



# Queen Elizabeth National Spinal Injuries Unit

## ANNUAL REPORT

2005-06

Queen Elizabeth National Spinal Injuries Unit  
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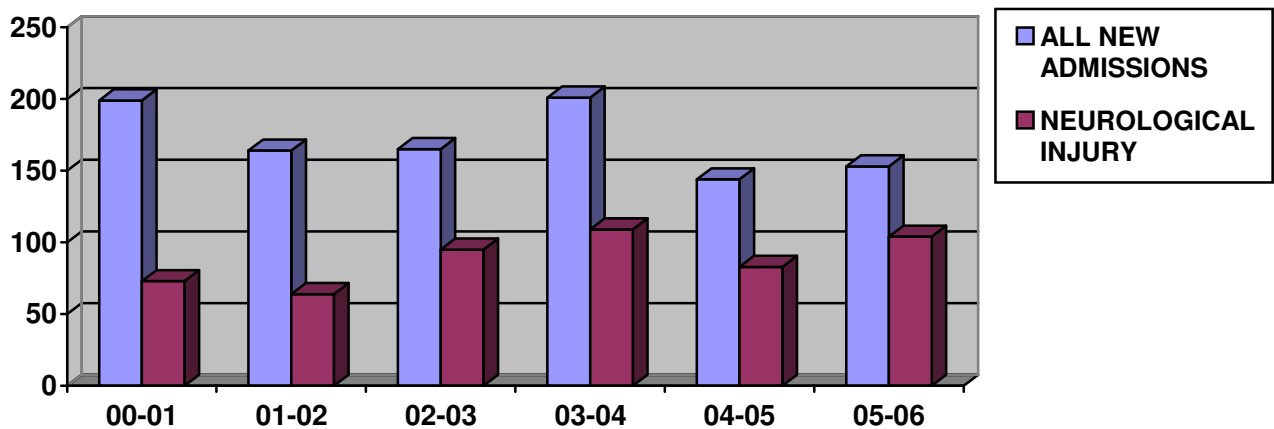
This report is based on information gathered and analysed throughout the year by many members of staff. Special thanks to Ana Bewick and Irene Clark for the final production.

## 1.0 Introduction

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. This involves the acute management of the injury, rehabilitation to maximise function and life long follow up to prevent the complications of paralysis.

The Unit also provides support to all hospitals in Scotland who admit fractures of the spinal column. This support varies, from simple advice to local visits and consultations. Complex fractures, without neurological injury, requiring surgery or specialised rehabilitation are admitted as necessary.

The year was dominated by the planning of new developments, painting the unit and the refurbishment of Edenhall Ward. Despite the reduction in the number of available beds the throughput of the unit was maintained.



During the year there was an increase in the number of total admissions and in the number of patients with a neurological injury. There were one hundred and four neurologically injured and forty-nine non-neurologically injured spinal patients. There was further progress in limiting the number of non-neurological injured patients admitted by supporting their treatment in the referral hospital.

## 2.0 Activity

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

## 2.1.1 New In-Patient Activity

An increasing number of referred patients were treated by outreach medical services or as outpatients due to limitations on beds. Despite the number of bed closures all known patients with a neurological injury in Scotland were managed in the unit.

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	TOTAL 1992- 2006
<b>NEW ADMISSIONS</b>	199	164	165	201	144	<b>153</b>	<b>2174</b>
<b>Neurological</b>	73	64	95	109	83	<b>104</b>	<b>1001</b>
<b>Non-neurological</b>	126	100	70	92	61	<b>49</b>	<b>1173</b>

Appendix DA1

In excess of 200 patients were referred to the unit during 2005-2006. Orthopaedic consultants or neuro-surgeons managed over fifty patients without neurological deficit in the referral hospital following advice. The consultant staff or liaison nurses continued to support the management of a number of other cases in the referral hospital. The increasing number of elderly patients with cervical injuries necessitated halo fixation or specialised orthosis in the referral hospital with outpatient follow up in the unit continued. A number of patients were managed in the Neuro-surgical and Orthopaedic wards of the Southern General Hospital because of concomitant injuries. In a few cases the referrals were inappropriate for admission but could be treated as outpatients.

## 2.1.2. 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>

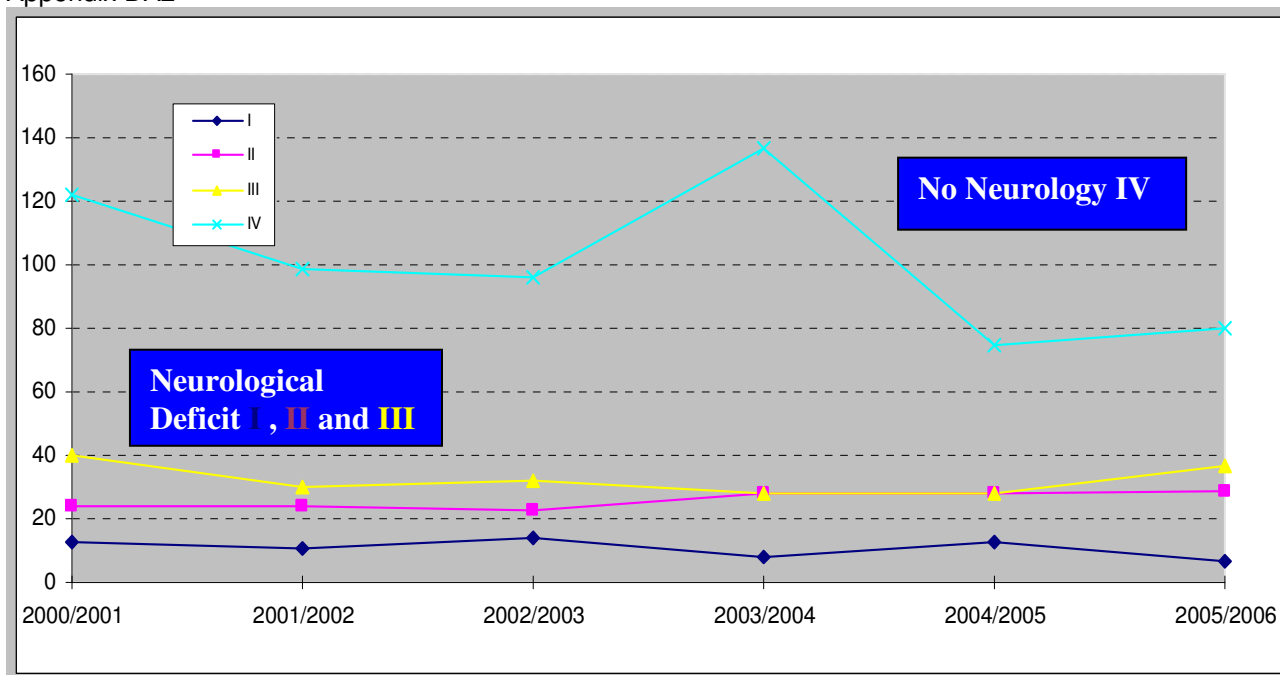
**Group I** patients have the most severe neurological injuries and are the most dependant. The numbers are expected to vary considerably each year.

**Group II** and **Group III** have a significant neurological loss and are very dependant and 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 and possible return to work.

## 2.1.3 New Admissions by Case-Mix Complexity

Appendix DA2



GROUP	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Total 1992/ 2006
I	13	11	14	8	13	7	142
II	24	24	23	28	28	29	346
III	40	30	32	28	28	37	482
IV	122	99	96	137	75	80	1204
<b>Total</b>	<b>199</b>	<b>164</b>	<b>165</b>	<b>201</b>	<b>144</b>	<b>153</b>	<b>2174</b>

There was a fall in the number of highly dependant Group I patients compared with the previous year. The number of patients admitted with no neurology stabilised. This is related to a reduction in incidence, and the opportunity for management at the primary referral hospital and the reduction in beds due to the painting and refurbishment programme.

The variation in complexity in Group IV is better demonstrated by ASIA grades. The rate of throughput remains higher than any other spinal injury unit in the UK.

## 2.1.4 New Admissions by ASIA Impairment Level & Health Board

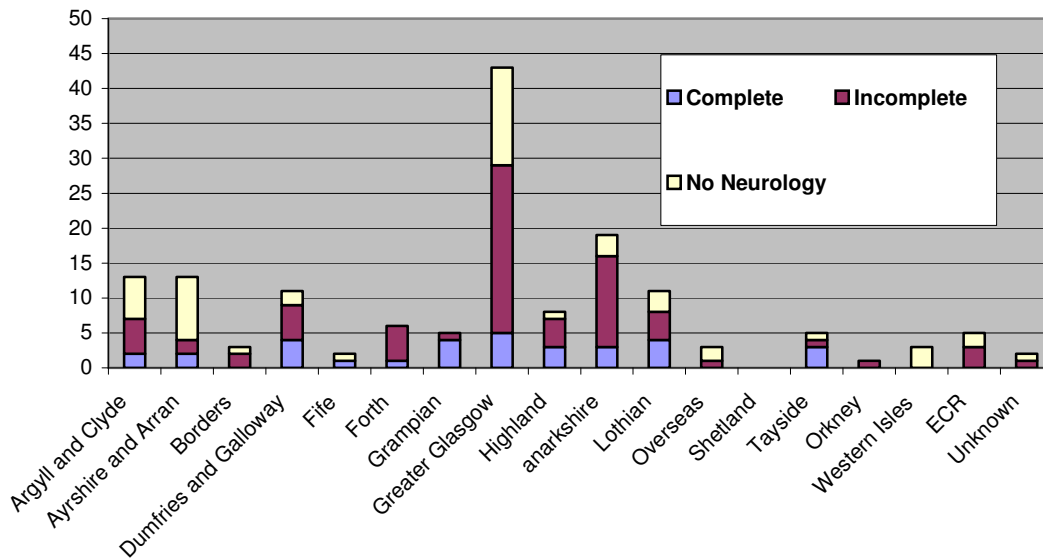
The ASIA grading system is recognised internationally as a measure of dependency and can be used to classify improvements over time.

<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

2005/2006	A	B	C	D	E	Total
Argyll & Clyde	2	2	0	3	6	13
Ayrshire & Arran	2	0	1	1	9	13
Borders	0	0	1	1	1	3
Dumfries & Galloway	4	0	2	3	2	11
Fife	1	0	0	0	1	2
Forth Valley	1	0	2	3	0	6
Grampian	4	0	1	0	0	5
Greater Glasgow	5	3	8	13	14	43
Highland	3	2	0	2	1	8
Lanarkshire	3	1	6	6	3	19
Lothian	4	0	3	1	3	11
Overseas	0	0	0	1	2	3
Shetland	0	0	0	0	0	0
Tayside	3	0	1	0	1	5
Orkney	0	0	1	0	0	1
Western Isles	0	0	0	0	3	3
ECR	0	0	1	2	2	5
Unknown	0	0	0	1	1	2
<b>TOTAL</b>	<b>32</b>	<b>8</b>	<b>27</b>	<b>37</b>	<b>49</b>	<b>153</b>

The distribution of high dependency patients is as expected. The pattern is dependant on the population and the activities of each area. Groups A and B, with the highest level of dependency and which require the most specialist care are relatively rare.

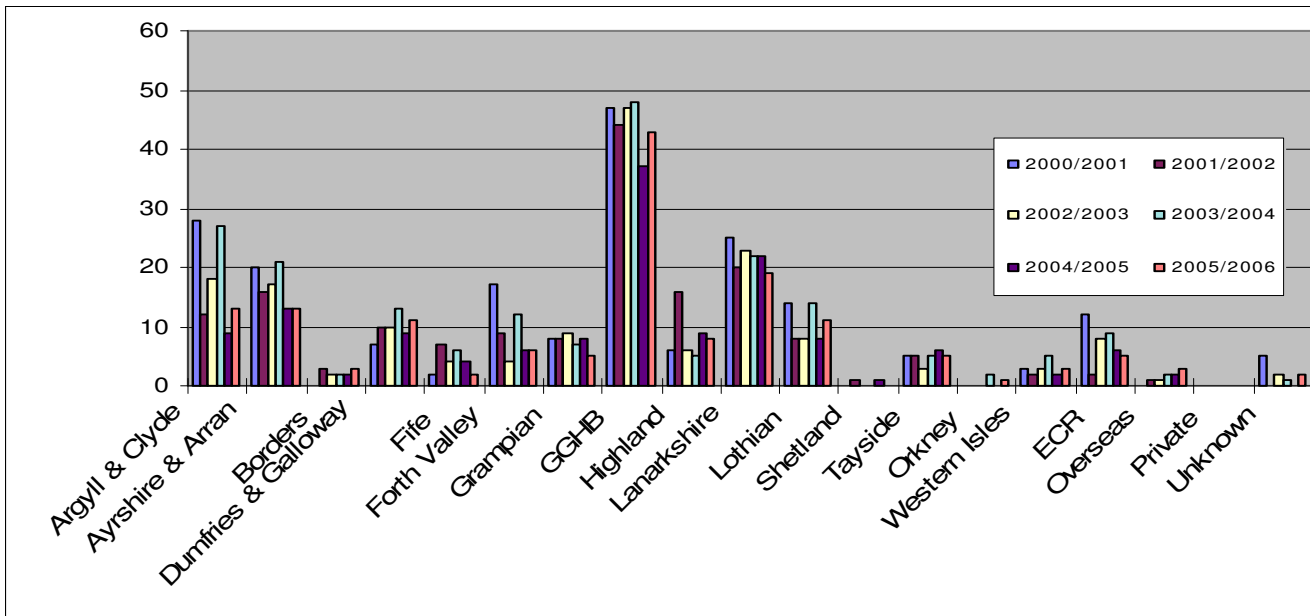
## 2.1.41 Admissions by Neurological Deficit and Health Board



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 reduced. The distribution of complete and incomplete injuries varies by year. All boards except 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.

