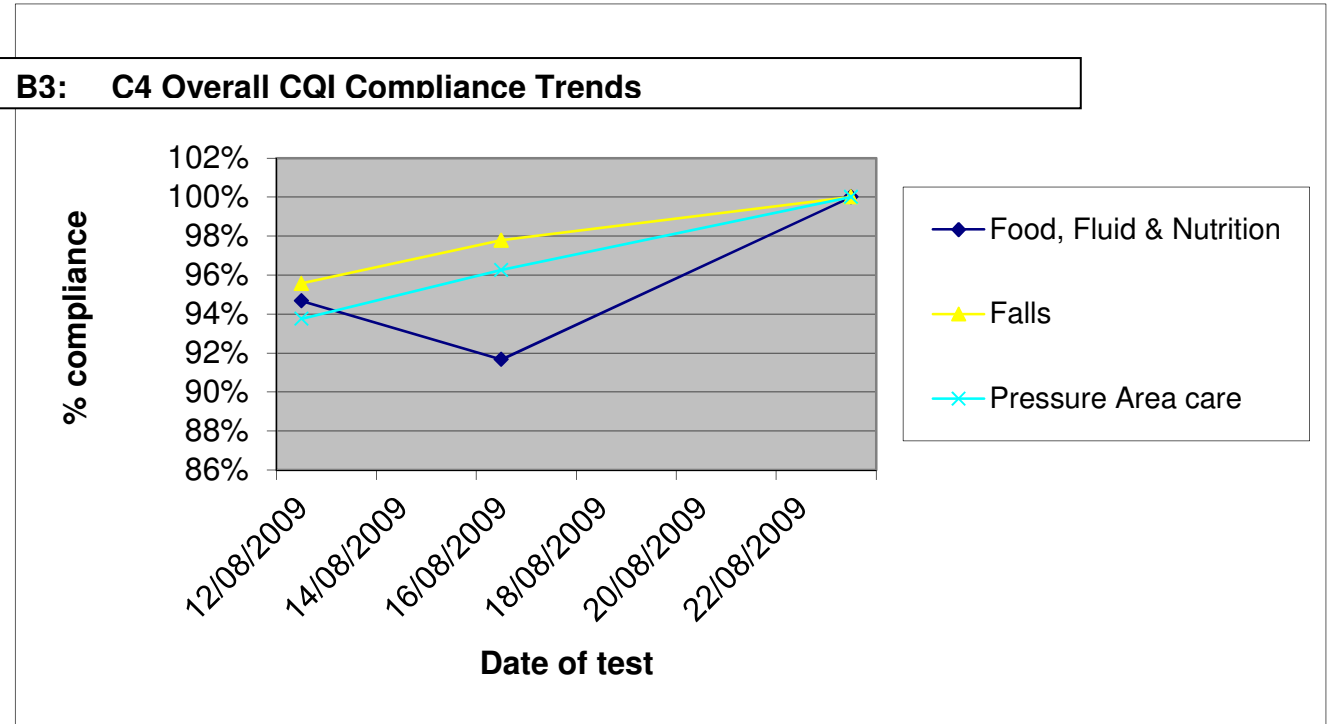
Table Twenty-two:

<b>2010-2011</b>	<b>MRSA</b>	<b>C.Diff</b>	<b>Other HIA</b>
<b>Edenhall</b>	<b>4</b>	<b>1</b>	<b>1</b>
<b>Philipshill</b>	<b>7</b>	<b>2</b>	<b>0</b>