## 2.1.5 New Admissions by Health Board Of Residence 2000-2006

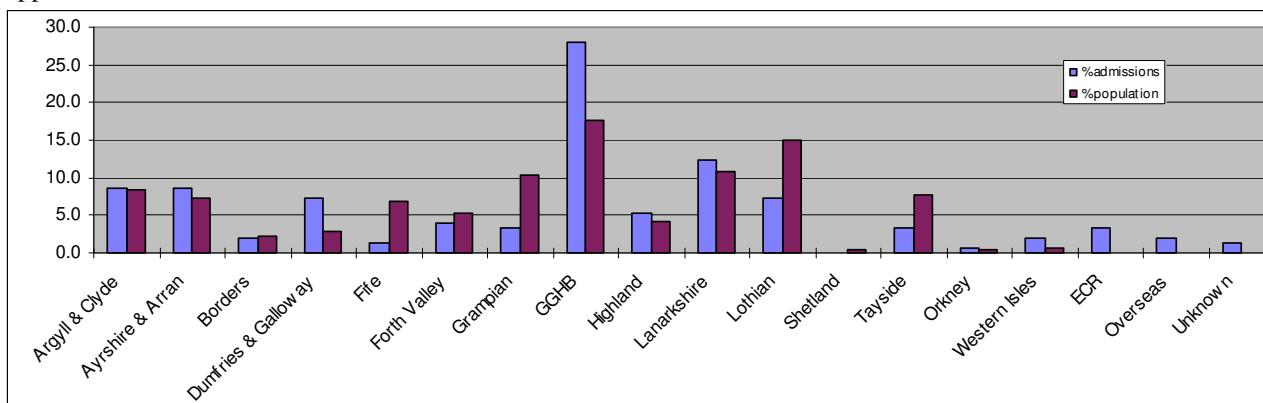
Appendix DA3



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.

## 2.1.6 Admissions by Health Board compared with Population Size

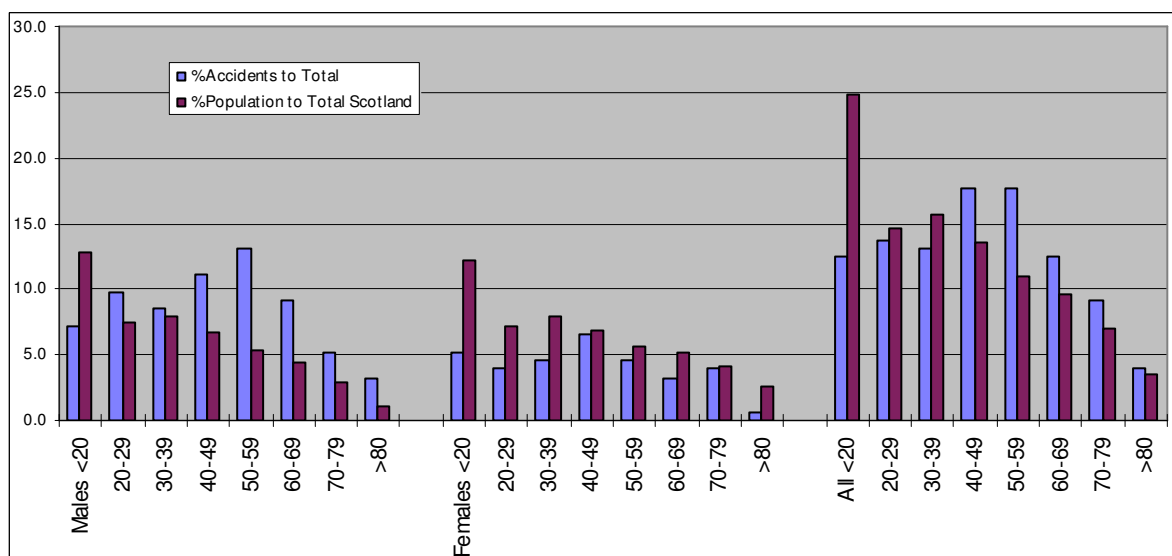
Appendix DA4



There continues to be a preponderance of referrals from the adjacent Health Authorities of Greater Glasgow Health Board, Argyll & Clyde, Lanarkshire and Ayrshire and Arran. This reflects an increased incidence of neurological injury from these regions and patients with fractures requiring surgical fixation. Neurological injured patients remain the priority.

There has been positive encouragement for consultant medical staff in Lothian, Tayside and Grampian to develop services for those patients with no neurological injury. Support is always available from the unit in the management of these patients. This has significant benefits for both patients and relatives.

## 2.1.7 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 these figures.



## 2.1.8 Length of Stay for Traumatic Injury by Level of Spinal Cord Lesion

Case mix	No. of patients	Mean L.O.S. (days)	Range of L.O.S.
I	6	211	96-312
II	30	176	1-344
III	34	140	2-559
IV	81	22	2-169
All	151	87	1-559

Throughout the last ten years there has been significant effort spent on reducing the length of stay within the unit. Improvements in surgical intervention and rehabilitation strategies have resulted in better patient outcomes and earlier discharge. The wide variation of length of stay within each classification is indicative of the variation in the rehabilitation needs within each group.

The low median length of stay of Group IV is indicative of the efficient management of such patients by appropriate surgical stabilisation or use of halo jackets or thoraco-lumbar spinal supports.

The total number recorded in this section is lower than the total number of admissions because not all patients are discharged within the calendar year.

## 2.2 In-patient Procedures

The acute management and rehabilitation of the spinal injured patient can involve a significant number of in-patient surgical procedures. This section outlines the major surgical procedures carried out during the year.

### 2.2.1 Surgical Stabilisation

Surgical stabilisation of spinal fractures is carried out to prevent further neurological damage, aid early rehabilitation and to promote good long-term function. Rarely late surgery is indicated to reduce pain and deformity or to deal with neurological complications. Failure of orthotic management is a further indication for surgery. A team approach to decision making is used to optimise patient outcome.

A pro-active approach to cervical and thoraco-lumbar surgery is followed to permit early rehabilitation, a reduced length of stay and better functional outcome

Over the year the orthopaedic surgeon carried out thirty-one thoraco-lumbar fixations and the neuro-surgical team sixteen cervical fixations.

### 2.2.2 Spinal Injury Specific Surgery

A wide range of procedures, involving orthopaedics, plastic surgery, urology, general surgery, ENT and neurosurgery, are required for acute and long-term patients. The spinal unit staff and appropriate specialists from the Southern General Hospital provide this service. Over thirty-one spinal injury theatre lists were carried out over the course of the year involving forty-four individual procedures and seven surgical specialities. Additional upper limb and orthopaedic trauma cases were performed in the orthopaedic theatre. Day Case procedures carried out within the unit are recorded in a later section.

### 2.2.3 Implanted Pain Control

Chronic pain and spasms are a significant problem for patients with a spinal cord injury. There is an increasing demand for treatment. One approach is the surgical implantation of reservoirs of analgesic drugs or anti-spasmodic drugs. Four new pumps were implanted to help manage patients with intractable problems.

Patients attend outpatient clinics with varying frequency to have pumps refilled or reprogrammed. Between five and twelve patients attend each clinic.

At present thirty-two pumps are implanted and operational. Twenty-one patients attend the QENSIU for refills and eleven attend local hospitals.

Pumps Active 05-06	
Isomed	12
Synchromed	14
Archimedes	6

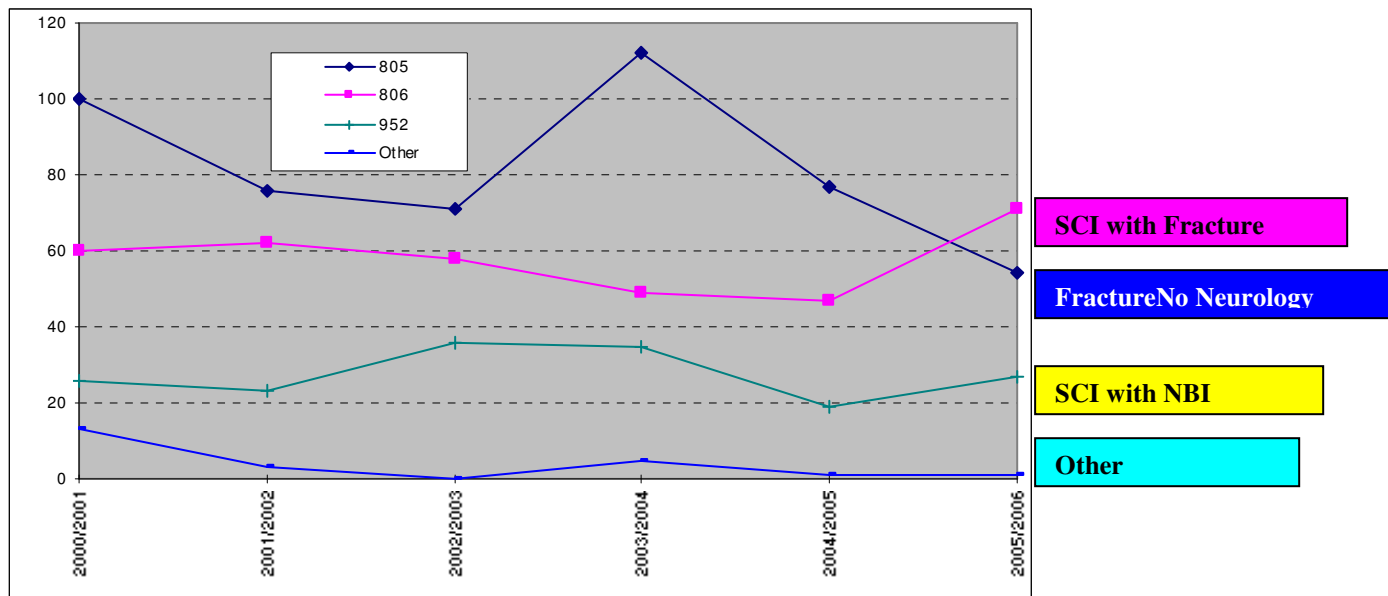
### 2.3 Admissions and Discharges by Degree of Injury

The degree of injury is dependent on the type and effect of the injury. A non-traumatic spinal cord injury may be more serious in terms of outcome and dependency than a traumatic lesion with a major neurological deficit. The spectrum of activity in the unit is shown by the appropriate ICD9 codes.

<b>ICD805</b>	<b>Fracture of vertebral column without mention of spinal cord injury</b>
<b>ICD806</b>	<b>Fracture of vertebral column with mention of spinal column injury</b>
<b>ICD952</b>	<b>Spinal Cord Lesion without evidence of spinal bony injury</b>
<b>OTHER</b>	<b>Other Spinal Cord Related Conditions</b>

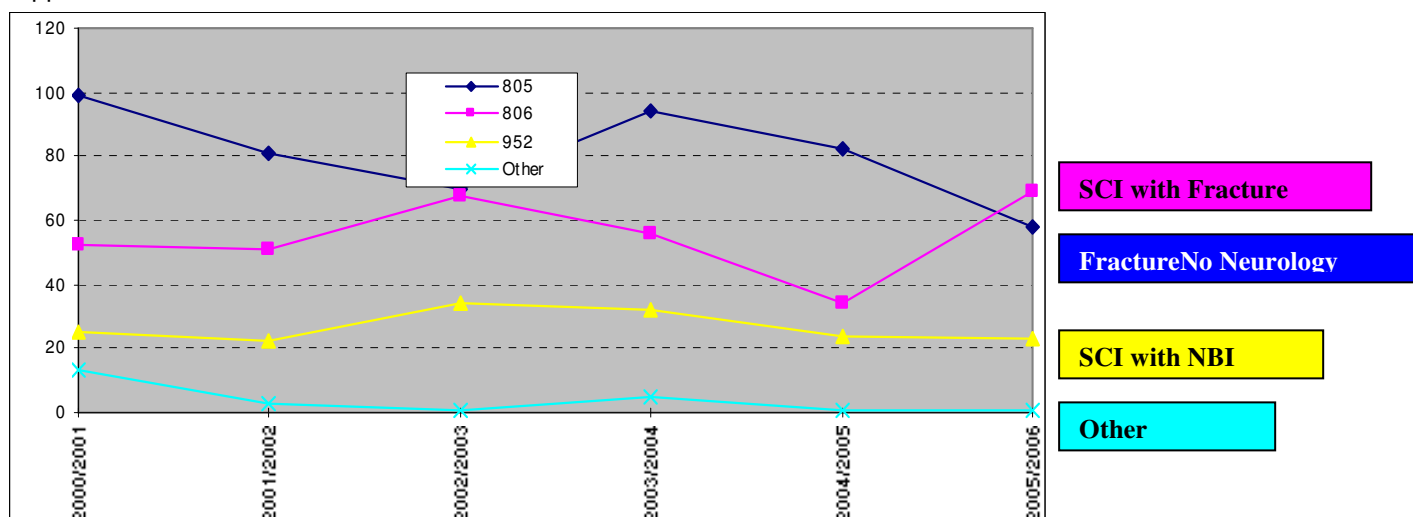
#### 2.3.1 Admissions by Degree of Injury

Appendix DA5



## 2.3.2 Discharges by Degree of Injury

Appendix DA6



It is predicted that there will be around eighty new spinal cord injuries per year for a population the size of Scotland (5.5 million). The exact nature will vary from year to year but all are admitted for treatment and rehabilitation.

There are approximately five hundred spinal fractures a year. The majority have no neurological injury and are managed by orthopaedic surgeons in local hospitals. There is an increasing demand for advice and admission for such fractures. This is related to a reduction in the number of surgeons having an interest in spinal work and pressure on beds to cope with elective orthopaedic surgery. The unit is anxious to be of assistance wherever possible and sees it having an important role in the management of the more complex fractures and providing advice at all times.

### 2.3.3 Admissions and Discharges for Non Traumatic Spinal Cord Injury (ICD 9 Code 952)

2005/2006	Admissions	Discharges
Central Cord Lesion	14	12
Infection	1	0
Vascular	3	4
Tumour	1	1
Surgical	3	1
Non-specific Lumbar Lesions	0	0
Penetrating Wounds gun/stab	1	0
Other	4	5
<b>Total</b>	<b>27</b>	<b>23</b>

Appendix DA7

Non-traumatic spinal cord injury is misleading as it includes Central Cord Syndrome that is traumatic in origin but does not involve significant bony damage and often results in major paralysis. It usually occurs in the elderly population who have osteoarthritic changes in the cervical spine and results in a severe disability.

### 2.3.4 In-patient Bed Days

2005/2006	Edenhall (HDU)	RCU	Philipshill (Rehab)	TOTAL
<b>Beds</b>	12	4	32	<b>48</b>
<b>Actual -TOBD</b>				<b>16,001</b>
<b>Available</b>				<b>17,708</b>
<b>Bed Occupancy %</b>				<b>90.04</b>
<b>ALOS</b>				<b>65.3</b>

Patients are admitted on a basis of clinical need. The majority of new injuries are admitted to Edenhall Ward for acute assessment. A few patients are admitted to Philipshill if they have had stabilisation in their referral hospital or have been treated conservatively and have entered the rehabilitation phase. It remains impossible to obtain separate ward occupancy figures for the unit from the HIS/PAS systems.

There has been a continued reduction in the overall length of stay for the majority of patients during the year. This has been achieved by reduction in the delay between actual and intended date of discharge.

### 2.3.5 Delay Between Actual and Intended Date of Discharge

	No. of patients discharged	No. of Patients Delayed	Mean delay (days)	Range of Delay (days)	NO DELAY
<b>2000/2001</b>	189	27	68	1 - 877	85%
<b>2001/2002</b>	157	11	19	1 - 107	92%
<b>2002/2003</b>	173	8	46	2 - 212	95%
<b>2003/2004</b>	187	7	52	1 - 188	96%
<b>2004/2005</b>	141	0	0	0	100%
<b>2005/2006</b>	<b>151</b>	<b>9</b>	<b>65</b>	<b>7-174</b>	<b>94%</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. This marks a point in but not the end of rehabilitation. Over the last five years there has been reduction in the number and length of delay but there are recurrent problem issues. Housing adaptation and nursing home placements are often delayed by factors out with the control of staff. This has implications beyond the convenience of patients. Delays in moving onto the next stage of rehabilitation, such as discharge from the unit, can be demoralising and demotivating for everyone particularly the patient. It is envisaged that the planned step down unit will assist in this process. A further initiative has been set up with a charity Aspire in conjunction with the Margaret Blackwood Housing Association to make available suitable adapted rented accommodation in Glasgow, Lanarkshire, Edinburgh and Perth region to assist early discharge. This may prevent re-location to the referral hospital on completion of formal rehabilitation.

### 2.3.6 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. Some re-admissions are inevitable and cannot be prevented by greater education or increased care in the community.

There were fifty-one readmissions to the unit during the year. This is an increase on previous years but a significant shortfall on the contract estimate of 200.

Case-mix complexity and individual patient circumstances are out with the control of the unit. A continued emphasis on discharge at the appropriate level of rehabilitation and education should ensure that the number of re-admissions remains at a satisfactorily low level.

### 2.4 Out patient Activity

The out patient activity of the unit is focused on the post discharge management of acute injuries and long term follow. Dedicated clinics in Orthopaedics, Neurosurgery, Urology, Rehabilitation and Pain Management supplement the nurse led Annual Review Clinics for those patients with a neurological deficit. Early discharge of patients, with no neurological injury and no expectation of future disability, is encouraged.

New patients are referred for consultant opinions regarding a wide range of associated conditions.

As the unit provides a service for the whole of Scotland it is appropriate for a multi-disciplinary team to travel to other centres . Out reach clinics are held in Raigmore Hospital (Inverness), Edenhall Hospital Edinburgh, Foresterhill Hospital (Aberdeen), Dumfries and Galloway Royal Infirmary, The Borders Hospital and Arbroath. This service is dependant on local hospitals and their staff for facilities and resources. Their help has been essential in the setting up and continued success of the clinics.

#### 2.4.1 Summary of Out-patient activity

	<b>2000/ 2001</b>	<b>2001/ 2002</b>	<b>2002/ 2003</b>	<b>2003/ 2004</b>	<b>2004/ 2005</b>	<b>2005/ 2006</b>
<b>Return</b>	2074	2229	2228	2412	2205	<b>2235</b>
<b>New</b>	139	90	88	93	121	<b>122</b>

The number of return outpatients is stable and reflects the prevalence of the spinal cord injured population in Scotland. New outpatients referrals have increased. The majority of these new patients are tertiary referrals involving complex medical investigation and assessment. They are generally managed as outpatients and are separate from acute new admissions.

## 2.4.2 New Out-Patient Activity by Health Board

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
Argyll & Clyde	32	25	19	22	26	27
Ayrshire & Arran	4	7	5	8	8	7
Borders	1	0	0	0	1	0
Dumfries & Galloway	2	2	1	10	2	4
Fife	1	0	1	2	2	2
Forth Valley	15	3	4	7	4	11
Grampian	0	4	1	2	1	2
Greater Glasgow	45	29	32	22	41	26
Highland	0	1	1	1	0	14
Lanarkshire	29	16	20	15	27	19
Lothian	6	2	3	3	4	3
Shetland	0	0	0	0	1	0
Tayside	1	1	0	1	1	3
Orkney	0	0	0	0	0	0
Western Isles	2	0	1	0	2	2
ECR	1	0	0	0	1	2
<b>Total</b>	<b>139</b>	<b>90</b>	<b>88</b>	<b>93</b>	<b>121</b>	<b>122</b>

## 2.4.3 Out -Patient Activity by Centre

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	CHANGE PREVIOUS YEAR	TOTAL 1992-2006
<b>New QENSIU</b>	139	90	88	93	121	122	+ 1%	896
<b>Return QENSIU</b>	1729	1934	1880	2090	1851	1868	+ 9%	19072
<b>Edinburgh Edenhall</b>	255	171	189	189	192	193	+ 1%	2117
<b>Raigmore Inverness</b>	51	55	47	28	57	54	- 5%	455
<b>Aberdeen</b>	46	51	65	55	51	63	+ 24%	344
<b>Dumfries</b>	18	18	24	19	15	19	+ 27%	113
<b>Borders</b>			23	14	16	17	+ 1%	70
<b>Arbroath</b>				17	23	21	- 9%	61
	<b>2238</b>	<b>2319</b>	<b>2316</b>	<b>2505</b>	<b>2326</b>	<b>2357</b>	<b>+ 1%</b>	<b>23128</b>

The outpatient service continues to respond to the variable demand throughout the regions. The aim is to provide as local a service as practical and in line with need. The outreach clinics are designed to provide the same level of multidisciplinary care that is available in the parent unit. There are constraints in increasing the service due to the number of rehabilitation consultants. It is envisaged that all clinics will be consultant led with the appointment of a new consultant.

#### 2.4.4 Outreach Clinic Clinics

Frequency	Location		
Weekly	QENSIU NEW	QENSIU RETURN	Edinburgh
Three Monthly	Aberdeen	Inverness	
Six Monthly	Dumfries	Borders	Arbroath

#### 2.4.5 Outpatient Activity by Specialty at QENSIU

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
<b>Orthopaedics</b>	<b>DBA</b>	123	97	114	136	143	<b>139</b>
<b>Neurosurgery</b>	<b>RAJ</b>	86	133	126	108	57	<b>88</b>
<b>Neurosurgery</b>	<b>JB</b>	0	0	0	0	64	<b>51</b>
<b>Urology</b>	<b>GC</b>	370	356	287	267	256	<b>292</b>
<b>Skin Care</b>		200	145	115	187	111	<b>107</b>
<b>Pain / Acupuncture</b>		96	57	191	295	222	<b>190</b>
<b>Neuroprosthetics</b>	<b>TH/MF</b>	13	42	22	29	19	<b>29</b>
<b>Sexual Dysfunction</b>		27	45	41	47	18	<b>23</b>
<b>Spinal Injury Annual Review</b>	<b>TOTAL</b>	953	1059	984	1021	961	<b>949</b>
	MEDICAL		639	603	681	569	<b>526</b>
	NURSING		420	381	343	392	<b>423</b>
<b>Total</b>		<b>1868</b>	<b>1934</b>	<b>1880</b>	<b>2090</b>	1851	<b>1868</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. Urology clinics are available to investigate or treat bladder dysfunction at any stage. The provision of anaesthetic consultant pain sessions has been successful in introducing new techniques and drugs into patient management. Neuroprosthetics includes assessment and surgery for upper limb problems principally in tetraplegics.

The Spinal Injury Annual Review clinics are a large component of the commitment to life long care. These are nurse led with only fifty-five percent of patients requiring medical input.

There is an open door policy for patients and inevitable some activity remains under-reported. The numbers exclude visit to hospitals and homes by medical staff and the Liaison Sisters.

#### 2.5 Day Case Activity

Day case activity continues to offer an important service for minor surgical procedures, medical interventions and nursing care. The new developments in spinal fracture management, pain control and sexual dysfunction are expected to maintain this activity. The introduction of pain control sessions in 2002 resulted in increased activity, which has been maintained. The level of Day Case activity exceeds the contracted activity but will be self limited due to the finite population of spinal injured patients.

## 2.5.1 Day Case Attendances by Reason For Admission

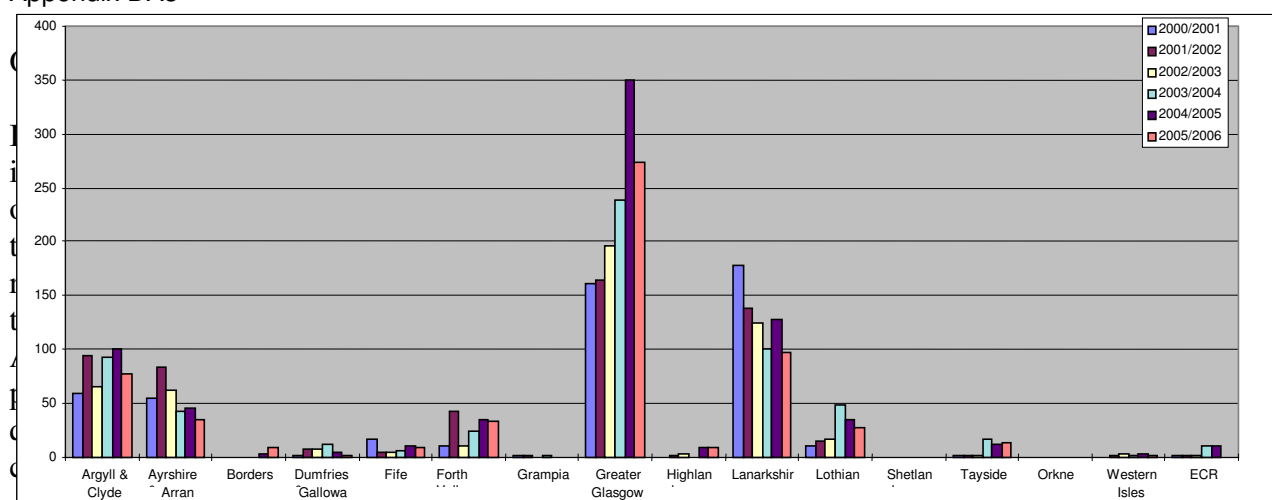
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
Urology /Urodynamics	15	31	21	21	24	18
Halo Fixation	234	346	242	226	220	182
Skin	7	5	5	20	21	12
Orthopaedic/Neurosurgery	1	0	1	0	0	0
Pain/Acupuncture	231	160	203	292	461	365
Sexual Dysfunction	11	12	21	33	17	8
Other	0	2	2	5	3	5
<b>Total</b>	<b>499</b>	<b>556</b>	<b>495</b>	<b>597</b>	<b>746</b>	<b>590</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 a under resourced area and suitable for development.

## 2.5.2 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 locality either by staff from the unit or appropriate specialists. One bed in Philipshill Ward is designated as an intervention bed so that patients who have to travel long distances are not disadvantaged.