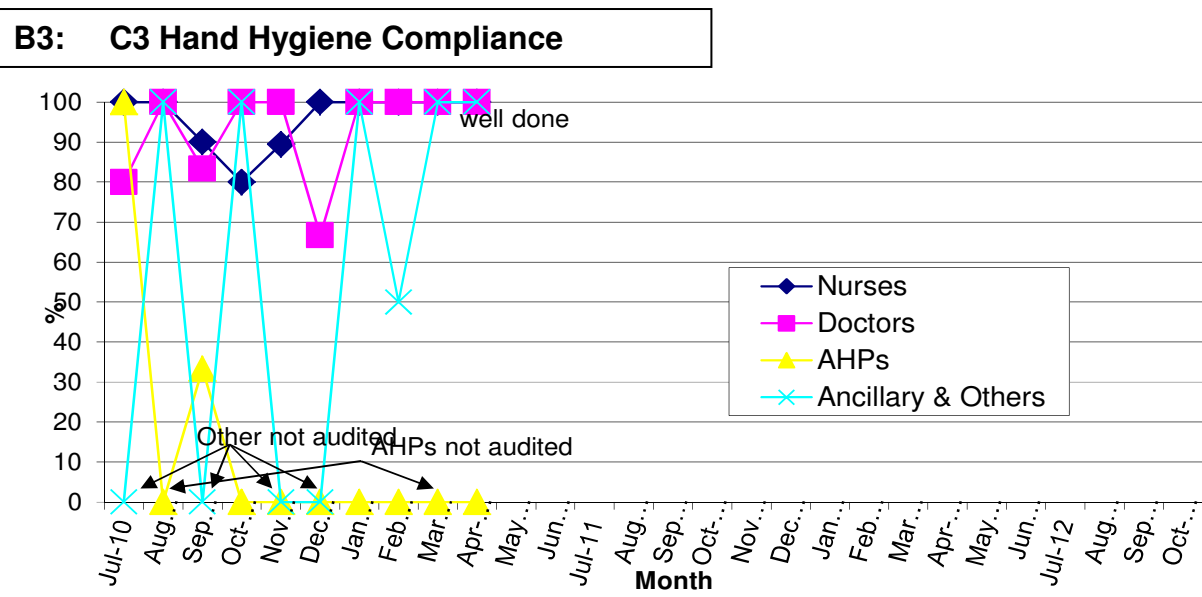
The figures are gratifying, especially as Philipshill Ward had a full complement of beds throughout and includes long term ventilated patients. Edenhall Ward receives patients in the early stage after multiple trauma and many come from ITU or HDU areas and are a high risk group. It is unit policy to 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. Fig Nineteen:





Following on from such work an emphasis has been placed on pressure ulcer prevention as outlined in B3: D.

**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

	<b>No. of patients</b>	<b>No. of acquired sores</b>	<b>No. of admitted sores</b>	<b>Total number of sores</b>	<b>Point prevalence</b>
<b>2006/2007</b>	39	0	7	7	18%
<b>2007/2008</b>	40	7	6	13	32.5%
<b>2008/2009</b>	42	2	11	13	30.95%
<b>2009/2010</b>	42	3	5	8	19%
<b>2010/2011</b>	<b>36</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>25%</b>

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.

In spring 2009 there was an impression that there was an increase in the occurrence of all types of critical skin ischemia. In one day the 17<sup>th</sup> April 2009 fourteen patients were found to have pressure marks having acquired them while in the Unit. A Review Team was set up including senior medical, nursing, occupational therapy and physiotherapy staff. The objective is to consider the skin management in all patients with spinal injury with the focus to date largely on inpatients within the unit with the longer term objective of considering sores developing within other hospitals prior to admission.

In the last year 17 patients have been admitted to the Spinal Injuries Unit from the community for the management of Chronic Pressure Sores. To date their average length of stay is 64 days.

The Team reviewed and updated all Unit protocols relevant to the prevention of and the redevelopment of pressure sores. The NHS (Scotland) new pressure ulcer guidelines were introduced following a piloting period. The information booklet for patients 'Looking after your skin' was updated in early 2010 and the adapted 'European Pressure Ulcer Advisory Panel Grading Score' was introduced based on the thickness of the sore.

A number of training sessions were held to update staff.

In October 2009 the Team agreed a system (Red Flag) for the identification and multi-disciplinary assessment of the cause of all new sores developing in the Unit. A number of common contributing factors in the development of sores were identified by the Team and appropriate changes made including:

- discussion with dietician colleagues regarding optimising nutrition for patients,
- optimising bowel care,
- review of techniques for cleansing skin,
- training staff in log rolling and positioning techniques i.e. pelvic twist to help prevent sacral sores.
- adjustment and the purchase of new shower chairs and further education of staff on their safe use
- purchase of sixteen 'Roho' sections, a dry flotation mattress overlay section.

A database of all skin issues developing within the Unit has been set up.

The Review Team is currently in the process of developing a Unit Wound Management Formulary following a review of products available on the GGC Formulary.

The occurrence of pressure "sores" within the Unit is reducing. In November 2005 forty-three sores developed in patients within the Unit but in November 2006 only 27 new sores were identified. In the six month period to the beginning of April 2011 42 new sores were identified.

The review group continues to meet every few months. All new sores developing within the Unit continue to be Red Flagged to enable contributing factors to be identified in order to inform further changes in management in the future. (Dr M. 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 four formal complaints. Three of the complaints were about aspects of discharge and placements in other hospitals. One complaint regarded perceptions about the level of care required. They have all been subject to a full investigation by management and are now closed. One complainant remains dissatisfied. An informal review of procedures was carried out in response to a query. This resulted in a clarification in certain practices.

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.

**B5 B Better Together Programme Involvement**

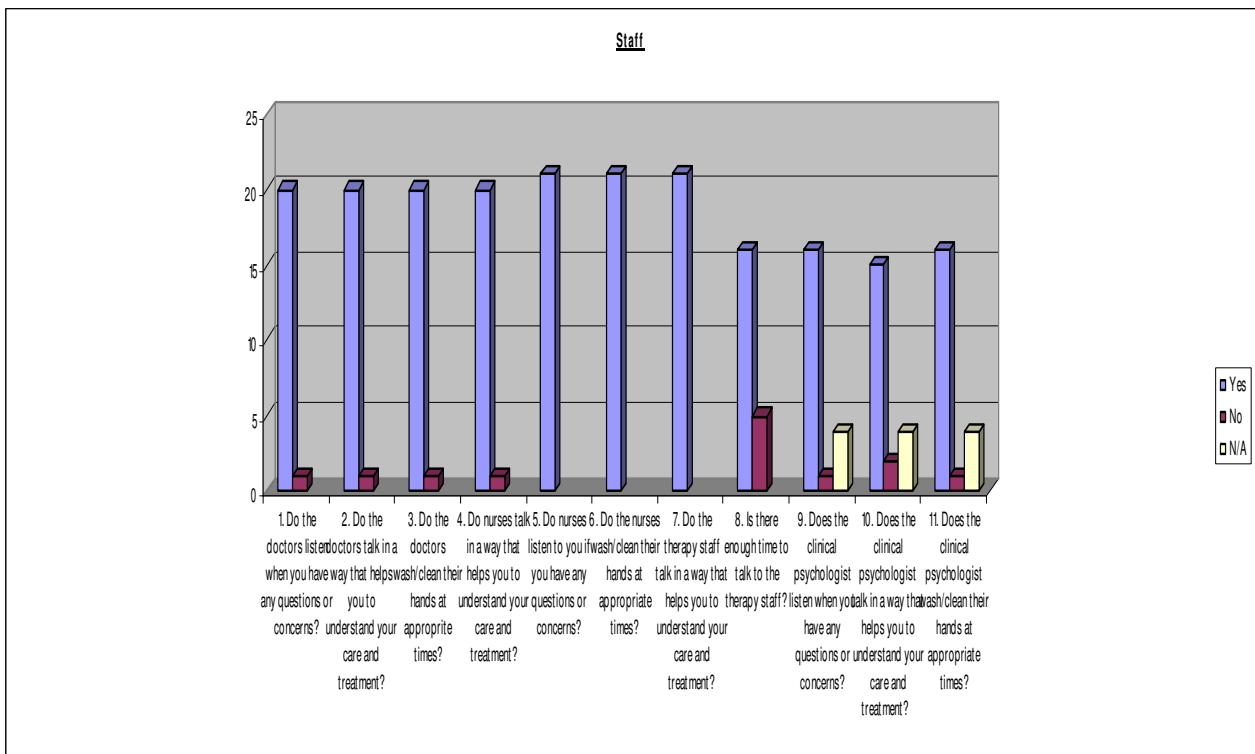
The unit has been a leader in introducing “Better Together” and “ Time to Care” programmes.