Appendix DA8





### 3.0 Waiting Times

#### 3.1 Waiting Times Outpatient Clinics

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

#### 3.2 Waiting Times Acute Admissions

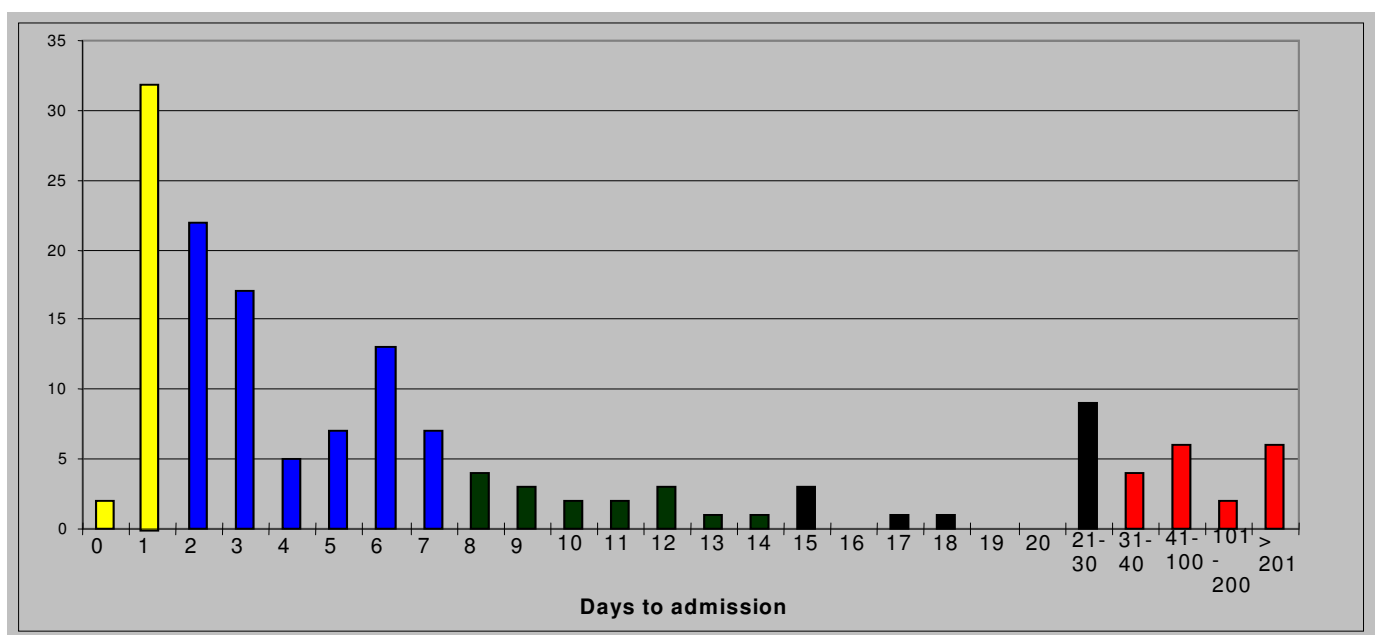
Acute referrals are admitted as soon as appropriate on clinical grounds. It is unit policy to try and admit all patients with neurological injury within twenty-four hours as long as there are no concomitant medical problems. Patients requiring specialised Neurosurgical or orthopaedic care are managed in the appropriate ITU or ward prior to transfer. In the year there have been some constraints due to the painting contact and the refurbishment of Edenhall Ward.

#### 3.3 Time from Injury to Admission

Despite the painting and refurbishment programme there was an increase in the number of early admissions over the previous year.

In 2005-06 twenty-two per cent of patients were admitted within twenty-four hours. Thirty-six per cent were admitted within forty-eight hours and forty per cent within four days. Sixty-seven percent were admitted within four weeks. Early admission to the Spinal Injury Unit provides immediate support to the patient and family. A audit of acute admissions indicated that only one third were due to bed issues with the rest related to severity of injury, transport difficulties or delay in diagnosis or presentation.

The policy remains of early admission for neurological injury with non-neurological injury admitted as beds became available.



Early admission to the unit continues to be a priority. It may become of increasing relevance if early intervention strategies become available.

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-percent 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.

	<b>No. of Patients</b>	<b>Mean Time (Days)</b>	<b>Range of Time</b>
<b>2000-2001</b>	199	163.3	0 – 12575
<b>2001-2002</b>	164	103	0 – 12012
<b>2002-2003</b>	165	62	0 - 4948
<b>2003-2004</b>	201	83	0 - 6596
<b>2004-2005</b>	<b>144</b>	<b>231</b>	<b>0 – 11237</b>
<b>2005-2006</b>	<b>153</b>	<b>518</b>	<b>0-21075</b>

In the current year the mean is particularly distorted as non-urgent cases were disproportionately delayed to admit urgent cases. Eighty three percent of patients were admitted within one month of injury.

This analysis includes all patients admitted. Some patients have an acute injury or medical condition on top of a pre-existing injury, which explains the prolonged delay.

Eight patients were admitted after one hundred days. These patients had been initially cared for in other centres or had developed a secondary complication due to a further insult at a previous fracture.

## **4. Quality of Care Issues**

### **4.1 Charter Mark**

The unit was awarded the Charter Mark for the third time in 2004. This is a reflection of the excellent work done by all members of staff in maintaining and developing the service in previous years. The unit is subject to regular review to ensure standards are maintained. There is a continuous process of internal review to ensure that systems are developed in line with the highest standards of care.

#### **4.2.1 National Service Division Visit**

Close co-operation between the staff of the unit and NSD has an important role in maintaining the service and permitting service development. It also ensures that there is an early response to increased or changing clinical needs.

The Annual and six-monthly report acts as a focus to continually evolve and evaluate the service.

#### **4.2.2 Formal 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. Increasing standards set within the unit, increased security and the smoking ban have all created new challenges in obtaining patient and family trust and support.

The division recorded two formal complaints One regarding nursing procedures and the other outpatient physiotherapy. Both were fully investigated and resolved.

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. The future of parking in the vicinity of the unit is of concern especially with the introduction of parking charges. This will have a significant impact for visitors and out-patients. It is of particular concern due to the length of stay and of some patients or carers travelling long distances.

#### **4.2.3 Relatives & Patients Meetings**

Regular contacts are maintained with relatives and carers throughout a patients stay. Significant input to the organisation and running of the unit has been obtained from the informal meetings arranged within the unit and by SIS. All staff are encouraged to attend patient social activities and events. The medical staff encourages an open dialogue with patients and relatives regarding treatment and progress. Consent issues remain in constant review and the implications of the Incapacity Act in the management of the acutely injured have been implemented.

#### **4.2.4 Benchmarking**

There have been continued attempts to develop benchmarking with other UK units. Some figures are now available from other units but comparisons are difficult due the varying remits of each unit. The review carried out by NSD obtained useful information regarding activity and outcome in the UK. The core management in the Scottish unit tends towards a European or North American model as best addressing the particular difficulties experienced in Scotland.

## 4.2.5 Hospital Management

Greater Glasgow Health Board is now NHS Greater Glasgow and Clyde. The unit is now part of the Acute Division – Regional Services Directorate.

### Management Team

Director of Regional Services General Manager Regional services		Jonathan Best Susan Dick
Clinical Director Clinical Services Manager	QENSIU QENSIU	David..B..Allan FRCS Margaret McKillop MBE

## 4.3 Education

The unit places great emphasis on education of all agencies and staff that come into contact with the spinal cord injured. This extends to prevention of the initial accident, management of the early stages and the avoidance of subsequent complications in the early or late stage of rehabilitation.

The Consultant Medical staff gave lectures at Edinburgh, and Glasgow and Fort William to paramedical and medical groups. Medical students attend for clinical practice in 2<sup>nd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year. Third years also attended the spinal injury special study module. The Senior Nurse Manager lectured at Ayr, Paisley and Caledonian Universities.

Meetings were organised with GPs and District Nurses by the Liaison Nursing staff. The Education Sister co-ordinated Study Days for nurses from Aberdeen, Dublin, Paisley and Caledonian Universities.

Out-reach study days for carers and patients were held in Aberdeen (2003), Inverness (2004). Training days were organised for Stornaway and Nairn this year. Further educational days will be organised for Dumfries and the Borders. The Out-Patient Sister provided training and education for University students and District Nurses at Paisley and Caledonian Universities.

The Unit received a number of UK and overseas Medical and Paramedical visitors.

## 4.4 Hospital Acquired Infection

Hospital acquired infection continues to be a problem within the Unit mirroring the experience throughout the hospital population.

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.

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
Total patients req. isolation	52	67	70	N/A	44	Na
Salmonella				6	1	0
Clostridium Difficile	1	1	6	0	4	0
MRSA	48	64	64	33	39	38
Streptococcus pyogenes	0	1	0	2	0	0
Scabies	0	0	0	0	0	0
TB	1	1	0	0	0	0
Varicella Zoster	1	0	0	1	0	0
Patient days in isolation				N/A	3480	3160
Ave. days in isolation	53.75	52.6	52.6	N/A	79	83

The patients are at high risk of MRSA and a policy of pre-admission checks and isolation are employed. The low rates of infection are a tribute to the standard of nursing care and policies within the unit especially as regards bowel care.

All G and H grade nurses within the Unit will complete training for "Control of Infection Champions" in the coming year.

#### 4.5 Pressure Sore Prevention

Spinal injured patients are the most susceptible population to the development of pressure sore due to the absence of sensation and movement. The Unit continues to be at the forefront of pressure sore management with the introduction of protocols and training programmes for patients, carers and nursing staff. A digitised record for monitoring the healing and assessing the effects of treatment of pressure sores has been introduced.

#### 4.6 Pressure Sore Prevalence

	No. of patients	No. of acquired sores	No. of admitted sores	Total number of sores	Point prevalence
2000/2001	42	2	4	6	15%
2001/2002	48	4	8	12	25%
2002/2003	42	1	5	6	14%
2003/2004	45	1	9	10	22%
2004/2005	43	4	4	8	19%
2005/2006	40	3	5	8	20%

Patients with a spinal cord injury are at significant risk of developing pressure sores and sacral skin splits. They result in significant delays in rehabilitation and discharge from

hospital. Overall the number of sores remains low and the majority are present on admission or are revealed soon afterwards. A number of sores are inevitable in early rehabilitation and education. The endowment funds purchased a digital record system that is used to monitor treatment.

#### 4.7 Therapy Beds

	Number	Ave Units per period	Days
<b>Mattress Units</b>	111	8.79	3208
<b>Core Frame Units</b>	23	1.39	508

#### 4.8 Ventilated Bed Days

During the year ten patients required ventilation during their acute care. There is a close working relationship with the neuro-anaesthetists to monitor progress and reduce ventilation times. This was a significant but fortuitous reduction due to the reduction in the number of acute beds. Normal variation in case-mix should result in an increased activity in the coming year.

Appendix DA20

		No. Patients	Ave. Ventilated Days	Total Ventilated Days
<b>2005/2006</b>	Edenhall	10	29	285
	RCU	1	365	365

There have been further developments in protocols for the maintenance and weaning of low tetraplegic ventilator dependent patients. Changes have resulted in a reduction in the number of ventilated days.

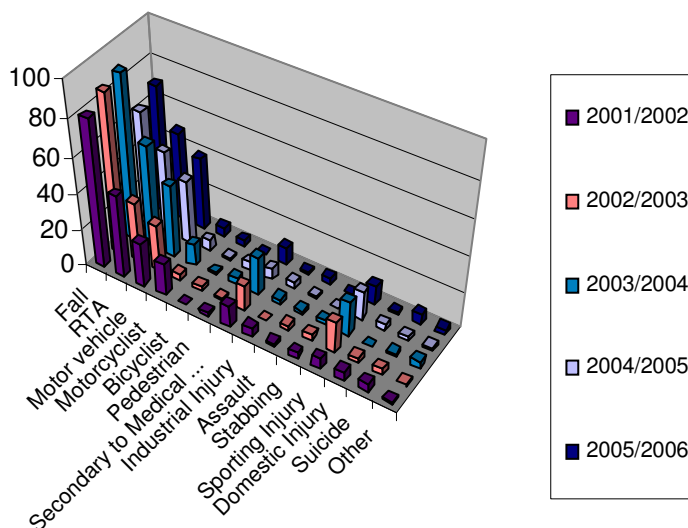
#### 5.0 Mechanism of Injury

The reduction in non-neurological cases had resulted in a decrease in the number of low velocity falls admitted. The figure is now stable and likely to remain at the current level. The number of high velocity RTA admissions has not changed significantly. The continued high proportion of motorcycle and bicyclist injuries, compared with usage continues. Sporting injuries have decreased slightly after causing some concern. They occur in young patients and tend to be associated with significant neurological injuries. The number of cases clearly identified as attempted suicide has increased, but probably under represents the problem.

## 5.1 Mechanism of Injury

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
<b>Fall</b>	<b>83</b>	<b>81</b>	<b>87</b>	<b>90</b>	<b>63</b>	<b>70</b>
<b>RTA</b>	<b>59</b>	<b>45</b>	<b>33</b>	<b>57</b>	<b>46</b>	<b>49</b>
Motor vehicle	44	24	26	40	35	40
Motorcyclist	11	18	4	12	6	5
Bicyclist	1	1	2	1	1	3
Pedestrian	3	2	1	4	4	1
<b>Secondary to Medical Diagnosis</b>	<b>19</b>	<b>11</b>	<b>14</b>	<b>21</b>	<b>6</b>	<b>10</b>
<b>Industrial Injury</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>1</b>
<b>Assault</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>
<b>Penetrating Injuries</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>0</b>
<b>Sporting Injury</b>	<b>16</b>	<b>6</b>	<b>17</b>	<b>19</b>	<b>16</b>	<b>10</b>
<b>Domestic Injury</b>	<b>8</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>1</b>
<b>Suicide</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>6</b>
<b>Other</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>3</b>
<b>Total</b>	<b>199</b>	<b>164</b>	<b>165</b>	<b>201</b>	<b>144</b>	<b>153</b>

## 5.2 Mechanism of injury by Year



Overall the pattern mirrors social trend within the population. Alcohol continues to be implicated in the aetiology of many spinal injuries. The causes of injury are important as a guide to the development and promotion of prevention programmes. Falls from a height remain the most common cause in Scotland. In most units throughout the world Road Traffic Accidents are the commonest.