**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

**B5: C1 Questionnaire Example**

Fig Twenty Four:



Staff	Yes	No	N/A	Comments
1. Do the doctors listen when you have any questions or concerns?	20	1		Ward round too rushed, most of the time, yes but not much as they should.
2. Do the doctors talk in a way that helps you to understand your care and treatment?	20	1		Only on a 1:1 discussion do you get a better understanding, Sometimes jargon, nurses explanation better, sometimes.
3. Do the doctors wash/clean their hands at appropriate times?	20	1		Not sure, consultants always do.
4. Do nurses talk in a way that helps you to understand your care and treatment?	20	1		All the nurses I have talked to have been extremely helpful in answering my questions, Some of them.
5. Do nurses listen to you if you have any questions or concerns?	21			The nurses always have time to listen to me, some of them.
6. Do the nurses wash/clean their hands at appropriate times?	21			Most do very religiously
7. Do the therapy staff talk in a way that helps you to understand your care and treatment?	21			Very helpful and easy to understand.
8. Is there enough time to talk to the therapy staff?	16	5		Because they have loads more people to talk to , Amanda has been helpful in filling out forms with me, she always makes time for a chat.
9. Does the clinical psychologist listen when you have any questions or concerns?	16	1	4	
10. Does the clinical psychologist talk in a way that helps you to understand your care and treatment?	15	2	4	
11. Does the clinical psychologist wash/clean their hands at appropriate times?	16	1	4	

## 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:

	04/05	05/06	06/07	07/08	08/09	09/10
<b>Return</b>	2205	2235	2042	2283	2182	<b>2182</b>
<b>New</b>	121	122	122	319	307	<b>192</b>

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: Activity: Out-Patient By Centre**

	06/07	07/08	08/09	09/10	10/11	CHANGE YEAR	TOTAL 92-11
<b>New QENSIU</b>	122	307	307	192	<b>229</b>	<b>+ 19.3%</b>	<b>2053</b>
<b>Return QENSIU</b>	1690	1905	1830	1825	<b>1861</b>	<b>+ 2.0%</b>	<b>28183</b>
<b>Edinburgh</b>	187	212	169	168	<b>162</b>	<b>(3.6%)</b>	<b>3015</b>
<b>Inverness</b>	55	60	62	45	<b>49</b>	<b>+ 8.9%</b>	<b>726</b>
<b>Aberdeen</b>	63	59	62	68	<b>61</b>	<b>(10.0%)</b>	<b>657</b>
<b>Dumfries &amp; Galloway</b>	16	18	28	14	<b>9</b>	<b>(35.7%)</b>	<b>198</b>
<b>Borders</b>	17	17	9	36	<b>19</b>	<b>(47.2%)</b>	<b>168</b>
<b>Arbroath</b>	14	24	22	26	<b>14</b>	<b>(46.2%)</b>	<b>161</b>
<b>Huntly</b>	0	0	0	0	<b>18</b>	<b>New</b>	<b>18</b>
<b>Total</b>	<b>2164</b>	<b>2602</b>	<b>2489</b>	<b>2374</b>	<b>2422</b>	<b>+ 2.0%</b>	<b>35179</b>

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

	06/07	07/08	08/09	09/10	10/11
<b>Ayrshire &amp; Arran</b>	8	18	20	18	<b>21</b>
<b>Borders</b>	1	3	3	3	<b>1</b>
<b>Dumfries &amp; Galloway</b>	6	7	12	8	<b>7</b>
<b>Fife</b>	3	8	9	1	<b>7</b>
<b>Forth Valley</b>	9	23	20	16	<b>17</b>
<b>Grampian</b>	3	15	8	4	<b>3</b>
<b>New Out-Patient Activity by Health Board (cont)</b>					
	06/07	07/08	08/09	09/10	10/11
<b>Greater Glasgow Clyde</b>	58	169	160	91	<b>136</b>
<b>Highland</b>	4	6	4	2	<b>4</b>
<b>Lanarkshire</b>	19	40	49	32	<b>20</b>
<b>Lothian</b>	8	18	11	11	<b>8</b>
<b>Shetland</b>	0	0	0	0	<b>1</b>
<b>Tayside</b>	2	7	6	4	<b>3</b>
<b>Orkney</b>	0	0	0	0	<b>0</b>
<b>Western Isles</b>	0	2	4	1	<b>0</b>
<b>ECR</b>	1	3	0	1	<b>1</b>
<b>Unknown</b>	0	0	1	0	<b>0</b>
<b>Total</b>	<b>122</b>	<b>319</b>	<b>307</b>	<b>192</b>	<b>229</b>

**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 Support Nurse. They all provide assistance to the Clinical Support Manager/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. Dundee and Larbert are other potential sites of new outreach clinics but would require further staffing.

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 153 visits covering 7,802 miles.

Sister Woods 147 visits covering 7,664miles.