<b>6.0 Financial Report 12 Months ending 31.03.06</b>					<b>Forecast</b>	<b>Out-turn</b>
	<b>2005/06</b>		<b>YTD</b>		<b>At</b>	<b>V's</b>
<b><u>Dedicated Staff Costs</u></b>	<b>Annual Budget</b>	<b>Budget</b>	<b>Actual</b>	<b>Variance</b>	<b>Month 9</b>	<b>Forecast</b>
Administrative	£140,786	£140,786	£146,785	(£5,998)	£146,616	(£168)
Medical	£735,759	£735,759	£752,445	(£16,685)	£758,684	£6,240
Nursing	£2,586,813	£2,586,813	£2,456,223	£130,590	£2,461,167	£4,944
Paramedical	£444,087	£444,087	£438,031	£6,056	£436,491	(£1,540)
						£0
<b>Total Staff</b>	<b>£3,907,446</b>	<b>£3,907,446</b>	<b>£3,793,484</b>	<b>£113,962</b>	<b>£3,802,959</b>	<b>£9,475</b>
<b><u>Supplies Costs</u></b>						
Administrative	£98,026	£98,026	£80,369	£17,657	£83,580	£3,211
Medical	£3,741	£3,741	£4,275	(£534)	£2,984	(£1,291)
Nursing	£10,638	£10,638	£3,426	£7,213	£4,745	£1,319
Paramedical	£16,992	£16,992	£12,336	£4,656	£14,472	£2,136
Pharmacy	£549,367	£549,367	£602,424	(£53,057)	£614,112	£11,688
Surgical Appliances	£94,480	£94,480	£41,980	£52,501	£42,988	£1,008
<b>Direct Supplies</b>	<b>£773,245</b>	<b>£773,245</b>	<b>£744,810</b>	<b>£28,435</b>	<b>£762,881</b>	<b>£18,071</b>
<b><u>Allocated Costs</u></b>						
Medical Records	£91,737	£91,737	£91,737	£0	£91,737	£0
Building Costs	£179,153	£179,153	£179,153	£0	£179,153	£0
Domesic Services	£59,981	£59,981	£59,981	£0	£59,981	£0
Catering	£165,028	£165,028	£165,028	£0	£165,028	£0
Laundry	£58,991	£58,991	£58,991	£0	£58,991	£0
Neuroradiology	£68,717	£68,717	£68,717	£0	£68,717	£0
Laboratories	£79,243	£79,243	£79,243	£0	£79,243	£0
Anaesthetics	£32,806	£32,806	£32,806	£0	£32,806	£0
Portering	£63,885	£63,885	£63,885	£0	£63,885	£0
Phones	£43,306	£43,306	£43,306	£0	£43,306	£0
Scottish Ambulance Service	£8,042	£8,042	£8,042	£0	£8,042	£0
General Services	£24,801	£24,801	£24,801	£0	£24,801	£0
<b>Allocated Costs</b>	<b>£875,689</b>	<b>£875,689</b>	<b>£875,689</b>	<b>£0</b>	<b>£875,689</b>	<b>£0</b>
<b>Total Supplies</b>	<b>£1,648,934</b>	<b>£1,648,934</b>	<b>£1,620,499</b>	<b>£28,435</b>	<b>£1,638,570</b>	<b>£18,071</b>
<b><u>Overhead Costs</u></b>						
Fixed costs :-						
Rates	£52,641	£52,641	£52,641	£0	£52,641	£0
Capital Charge	£550,978	£550,978	£550,978	£0	£550,978	£0
Trust Overheads	£134,232	£134,232	£134,232	£0	£134,232	£0
<b>Total Overheads</b>	<b>£737,851</b>	<b>£737,851</b>	<b>£737,851</b>	<b>£0</b>	<b>£737,851</b>	<b>£0</b>
<b>Total Expenditure</b>	<b>£6,294,232</b>	<b>£6,294,232</b>	<b>£6,151,834</b>	<b>£142,397</b>	<b>£6,179,380</b>	<b>£27,546</b>



## 6.0 Financial Report (Cont)

Post Graduate Dean Funding	(£107,676)	(£107,676)	(£107,676)	£0	(£107,676)	£0
Total Expenditure net of Post Graduate Dean Funding	<b>£6,186,556</b>	<b>£6,186,556</b>	<b>£6,044,158</b>	<b>£142,397</b>	<b>£6,071,704</b>	<b>£27,546</b>
Funding Ring Fenced for N/R Equipment Spend			£55,500	(£55,500)		
<b>Revised Variance Outturn</b>				<b>£86,897</b>		
Annual Budget	£6,186,556					
Original Forecast	£6,071,704					
N/R Equipment Provision	£55,500					
Forecast Variance	£59,351					
Actual Variance	£86,897					
Forecast v Actual Identified Separately	£27,546					

## 7.0 Service Developments and Future Plans

### 7.1 Family Unit

The Halfway House will be lost as a result of the major developments planned for the Southern General Hospital site. This facility has been an important part of the overall rehabilitation programme, providing patients and families an opportunity to spend time together prior to discharge. The current plan is to replace this building with a Family Unit addressing modern attitudes to rehabilitation. It will contain multipurpose self-contained adapted accommodation, a separate family room, a dental suite and an interactive space. Plans have been drawn up and a location adjacent to the unit identified. The proposal will go forward for funding in this financial year.

### 7.2 Research Mezzanine

The unit has developed a number of productive research partnerships over the last six years. Prof Ken Hunt and his colleagues from the Centre for Rehabilitation Engineering at Glasgow University have made the principal contribution. Funding has been awarded Under SRIF 111 for research infrastructure within the unit. The change in emphasis to disabled sports being carried out in the community has lessened the demand on the Games Hall and in particular its elevated roof space. Plans have been developed for a Research Mezzanine within this to conserve service areas. Project management is under way and there are ongoing discussions regarding agreements as to use. Applications are in place for university-based staff to support work done in the unit from Strathclyde, Glasgow and Caledonian University.

### **7.3 Physiotherapy Assistant**

The increasing sophistication of rehabilitation regimes and the use of specialised equipment has placed an increased demand on the physiotherapy and nursing staff. A decision in principle was made some time ago that a physiotherapy assistant could address this. The post will be filled in the current year.

### **7.4 Respiratory Care**

The general concept of the Respiratory Care unit has been a great success. The nature of the work and the varying pattern of care required has necessitated continual change as to how this care is provided. The location within the unit has again been changed to reflect on how the service is provided. It is important that the need of the patients is monitored and an appropriate level of care provided. The medical and nursing staff plan to review the service in the coming year to investigate and plan for the needs of the next five years. This remains a priority when Philipshill is refurbished. It is perceived that there is a need to investigate re-instating a Respiratory Care Staff Nurse to provide help and support for patients in the hospital and community who have specialist respiratory needs. This would cover ventilator dependant patients and others who experience difficulties with increasing age.

### **7.5 Implantable Electrical Devices**

Patients with neurological injuries can benefit from implantable stimulators in a number of sites. These include the upper limb, diaphragm and bladder. The unit is involved in the development of surface and implantable electrodes to assist breathing and walking. No Phrenic Nerve stimulators have been required in the last year but some diaphragm and upper limb implantable systems remain functioning. The unit is involved in investigating alternatives to the currently available systems as part of the research programme.

### **7.6 Non-invasive ventilation and assisted ventilation**

Avoidance of ventilation in acute cases or in respiratory decompensation is beneficial. Methods of assistive non-invasive ventilation have been developed with the neuro-anaesthetists to reduce rehabilitation times.

Functional Electrical Stimulation of the abdominal muscles has been used to assist breathing and coughing in tetraplegics as part of a research programme. A clinical trial protocol is in place and patients will be recruited in the coming year.

### **8.0 General Clinical Services**

## **8.1 Outreach Clinics**

As a national service we feel that it is important to provide out patient and consultation services throughout Scotland. This has resulted in the development of out-reach clinics in areas identified on our database as having a concentration of patients. Medical, Nursing, and Occupational Therapy staff attend outreach clinics as required. Volunteers from SIS also attend to see and advise patients and carers. The increasing demand places a strain on the core service in the Unit as senior Medical Staff are required to be present at outreach clinics. No further expansion is possible within the current staffing structure.

## **8.2 Out-Patient Department**

The out-patient department has a key role in the management of the acute injuries and in preventing long term complications. The newly introduced Pain and Intrathecal pump clinics have proved very successful in helping those patients who experience difficulties with pain control. It is hoped to develop this further in the coming year

The move towards a greater emphasis on cardiovascular fitness and general health is being investigated. A clinic specialising in the nutritional aspects of paralysis would be an important part of this policy. For some time it has been recognised that optimum nutrition can reduce skin and bowel complications and it is also known that maintaining a reasonable Body Mass Index (BMI) can minimise difficulties with transfers and seating problems. In the year ahead this will be pursued with the Dietetics Department in the hospital.

## **8.3 Spinal Nurse Specialists Liaison Sisters**

There is a continued demand for nurse specialist visits for patients in their home or care placement. This prevents unnecessary visits to the unit and supports patients and carers. During the year staff travelled over 16,000 thousand miles by car and carried out one hundred and eighty eight visits. This is a significant reduction compared with last year due to maternity leave.

## **8.4 Assistive Technology**

There is an increasing demand for technology in the management of the paralysed patient. The ultimate aim is to promote independence, assist in activities of daily living and to improve work opportunities. The additional occupational therapist has been able to plan for developments in this area. Environmental control, communication and computer skills are all being investigated. This development is fully integrated with the work done in the unit by Momentum (formerly Rehab Scotland) and SPIN.

Momentum has appointed an outreach worker to bring adaptive or assistive technology to outpatients throughout Scotland.

## **8.5 Training & Development Post**

The Nurse Training and Development post continues to be extremely successful. Following the success of the HNC Advanced Training for Auxiliaries, one nursing auxiliary has completed the training and has gone onto Paisley University to train as a trained nurse. This year we will release a further auxiliary to undertake the initial training ultimately leading to qualification as a Staff Nurse.

## **8.6 Further Developments within Multi-Disciplinary Team**

In 2006 a housekeeper was appointed to support the unit in its aim to provide the highest standards of care, security and patient service.

The cost at auxiliary level is being met this from the existing budget and the post will be reviewed after 9 months.

A multidisciplinary approach to education for patients, family and carers is followed in the unit. It is recognised that there is a need for continued education and an outreach service for patients discharged before the introduction of modern practice. Following the success of the educational "Road Show " a similar event was held in Inverness and smaller events held at Nairn and Storoway. The format gives an opportunity for patients, carers and nursing staff who are distant from Glasgow to review their care and experiences.

## **8.7 Nursing Recruitment**

Nurse recruitment remains a national problem. The unit has been fortunate in attracting excellent staff to fill last year's vacancies. A pro-active approach is taken by all staff to make a placement in the unit an important part of career development.

The quality and nature of the training available makes it inevitable that there will be a steady turnover of certain grades of staff.

## **8.8 Medical Recruitment**

The changes caused by the European Working Time Directive, Modernising Medical Careers and the New Consultant Contract has placed additional strains on the current medical staff. This has constrained the development of new clinical services and outpatient clinics. A new Consultant in Rehabilitation Medicine is planned for Nov 2006 and will go some way to resolve the problem. The unit will be recognised for Foundation Training but this will further limit the amount of time each trainee will spend in the unit.

## **8.9 Pain Management**

The introduction of two consultant anaesthetists with four sessions has resulted in a review of pain management within the unit. This has included immediate care, postoperative issues and neuropathic pain. A multidisciplinary Pain Interest Group has been set up to coordinate changes in current systems.

Activity is now being monitored. In-patient and outpatient consultations are steadily increasing. There is an increasing demand for interventional procedures and analgesic pump implantations. During the year twenty-one in-patient interventional procedures were carried out. An outcome assessment is planned to measure the efficacy of new treatments. There has been some disruption in the service due to army service and sick leave. A review of the service will be carried out in the coming year to ensure the maintenance of an appropriate service.

## 8.10 Paramedical staffing

A clinical scientist has been appointed to support FES research and to conduct the Global Fitness Study. This is funded from grants and charitable donations.

Some consideration has been given as to how the unit can support recreational and sporting activities for in and out patients. A senior physiotherapist or Sports Medicine graduate with a remit to develop sporting excellence is favoured. At present there are excellent facilities within Glasgow for para-sports and there are continued developments nationally.

## 9.0 Capital Development and Equipment Replacement

The unit was commissioned in 1992 and despite regular maintenance it has now reached the stage of requiring significant refurbishment. With the support of the hospital management a programme has been developed following the major painting programme. This commenced in February 2006 with the replacement of lighting, flooring and the bed heads in Edenhall Ward. Funding has been secured from two charities for specialised adaptive technology consoles for dependant patients. Endowment Funds will provide new furniture for the common areas. Further work will be required in Philipshill Ward in the coming year, especially in the toilet and shower areas. The major concerns regarding ventilators are being addressed and it is anticipated that there will be further investment in the coming year.

Bed Head Services	£100,000	Monitoring Edenhall	£100,000
Dragar Ventilator	£35,279	RCU Ventilator	£7,931
Mattresses (12)	£4,539	Shower Chairs	£3,348
Trolleys	£2248		

### 9.1 Charitable Funding - Endowment Funds

The unit is very fortunate in attracting significant donations from patients, relatives, friends, individuals and corporate bodies. These are used to provide facilities and services, which cannot be reasonable expected from central funding.

Specialised physiotherapy stations, occupational therapy equipment, medical record storage, televisions, computer equipment, shower chairs and travel costs have been sourced from endowment monies. Individual patient donations have paid for specialised equipment and the employment of a massage therapist.

Research grants have provided equipment and partial staff costs. There have been significant donations in time and equipment from Celtic FC, The Murrayfield Trust, the Clydesdale Bank, Momentum, SPIN and SIS. All sporting activities are supported by an independent Charity - Options.

This has occurred without any concerted fund raising activity but has been dependant on individuals. The contribution made by these individuals is gratefully acknowledged.

Significant funding has been raised for the installation of adaptive technology consoles for Edenhall Ward by a individual donation and a charitable contribution via Momentum.