Total numbers of visits carried out by liaison nurses were 300, covering 15,406 miles.

Sister Duffy 115 visits covering 7,197

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

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

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 Prempah	Meetings	Clinics	Visits	Miles	External Teaching
APRIL	13		13	543	22
MAY	11	4	13	976	
JUNE	11		17	995	3
JULY	4	2	11	166	
AUGUST	5	1	14	873	
SEPTEMBER	15	3	14	356	35
OCTOBER	10	2	10	725	
NOVEMBER	13	2	11	745	
DECEMBER	9	1	12	275	10
JANUARY	17	1	11	632	
FEBRUARY	16	1	14	814	4
MARCH	16	1	13	702	
<b>TOTAL</b>	140	18	153	7,802	74

Sister Woods	Meetings	Clinics	Visits	Miles	External Teaching
APRIL	10	1	16	837	
MAY	11	3	14	681	
JUNE	8	2	11	591	9 staff
JULY	5	0	9	192	2 staff
AUGUST	9	1	13	897	9 staff
SEPTEMBER	9	2	16	1158	16 staff
OCTOBER	6	2	13	810	
NOVEMBER	18	0	12	553	
DECEMBER	11	1	7	117	4 staff
JANUARY	18	2	12	638	
FEBRUARY	13	2	9	512	
MARCH	14	1	15	648	
<b>TOTAL</b>	132	17	147	7,664	40

**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 7197 road miles travelled and air trips to Shetland and Stornoway completed.

Table twenty-seven:

Sister Duffy	MEETINGS	CLINICS	VISITS	EXTERNAL TEACHING	Respiratory Referrals
APRIL	4	1	18	41 staff	
MAY	4	2	18	28 staff	1 Monklands
JUNE	4	1	22	10 staff	
JULY	5	1	11	12 staff	
AUGUST	11		10	32 staff and carers	



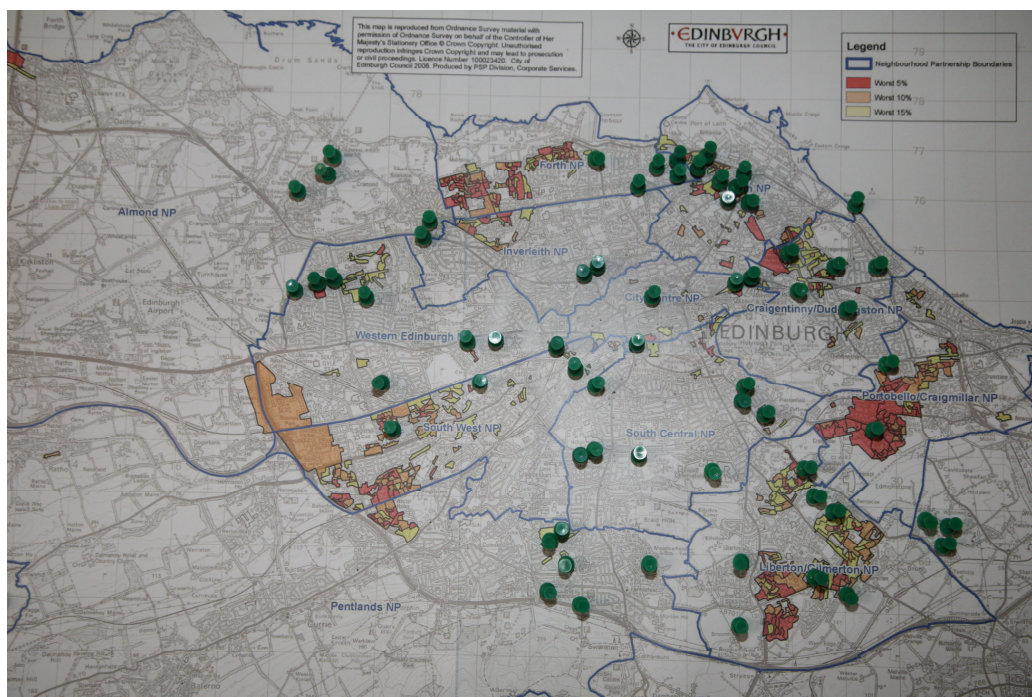
SEPTEMBER	7	1	7	34 staff	1 (Glasgow Royal)
OCTOBER	7	1	7	13 staff	
NOVEMBER	13		7	11 staff	
DECEMBER	5		2		
JANUARY	7	2	6	13 staff	
FEBRUARY	7	1	4	8 staff	
MARCH	5	2	3	14 staff	
<b>TOTAL</b>	<b>79</b>	<b>12</b>	<b>115</b>	<b>214</b>	

A major role has been coordinating discharge for those requiring assisted ventilation with social services and an appropriate care and training package. A meeting of the various care managers will be organised this year to give them peer group support and an opportunity to meet team members within the unit.

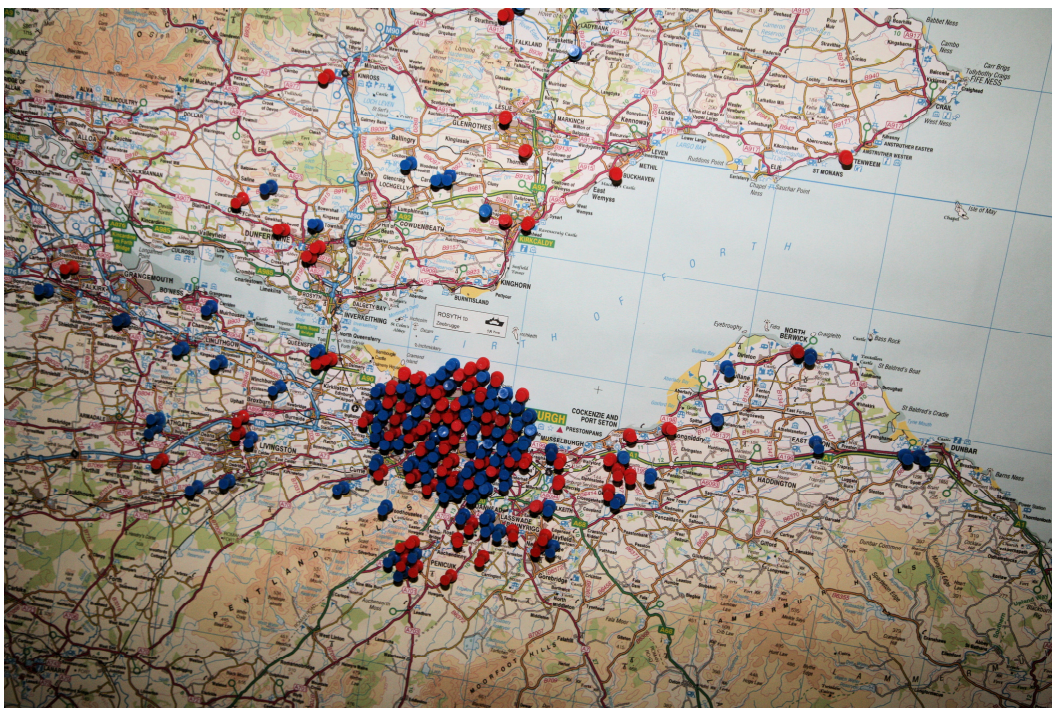
**B6: B4 Location of Lothian Outreach Clinic ( Dr Purcell, Eugene Wallace).**

Since 1992 an outreach clinic has been run for patients resident in the Lothian region in Edanhall Hospital at the site of one of the closed spinal injury units. Many thanks are due to the dedicated staff who have provided the service over many years. This hospital is now closing and an alternative site is being sought. As we have always [planned clinic location on demand it was thought worthwhile to identify the home addresses of all patients attending the current clinic at Edanhall.

**B6: B5 Map One: Central Edinburgh Patients attending Lothian Clinic (Edanhall)**



B6: B5 Map Two: All Patients attending Lothian Clinic (Edanhall)



The location of the new clinic is currently undecided. The vast majority of patients live within the central Edinburgh area and many face challenges travelling. Their hope is a central location within the Edinburgh bypass. If this is not feasible then it is expected that those patients in the north and West of the Lothian catchment area will relocate to Glasgow. If necessary then the frequency of the Lothian clinic will be reduced to accommodate a clinic in Larbert or other suitable site.

### 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.

This became more obvious throughout the last few years as the emphasis in some areas of healthcare have shifted towards elective practice and a taking for granting in the concept of a national service and the management of trauma care.

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 2011**

Acknowledgement is made to Ana Bewick, Irene Clark, Mariel Purcell, Eugene Wallace, 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.