Weight Training	£5220	Day Room Furniture	£1956
Shelving	£350	Training Modules	£700
Domestic	£222	Shredders	£400
ATV Modules	£45,000	Trolleys	£5000

## **10.0 Clinical Networking and National Guidelines**

Admission guidelines were issued to all hospitals in Scotland during 2002. This was of great benefit standardising the immediate management of patients and their subsequent referral. Standard referral proformas, transfer guidelines and admission proformas are now in place. An audit of 100 consecutive admissions indicates that compliance with the transfer protocols was approaching 90%. Of concern was the association between high incidences of skin damage due to the lack of a vacuum mattress for inter-hospital transfers. Discussions with the Scottish Ambulance Service have resulted in a planned target of having all transfers complying with the protocols within two years. Consultations with the ambulance service have taken place regarding the use of cervical collars and neck immobilisation protocols.

The guidelines will be reissued during 2006.

## **11.0 Clinical Governance**

Multi-disciplinary clinical governance meetings are held within the unit monthly. Separate medical audit meetings are held with the Department of Rehabilitation. Each department has separate governance meetings. The Clinical Director and Clinical Services Manager meet weekly. Consultant clinical meetings are held twice a week. Regular meetings will be held with the new Health Board management structure.

Consultant portfolios have been introduced and appraisal started. SHO teaching and training is closely scrutinised with introductory interviews, educational contracts and regular reviews culminating in the RITA process. The SHO will be incorporated into the Foundation Training Programme.

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. Staff are encouraged to report incidents which are then investigated by senior medical and nursing staff.

In the past year staff reported seven formal incidents. All were fully investigated. As a result of two cases the unit guidelines for the use of oral Baclofen and patient handling are being reviewed. None of the incidents were life threatening or and no patient came to significant harm.

## 12.0 Medical 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 appointment of a Clinical Scientist funded by research grants and endowment monies has been a significant success. Funding is available for a research mezzanine on site from SRIF 111 from Glasgow University.

A collaborative meeting “The Spinal Frontier” is planned for this year to review new strategies in research.

### 12.1 Medical Research Partners

#### **Glasgow University Centre for Rehabilitation Engineering**

Professor Ken Hunt BSc,PhD,DSc                      Wylie Professor of Mechanical Engineer

Dr Henrik Gollee Dip Ing,PhD                      Lecturer  
Dr Sylvie Coupaud BA.Mres,PhD                      Clinical Scientist QENSIU

Dr Ben Saunders BEng,PhD                      FES Cycling  
Georg Worms Dip Ing                      Unsupported paraplegic standing

PhD Students

Helen Berry BSc                      FES cycling  
Emily Black BSc                      Unsupported paraplegic standing  
Chiara Ferrario                      FES Cycling  
Calum McRae MEng                      FES-cycling paediatric  
Andrew Pennycott MEng                      FES cycling engineering  
Lindsay Jamieson BSc                      Treadmill Walking

#### **Strathclyde University Bio-engineering Unit**

Dr Bernie Conway BSc,PhD                      Lecturer  
Dr Izzy Izzeldin MB,ChB                      PhD

#### **Caledonian University School of Health and Social Care**

Professor Malcolm Granat                      Treadmill Training

## **Stirling University Department of Psychology**

Professor Ronan O'Carrol PhD

Dr Adele Dickson PhD

Lecturer

## **Glasgow University Biosciences**

Dr John Riddell BSc PhD

Stem Cell research

Professor Sue Barnett BSc PhD

Olfactory Epithelial Cell Research

## **Scottish National Brachial Plexus Service**

Mr Tim Hems MD FRCS

Upper Limb Tetraplegia Service

## **University of Essex**

Dr Heba Lakany BSc PhD Artificial Intelligence

## **Proneuron Biotechnologies**

Macrophage Stem Cell Implants Israel

## **Apatech Ltd**

Bone Graft Substitute

## **Alfred Mann Foundation**

Bion Implantable Stimulation

## **12.2 Grants and Grant Applications - Cumulative Index**

The following have been granted or applied for to allow work to be done in the unit..

Functional electrical stimulation augmented treadmill training for incomplete spinal cord injured patients Pilot study MH Granat et al Scottish Executive £77,709 completed

A pilot study of lower limb FES cycling in paraplegia  
Prof K Hunt

Inspire £8,886 completed

Royal Academy of Engineering Secondment Scheme  
Prof K. Hunt – Six-month secondment 2003-4

RAE £13,000 completed

Development of Systems for tetraplegic Arm Cranking using Functional Electrical Stimulation: a pilot study K Hunt H Gollee S.Coupaud DB Allan

EPSRC £122,403 completed



Development of Systems for Paraplegic Cycling.  
 Prof K Hunt Dr N Donaldson EPSRC £244,137

Upper Limb Arm Cranking using FES  
 Dr H. Gollee Prof.K. Hunt European Commission £68,719 completed  
 :

Control strategies for integrating motor power with leg power in paraplegic cycling  
 Prof K Hunt et al EPSRC £77,573 completed

Integrated Voluntary Control of Unsupported Paraplegic Standing.  
 Prof K Hunt Dr H Gollee EPSRC £219,402

Practical systems for balance control  
 Prof K Hunt Dr H Gollee Neopraxis £38,000

Comparative Study of walking and cycling  
 Prof K Hunt Prof M Granat Dr B Conway Synergy Initiative £35,000

Equipment for Paraplegic Exercise Studies  
 Prof K Hunt Dr H.Gollee Scottish Higher Education Funding Council SRIF 2 £156,000

Electrophysiological Assessment of Central Nervous System Organisation following Spinal  
 Cord Injury B Conway, I Izzeldin, D B Allan ISRT Grant £120,000

Molecular Analysis of the total microflora on the surface of prosthetic hip joints removed  
 during Revision Arthroplasty Riggio M, Bagg J, Allan DB, Ramage G  
 Arthritis Rheumatism Council £117,763

Evaluation of the physiological and functional adaptations induced by locomotor training in  
 incomplete spinal cord injured subjects  
 B Conway, M Granat, D B Allan J Hasler KJ Hunt ISRT Grant £235,986

### 12.3 Journal Publications

- 1 Granat MH, Edmond P. The application of air bag technology: an objective clinical measure of involuntary muscle spasm. *Spinal Cord*. 1999 Jul;37(7):501-7
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- 6 Deep K, Jigajinni MV, Fraser MH, McLean AN. Prophylaxis of thromboembolism in spinal injuries--survey of practice in spinal units in the British Isles. *Injury* 2002 May;33(4):353-5
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- 8 Hunt K. J. and McLean A. N., "New developments in engineering for spinal cord injury rehabilitation" " *Ingenia (The Royal Academy of Engineering)*, pp. 29-34, November 2002
- 9 Prempeh RC Gibson JC Bhattacharya JJ "Midline clefts of the axis; a diagnostic dilemma" *Spinal Cord* (2002) 40,92-93
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- 13 Prasad RS, Fraser MH, Urquhart GD, McLean AN. Rupture of tuberculous spinal abscess resulting in tuberculous empyema and chylothorax. *Spinal Cord.* 2003 Jul;41(7):410-2.
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- 15 K. J. Hunt, B. Stone, N.-O. Negård, T. Schauer, M. H. Fraser, A. J. Cathcart, C. Ferrario, S. A. Ward, and S. Grant, "Control strategies for integration of electric motor assist and functional electrical stimulation in paraplegic cycling: utility for exercise testing and mobile cycling," *IEEE Trans. Neural Sys. Rehab. Eng.*, vol 12 pp.89-101, March 2004.
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- 25 Harrison CS, Grant M & Conway BA. (2004). Haptic interfaces for wheelchair navigation in the built environment. *Presence-Teleoperators and Virtual Environments* 13, 520-534.
- 26 Hunt KJ, Ferrario C, Grant S, Stone B, McLean AN, Fraser MH, Allan DB. Comparison of stimulation patterns for FES-cycling using measures of oxygen cost and stimulation cost. *Med Eng Phys.* 2005 Nov 17
- 27 MT McCormick, I Bone A MacLean, DB Allan "Blunt cervical trauma as a cause of Spinal Cord Injury and Delayed Cortical Blindness" submitted to *Journal of Neurology Neurosurgery and Psychiatry*
- 28 Hearn ST, Fraser MH, Allan DB, McLean AN "Spinal injuries in Scottish mountaineers Wilderness Environ Med. 2006 In press
- 29 Ferrario C, Hunt KJ, Grant S, Maclean AN, Fraser M, Allan DB Novel protocols for high sensitivity cardio-pulmonary exercise testing during Functional Electrical Stimulation cycle ergometry in spinal cord injured subjects *to be submitted*
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- 33 Gollee H, Hunt KJ, Coupaud S, Schauer T. An apparatus for FES-assisted arm-cranking exercise in tetraplegia. *Under preparation*
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- 36 Bell S, Shaw-Dunn J, Gollee H, Fraser MH, Allan DB. "Improving respiration in patients with tetraplegia". *Submitted to Br J Clin Anatomy* 2006

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- 20 Gollee H, Coupaud S, Hunt KJ, Fraser MH, Allan DB, McLean AN. "Potential cardiopulmonary benefits of functional electrical stimulation (FES) assisted arm-cranking exercise in tetraplegia". *Proc. 43rd Annual Scientific Meeting, Int. Spinal Cord Soc.* (Athens, Greece) Sept 2004.

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- 28 Oliver A, Allan D.B "Anterior Tibial Compartment Pressures in Spinal Cord Injured Patients" *EFFORT* (Lisbon, Portugal) June 2005
- 29 Hems T, Wallace L. "Experience with the Freehand Functional Electrical Stimulating Implant in Scotland" *FESSH* June 2005 Gothenburg
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- 32 Joseph G, Jigajini MV, Philip D, Raja M, McLean AN, Fraser MH, Allan DB Use of a structured referral protocol for the safe inter-hospital transfer of patients with spinal injury *British Orthopaedic Association* 2005
- 33 Coupaud S, Gollee H, Hunt KJ, Fraser MH, Allan DB, McLean AN. "Methods for cardiopulmonary exercise testing to assess exercise capacity in spinal cord injury" *Proc. 44th Annual Scientific Meeting, Int. Spinal Cord Soc.* 2005 Munich

- 34 K.J. Hunt, H. Gollee, S. Coupaud, D.B. Allan. Restoring function and enabling exercise in spinal cord injury. *Int. Spinal Research Network Meeting*, London, UK, September 2005.
- 35 Bell S, J Shaw-Dunn, H Gollee, MH Fraser, DB Allan. "Improving respiration in patients with tetraplegia". *in Proc. British Ass Clin Anatomists* Sheffield Dec 2005
- 36 McCaughey MC, McLean AN, Allan DB."Vitamin C for acidification of urine in spinal cord injured patients: is there an evidence base?" *In Proc 15<sup>th</sup> Eur Congress of Phys Med and Rehab* Madrid, Spain May 2006
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## **13.0 Summary**

The hard work and dedication of all staff has led to the maintenance and development of the service over the last year. Despite the disruption caused by the painting and refurbishment programme an increased number of new neurologically injured patients were seen and treated. A high quality service was maintained for patients with spinal fractures and no neurology. Significant developments occurred in education and research.

Much work has been done for the proposed Family Unit and Research Mezzanine. These will result in improved services for patients and will contribute to the quality of life including life expectancy of all patients.

During the year further progress was made in establishing an international research profile. A network of basic and clinical scientists continues to drive this forward. There is a tremendous potential synergy between the service and the internationally recognised basic science available in Scotland.

Appropriate thanks must be given to the National Services Division, the South Glasgow University Hospitals NHS Trust and the new NHS Greater Glasgow and Clyde for their help and support in delivering the service.

**Mr. D.B. Allan FRCS  
Consultant Orthopaedic Surgeon  
Director,  
Queen Elizabeth National Spinal Injuries Unit for Scotland**



Appendix	A	Physiotherapy Report
Appendix	B	Occupational Therapy Report
Appendix	C	Momentum Report
Appendix	D	Spinal Injuries Scotland Report
Appendix	E	Psychology Report
Appendix	F	Social Work Report

Appendix	G	Raw Data
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DA1	New Admissions
DA2	New Admissions by Case mix Complexity
DA3	New Admissions by Health Board of Residence
DA4	New Admissions by Health Board compared with Population Size
DA5	New Admissions by Degree of Injury
DA6	Discharges by Degree of Injury
DA7	Admissions and Discharges for Non Traumatic Spinal Cord Injury (ICD 9 Code 952) by aetiology
DA8	Day case Attendances by Health Board
DA9	New Admissions by Age Group
DA10	Age & Sex of New Patients by Category of Injury Female Patients 1999/2000
DA11	Age & Sex of New Patients by Category of Injury Male Patients 1999/2000
DA12	Age & Sex of New Patients by Category of Injury All Patients 1999/2000
DA13	Length of Stay for Traumatic Injury by level of Spinal Cord Lesion
DA14	All Discharges
DA15	Discharges by Case mix Complexity
DA16	Discharges by ASIA Impairment Level & Health Board
DA17	Discharges by ASIA impairment Level and Health Board
DA18	Delay between actual and intended date of discharge
DA19	Time to admission
DA20	Ventilated bed days

## **APPENDIX A      PHYSIOTHERAPY**

### **Staffing Levels:**

Jon Hasler MPhil MCSP Superintendent Lead Clinical Specialist.  
Vivian Smillie MCSP and William Stewart MCSP both Permanent Senior 1 posts.  
Sandra Forrest MCSP. Permanent Senior 11 post.

Eight month rotating Senior 11 post:  
Roddy Sheridan MCSP (June 05 to Jan 06)  
Cathel McCrae MCSP (30<sup>th</sup> Jan to present)

Four month rotating Staff grade posts:  
Julie McGuckin MCSP and Kate Wilson MCSP (long term sick) (Feb 05 to May 05).  
Fiona Morrison MCSP and Jennifer Fenlon MCSP. (June 05 to Sept 05).  
Josh Kwant MCSP and Barry Johnstone MCSP. (Oct 05 to Jan 06).  
Mairi Doyle MCSP and Lisa Donnachy MCSP ( Feb 06 to present)

When comparing these staffing levels with the recently published “Review of SCI Services for Health Authorities in South West, South East London and Eastern Regions”, the staffing we have for 48 acute/intensive rehabilitation beds, we see that we don't meet their standards of 1 physiotherapist to 4-6 patients.

Our four permanent physiotherapists provide an excellent base of experience and expertise having accumulated a combined total of 80 years spinal cord injury rehabilitation. This demonstrates stability, reliability and dedication.

At this point it is appropriate to report that Vivian Smillie senior 1 physiotherapist will be retiring on the 14th June 06. Vivian has faithfully served the spinal cord injured population of Scotland since 1976 for which many SCI individuals and we are extremely grateful. We wish her well in all her future ventures and wish her health and happiness.

### **Service Access.**

- Weekday Service Hours: 8.30am- 4.30 Mon-Thurs and 8.30-4.15 Fri.
- Weekend Service Hours: One of the SIU physiotherapists covers any work that is needed at the weekends. Once this work is completed they leave the hospital and the emergency call-out system is reverted to.
- Emergency cover:  
Mon-Fri 4.30pm-8.30am via the hospital wide on-call physiotherapy service. Weekends once the SIU physiotherapist has left the hospital, usually from midday onwards until 8.30 the following morning.

### **Service Activity.**

Breakdown of patient groups treated.

<b>New admissions:</b>	02/03.	03/04.	04/05.	05/06.
Neurological Deficit	Total (%)	Total (%)	Total (%)	<b>Total (%)</b>
Incomplete Quadraplegia	37 (40)	25 (25.5)	23 (28%)	<b>44(42%)</b>
Incomplete Paraplegia	19 (20)	16 (16.3)	12 (14.4%)	<b>16(15%)</b>
Cauda Equina lesions	9 (10)	7 (7.2)	2 (2.4%)	<b>18(17%)</b>
Complete Quadraplegia	11 (12)	14 (14.3)	22 (26.4%)	<b>9(8.5%)</b>
Complete Paraplegia	12 (13)	21 (21.4)	18 (22%)	<b>17(16%)</b>
Monoplegia	3 (3)	4 (4)	4 (5%)	<b>1(1.5%)</b>
Incomplete Others	2 (2)	11 (11.2)	0	<b>0</b>
Neuro deficits Total:	<u>93</u> (100)	<u>98</u> (100)	81 (100%)	<b>105(100%)</b>
No deficit/ Intact.	72	103	63	49
Total:	<u>165</u>	<u>201</u>	<u>144</u>	<u>154</u>

Every one of these patients was seen by the physiotherapy department, the incomplete tetraplegic patients taking the most time, through to the intact patients, who are seen as appropriate, but are usually only on the unit for approximately two weeks.

### Re-admitted patients.

All patients who are readmitted receive physiotherapy input if appropriate. This would be a number of times per day, in the case of a chest infection, to twice per week to maintain the range of movement in paralysed joints while the patient is on bed rest to heal a pressure sore.

Inpatient attendance's and direct patient contact treatment units:

2005/6	In-Patients				Out-patients			
	Month	Totals	N.P	Attendances Units	Totals	N.P	Attendances Units	
April	59	18	831	1966	6	6	7	25
May	56	15	780	2062	4	3	6	15
June	60	21	1045	2675	7	7	6	27
July	61	18	901	2341	7	5	16	39
August	58	14	1260	3311	6	4	21	32
Sept	58	12	1243	2942	2	2	2	4
Oct	54	8	1087	2348	1	0	1	3
Nov	60	12	1159	2651	1	1	2	5
Dec	54	11	935	2333	2	2	5	19
Jan	50	8	877	2208	4	3	5	14
Feb	49	10	868	2137	2	1	2	3
March	63	12	917	2323	5	4	5	21
<b>Totals</b>	682	159	11903	29297	47	38	78	207

Summary of Inpatient attendance's and direct patient contact treatment units.  
(15 minute units):

April-March	<u>02/03.</u>	<u>03/04.</u>	<u>04/05.</u>	<u>05/06.</u>
Attendance's	12359	12599	11573	<b>11903</b>
Units.	27753	29981	27416	<b>29297</b>
New patients	165	201	144	<b>159</b>

Combined indirect patient contact and non patient contact units.( 15 minute units).

02/03: 10269      03/04: 11093      04/05: 10144      **05/06: 10840**

Weekend cover:

<b>I/P Weekends</b>			
<b>Month</b>	<b>Att</b>	<b>Units</b>	<b>No.Pts</b>
<b>April</b>	53	98	16
<b>May</b>	52	110	12
<b>June</b>	57	125	20
<b>July</b>	113	243	28
<b>August</b>	63	138	21
<b>Sept</b>	64	144	18
<b>Oct</b>	35	81	11
<b>Nov</b>	21	49	10
<b>Dec</b>	62	141	17
<b>Jan</b>	23	64	9
<b>Feb</b>	21	40	10
<b>March</b>	36	65	11
<b>Totals</b>	600	1298	183

To ensure the highest level of care, the spinal injury trained physiotherapists cover all the weekend work on the spinal unit. This year the work-load has been as follows:

Year.	<u>02/03.</u>	<u>03/04.</u>	<u>04/05.</u>	<u><b>05/06.</b></u>
Attendance .....	717	765	778	<b>600</b>
Direct units:	1511	1625	1920	<b>1298</b>
Indirect units:	559	601	710.4	<b>480</b>
<u>Ave hours/wkd:</u>	<u>10</u>	<u>11</u>	<u>13</u>	<u><b>8.6</b></u>

Out Patients.

There are four types of out patient seen by the physiotherapy department. Firstly those patients continuing their rehabilitation having had an early discharge, secondly those patients returning for further rehabilitation having made some form of recovery, or deterioration. Thirdly patients requiring pain management, predominantly with acupuncture, and finally, those patients requiring a one off assessment.

Outpatients:

The figure's were as follows:

Year:	<u>02/03.</u>	<u>03/04.</u>	<u>04/05.</u>	<u><b>05/06.</b></u>
Attendance	90	196	90	<b>78</b>
Direct units	195	648	778	<b>207</b>
<u>New patients</u>	<u>31</u>	<u>52</u>	<u>41</u>	<u><b>38</b></u>

We remain understaffed to treat outpatients as thoroughly as we would like to.  
On call after 5pm.

This service is provided by the on call physiotherapists for the whole of the Southern General Hospital, and is provided as pre arranged treatments for patients with chest

complaints that will deteriorate if not treated at night, and emergency call outs from a Registrar or Consultant.

During the past 3 years the figures were:

Year:	<u>03/04.</u>	<u>04/05.</u>	<u>05/06.</u>
Attendance	96	70	86
Direct units	303	166	226
Total hours	76hrs	41.5 hrs	56.5hrs

DEPARTMENT	ARRANGE D			CALL-OUT		
	TOTAL Pt's	attendances	units	TOTAL Pt's	s	units
SPINAL						
APRIL	2	3	6	3	3	6
MAY	0	0	0	5	5	9
JUNE	9	9	19	1	1	2
JULY	9	9	23	7	7	21
AUGUST	1	1	2	4	4	14
SEPT	3	5	14	3	5	24
OCT	5	5	10	7	10	31
NOV	0	0	0	0	0	0
DEC	0	0	0	1	1	3
JAN	6	6	15	8	9	17
FEB	0	0	0	1	1	2
MARCH	1	1	2	1	1	6
<b>TOTALS</b>	36	39	91	41	47	135

TP's	Attendance	units
77	86	226

## **Education/ Training.**

For most physiotherapists learning about and gaining experience in Spinal Cord Injury rehabilitation is undertaken as a postgraduate.

However to enable students to have an experience of this specialist area all the Scottish training establishments send their students to us to gain an overview of this work.

During the year we ran 2 courses here in the unit for the physiotherapy students of the following universities:

Caledonian University. Glasgow. (BSc and MSc)

Queen Margaret University. Edinburgh.

Robert Gordon University. Aberdeen did not attend this year.

We also gave clinical supervision placements to 8 students from these universities. We also had 2 students on elective placements from a variety of other universities. These placements varied in length from 4 weeks to 8 weeks. In all a total of 53 weeks of student supervision were given in 2005/06.

All new key workers within the unit and all new SHO's were trained in the use of the Functional Independence Measure (FIM) enabling them to understand the use of this internationally recognised outcome measure and therefore to be able to participate in the units recording of our patient's FIM scores.

SHO's received lectures on the role of physiotherapy within QENSIU and on sport/recreation for SCI individuals.

Lectures were presented to the visiting Bioengineers and Prosthetics students from The University Of Strathclyde.

## **Our staff also lecture to patients within the patient education programme on the following topics:**

- ◆ Anatomy of the spinal column/spinal cord.
- ◆ Spasm/spasticity.
- ◆ Neurogenic pain.
- ◆ Wheelchairs.
- ◆ Sport and recreation.

Finally our commitment to training our own staff continued with regular in service training both for physiotherapy staff, the multidisciplinary team, and staff from other hospitals within Scotland.

Courses attended by staff this year have included the following:

## **Service Clinical Governance Framework.**

### **Clinical effectiveness (05/06).**

- Biannually the Superintendent attends the Inter-SIU Superintendent Physiotherapists meeting where exchange of current clinical effectiveness issues is undertaken. Clinical speciality standards for the management of SCI individuals are also reviewed and a number of clinical guidelines have been written and agreed across all twelve UK units. This year the meetings were in Pinderfields (Wakefield) and Rookwood (Cardiff).
- Current research/development papers are sometimes reviewed during in-service training and by attending specialist conferences.
- Individual Case Studies have been presented as part of our in-service training programme.

- Each patient has outcome measures using the Functional Independence Measure (FIM) set at the beginning of their rehabilitation and these are monitored especially pre discharge.
- Those physiotherapists within the Southern General Hospital who use acupuncture as a treatment modality have formed an Acupuncture interest group and are reviewing practice, standards etc.
- Audit of our success in achieving the CSP Cord Standards was undertaken every 4 months with our compliance rate rising to 98%.
- All staff have access to the library and the internet.
- Clinical Risk Management:
  - This is discussed between the SIU's and resulted in some of the agreed guidelines.
  - Each individual physiotherapist assesses their abilities and those of their patients. This alters as the rehabilitation process continues. This however is not formally recorded at present.
  - CPD.
  - Weekly in-service training within the SIU.
  - SGH Physiotherapy Department in-service training monthly:
  - Courses attended by staff:
    - Moving and Handling.
    - Fire lectures.
    - CPR.
    - MASCIP annual conference
    - Rehabilitation, " Who's Job Is Anyway"?
    - Gutmann Annual lectures.

### **Developments in 05/06.**

- Three new wheelchair accessible multi-gym equipment stations have been purchased to replace some of the 12 year old equipment that was worn out.
- As usual the Inter Spinal Injury Unit Games were hosted at the Ludwic Gutmann stadium in Stoke Manderville and were held during April. The team from QENSIU came mid table in 7<sup>th</sup> place. It is noted that the only reason we were able to send a team was due in no small measure to the fact that staff attending with the patients were willing to *volunteer* to give many hours of their own off duty time to make it all possible.

- This year the Strathclyde Police Force training department placed 2 Police Cadets with us, to work in a voluntary capacity for a 3 month period, as part of their community placement training. The aim is to provide the cadets with an understanding of equal opportunities issues and to develop an awareness of the diversity of needs within the community.

#### Patient Sport/Recreation and Community Reintegration.

This year a successful programme of sporting activity, as a part of our weekly rehabilitation programme, was continued and well attended by many patients.

Each Wednesday afternoon a rolling programme of sport has been run by a senior and junior physiotherapist. Sports tried out have ranged from archery, table tennis, basketball through to fencing for which we organised an external coach to supervise the sessions.

Our links with local/national sports/recreational resources run by both council and private/charitable organisations has continued. This can be seen through the following activities:

- ❖ The physiotherapy staff introduced a number of patients to disability sailing with weekly midweek sailing with a local sailing club. This was only possible due to staff voluntarily giving of their own time on Wednesday evenings through the summer.
- ❖ We invited the charity Back-Up to present quarterly talks to the patients about their outward bound and skiing activity courses. These were met with great interest by most patients.
- ❖ In partnership with Back-Up we ran a very successful advanced wheelchair skills workshop here in the unit where individuals with long standing paraplegia demonstrated and tutored current inpatients in the advanced use of their wheelchairs.
- ❖ We have taken patients to the Braehead curling rink on five occasions where they have received expert coaching from no other than one of the Winter Paralympics Silver Medal winning team and current wheelchair curling world champions.
- ❖ We have informed patients of the charity Walking on Air who aim to introduce disabled individuals to the sport of gliding.

We would have liked to enable our patients to undertake more of these recreational/sporting activities through the year but have found it problematic to undertake a regular programme of "out of unit" activities due to the increased staffing implication trips out of the unit necessitate.

#### Research (05/06):

The following research projects/grant applications have received physiotherapy input/advice during the year:

Our joint grant application, to the Scottish Chief Scientists Office, with Professor Malcolm Granet of Caledonian University was unfortunately unsuccessful.

Assistance continued to given to Dr. Isam Izzeldin MB BS MRCP UK in his clinical research entitled "Electrophysiological Assessment of the CNS organisation following Traumatic Incomplete SCI".

Assistance with the successful grant application for the following Strathclyde University Bioengineering project:

The title of the project is: Comprehensive Evaluation of the Physiological and Functional Adaptations Induced By Locomotor Training In Incomplete SCI Subjects. D. Allan, B. Conway, M. Granat, J. Hasler, K. Hunt.



## **Areas for Development (06/07):**

### **Recreation**

Rehabilitation teams within spinal cord injury units have long believed that a sport, recreation and community re-entry programme is a vital part of the rehabilitation process. Assisting spinal cord injured patients to learn to deal with social and environmental barriers through excursions into the community, including sporting, recreational and social activities should be fully incorporated into our programme of rehabilitation. As in other SIU's this should be a part of the rehabilitation therapy team role.

The unit has access to suitable transport allowing access to the wider community but has found it problematic to undertake a regular programme due to the increased staffing implication trips out of the unit necessitate.

For the patients pathway through rehabilitation to be successfully completed efforts should be made to continue the process in their own local community. There is therefore a role for the team to be contacting local sports/recreational resources both council/privately run to try and involve the discharged patient in activity out with their home that will also contribute to both their future physical and emotional rehabilitation/reintegration. This will be assisted by completion of the compilation of names and telephone numbers of all of Scotland's disability sports and recreation development officers. We will then put into practice the linking of our patients to their local council resources.

It was hoped that the above work would be up and running last year. This however has not occurred as yet. It is planned that the appointment of a physiotherapy support worker will enable the required time to be put to completing this work.

### **Moving research into clinical practice.**

- **Partial Body Weight Treadmill Gait Training.**  
As reported last year we still remain unable to integrate this treatment approach into everyday rehabilitation. For each patient session, of approx 1 hour, to be successfully and safely undertaken it required dedicated input from at least 2 physiotherapy team members.  
The appointment of the physiotherapy support worker along with the 2 researchers from the Strathclyde Bioengineering department should enable us to restore the integration of this treatment approach.
- **Upper and lower limb FES cycling programmes.**  
Once final published results have shown favourable outcomes for these projects this work would become integrated into the physiotherapy rehabilitation programmes of both paraplegic and tetraplegic patients. As yet we await favourable publication results. At last EC certificated equipment is now in production and has been offered to us as donated equipment by the commercial production company.  
Meanwhile more emphasis on non-FES cardiopulmonary fitness programmes could be developed along side the development of sport/recreation/reintegration programmes. One of our current Senior 2 staff is researching this area.
- ❖ **Equipment requirements.**  
As each year passes our aging stock/loan wheelchairs become more decrepit and out dated. This year two of our powered wheelchairs broke down and were found to be obsolete by our repair agencies.

We therefore wish to replace these powered wheelchairs with up to date versions similar to those issued by the wheelchair services to our individual patients on their discharge.

We also wish to modernise our stock of manual attendant wheelchairs for our ultra high injury patients. The development of and provision by wheelchair services of "Tilt in Space" wheelchairs with supportive seating systems and head support has recently enabled two of our patients to access these chairs. However assessment and therefore provision was greatly delayed as we only had the old design semi-reclining wheelchairs. This showed a gap in our ability to provide appropriate modern wheelchairs for assessment and initial mobilisation of this patient group.

## **Future Staffing Requirements/Developments:**

### **Physiotherapy Support Worker:**

We are looking forward to the appointment of our long awaited Physiotherapy Support Worker.

We will be seeking an individual with HNC/SVQ qualifications in the areas of exercise/sport/recreation sciences. These individuals would then be able to work with a high level of independence in the areas identified as needing increased input.

As yet we do not know what pay band this individual will be in.

The appointee will also be able to assist with the following activities enable current qualified staff to increase their time spent with one on one patient session, clinics, small research projects, audit etc:

- With the increasing number of incomplete patients we see, who are requiring pre-gait and gait training, there is an increasing need for the assistance of another person to be involved per treatment session. The technical instructor could be this person.
- In taking group sessions.
- Clerical administrative activities.
- Maintenance/cleaning of equipment.
- Accompanying out of hospital activities.
- Assisting in the hydrotherapy pool(in the water) thereby enabling an increase in usage.
- Undertaking maintenance stretches/exercises for long term and re-admission bed patients.

All of these activities would give the current staff more time to develop input to specific projects such as spasticity management via Botox and physiotherapy, recreational out of unit activities, collaborative and within department research projects etc.

### **Senior physiotherapist:**

To develop the service to patients attending the Out-Reach Clinic's across Scotland including those clinics held at QENSIU.

With the increased number of regional out-reach clinics there have been an increasing number of physiotherapy related issues coming to our attention that need to be dealt with after the team return from the clinics and request our input. This inherently means the issue takes longer to deal with than it would do if a physiotherapist at the clinic had actually seen the patient. The fact that there is no physiotherapy input at the clinics also means that there is now less and less follow-up, within the first year of discharge, of patients than was the case when they came to the QENSIU for their 6 week/6 month follow-up appointments.

Since the introduction of the Functional Independence Measure (FIM), as the units primary outcome measure, we have never managed to follow up our patients progress/deterioration in function post discharge. This could clearly be a role for a clinic physiotherapist.

With the increasing SCI population growing older each year the number of spinal/limb degenerative wear and tear problems that patients are reporting at reviews is increasing. The out-patient Occupational Therapist has specifically identified this as an issues. She is regularly asked, by patients, to help them with such problems, but feels these are issues a physiotherapist should deal with. This certainly would improve the quality of care provided. This will continue to be a gap in the service we provide unless time/resources can be allocated to address these issues.

Such a physiotherapist would develop the role to meet the following needs:

- ❖ *Discuss/guide local physiotherapists in continued physiotherapy input for recently d/c patients.*
- ❖ *START collecting follow-up FIM scores for patients thus identifying improvements/deterioration's in function and with local resources devising possible ways of optimising function.*
- ❖ *There is little emphasis, in the current clinics, on assessing neurological changes, joint range of motion/contracture development, physical methods of managing spasticity and preventative interventions to minimise future problems. Such assessments of patients developing problems could allow appropriate interventions to be devised and discuss with local teams. This could reduce/minimise future problems. These issues could be taken on by a physiotherapist.*
- ❖ *Assessment of our growing number of incomplete patients could well assist in maximising continued recovery post discharge. It could also draw the teams attention to deterioration in function in the longer standing individuals. This is particularly true in the area of gait pattern changes. This was highlighted at the Inverness clinic in April this year where three of the patients were incomplete walkers all of whom had gait problems all relating to orthotic problems and two also to tone with the development of bad gait habits. Immediate discussion, by the physiotherapist, with the on site orthotist will have moved reviews closer much more quickly for the patients.*
- ❖ *Liasing with local council sport/recreation officers to encourage discharged patients to continue rehabilitation/reintegration following discharge but out with the NHS.*
- ❖ *Respiratory function reviews in long standing high level tetraplegic patients to try and prevent/minimise respiratory problems.*

### Respiratory Physiotherapist

As the role of Dr A McLean our Consultant, and his interest in the respiratory management of high tetraplegic patient develops, and the Domiciliary Ventilation Service continues to develop, we need to increase/review our respiratory skills. This would ensure that the breadth of physiotherapy input these patients could benefit from is achieved. This would also be true of the increasing number of short-term ventilated patients, and tracheostomy patients that the unit is now treating.

Most spinal injuries units within the UK that treat ventilated/tracheotomy patients now have a physiotherapist leading the work with this group of patients.

It is true that we have increased the number of anaesthetic sessions but more time could be spent with patients, one on one, to wean them off the ventilator or from their tracheotomy. In many other speciality areas speech and language therapists and physiotherapists work together to increase time spent with patients easing the weaning process along more quickly. This hopefully can be achieved from now onward by current physiotherapists having more time to give the one on one time required by allocating their more able patients to input from the newly appointed support worker, when necessary.

## **APPENDIX B DEPARTMENT OF OCCUPATIONAL THERAPY**

### **SERVICE AIM STATEMENT**

To provide an effective Occupational Therapy service that will minimise disability, maximise independence and maintain health in the Spinal Injured of Scotland. This is achieved through assessment, treatment and evaluation.

### **SERVICE FUNCTION STATEMENT**

Occupational Therapy aims to

- Assist the recovery or rehabilitation of
  - Functional skills
  - Educational skills
  - Vocational skills
  - Social skills

This is to enable the individual to be maintained in the community or care environment at their maximum potential.

- Provide advice and support to carers and other agencies supporting the spinal injured.

The team of Occupational Therapists strive to:

- achieve the maximum level of service within allocated resources
- maintain a sound level of clinical expertise and excellence through skill sharing and education.

### **ASSESSMENT**

- Activities of Daily Living
- Hand Function
- Seating/pressure monitoring
- Home Environment
- Work Environment
- School
- Community Skills
- Lifestyle/Leisure
- Keyworker/Needs assessment
- Driving assessment screening (informal)
- Power wheelchair control needs
- Pre and post-op assessment in tendon transfer surgery

### **TREATMENT**

- Self-care skills
- Domestic skills
- Vocational skills
- Hand and upper limb function/remedial activity

- Orthotics
- Communication skills
- Functional mobility
- Family/carer training
- Education
- Neuro-control follow-up
- Tendon transfer post-op training
- Mouthstick training
- Environmental Control Unit training
- Assistive technology advice
- Adaptation of equipment
- Prescription/recommendation of aids and equipment

#### **EVALUATION**

- FIM scale
- Ongoing functional evaluation

### **SERVICE SPECIALITIES**

- Seating assessment with specific attention to the special needs of the spinal injured. This includes posture control in high level tetraplegia and pressure sore prevention with the use of a pressure-reading monitor. Joint sessions with bio-engineers are arranged when necessary.
- Splinting the tetraplegic hand and fabrication of splints to aid specific functions e.g. writing, shaving.
- Patient Education:       Skin/cushion care, pressure sore prevention in ADL  
  Community resources
- Environmental control unit and assessment for switch selection/position
- Mouthstick training
- Home assessment with recommendations for alteration to home or for rehousing, depending on the needs of patients and family
- Equipment: assessment of patients needs with regard to specialist aids and equipment required to aid function
- Adaptation of equipment and aids
- Workplace and work skills assessment
- Unique information service for patient, carers and staff
- Pre and post-op assessment and treatment in tendon transfer surgery.

### **SERVICE ACCESS**

**Service hours:** Monday - Friday , 8.30 - 16.30 (Fri 16.15)

**System of referral:** Blanket

**Location:** Based within the Queen Elizabeth National Spinal Injury Unit, a comprehensive Occupational Therapy Service is provided to the Spinal Injured of Scotland.

Within the unit there are 48 beds, 12 of which are designated High Dependency, 4 are within the Respiratory Care Unit and 32 are rehabilitation beds.

In keeping with the Spinal Unit's life-long care policy, the Occupational Therapy Service is extended to outpatients and home follow-up. The unit open door policy is also adhered to.

A holistic, multi-disciplinary team approach is adopted by the QENSIU

## STAFFING

All staff are well motivated, cohesive and committed to high quality patient care

Advice and expertise is often called upon by other Occupational Therapists and health care workers based in both hospitals and in the community

The service is staffed by 4.75 WTE. It should be noted that this remains one of the highest ratio of patients to staff in the UK. In the recently published Review of Spinal Injuries Services for Health Authorities in the South West, South East, London and Eastern Regions it is recommended the ratio is one therapist per 6 – 8 patients

The Head Occupational Therapist is responsible for

- the day to day management of the National Spinal Service
- development of the Assistive Technology Service
- staff supervision and development
- clinical caseload
- caseload allocation
- administration and statistical collation
- fieldwork Educator
- line management of the Senior 1 staff within the Rehabilitation Directorate
- The Head OT is responsible to the:
  - Clinical Director of the Spinal Injury Unit
  - OT Manager (the current structure is under review and this is likely to change in the coming months)

Senior 1 x 0.75 WTE - out-patient service - is responsible for,

- assessment and treatment to the outpatient population of spinal cord injured. This service includes follow-up, annual review of needs and function and care for those re-admitted to the unit with complications associated with SCI
- overseeing OT input to satellite clinics
- patients contacting the service on the open door policy
- development and administration of out-patient service

Senior 1 x 0.5 WTE - (Hand Therapist) - is responsible for,

- co-ordination of all spinal unit upper limb assessment and treatment
- identification of patients who would benefit from or be suitable candidates for tendon transfer surgery
- Hand Service development
- supervision of the Occupational Therapy Assistant

Senior 1 (in-patients) is responsible for,

- assessment, treatment and rehabilitation of newly injured patients.
- supervision of Senior II
- fieldwork educator
- other duties as assigned by the Head OT

Senior 11 is responsible for,

- assessment, treatment and rehabilitation of newly injured patients.
- other duties as assigned by the Head OT
- fieldwork educator

Occupational Therapy Assistance x 0.5 WTE is responsible for

- carrying out assigned patient treatment under the direction of a qualified member of staff
- various clerical, administration and other duties as assigned

All team members provide training for professional under-graduate and postgraduate training to students from various health care professions.

### **STATISTICS FOR April 2004 – Mar 2005**

	<b>Units</b>	<b>New</b>	<b>Returns</b>
<b>In-patients</b>	<b>9355</b>	<b>168</b>	<b>2961</b>
<b>Out-patients</b>	<b>1852</b>	<b>374</b>	<b>353</b>
<b>Hands (In- pt)</b>	<b>4114</b>	<b>N/A</b>	<b>3107</b>
<b>Hands (Out-pt)</b>	<b>444</b>	<b>17</b>	<b>157</b>
<b>Home visits</b>	<b>951</b>	<b>N/A</b>	<b>126</b>
<b>Total</b>	<b>16716</b>	<b>559</b>	<b>6704</b>

### **STATISTICS FOR April 2005 – Mar 2006**

	<b>Units</b>	<b>New</b>	<b>Returns</b>
<b>In-patients</b>	<b>9339</b>	<b>156</b>	<b>2702</b>
<b>Out-patients</b>	<b>1795</b>	<b>293</b>	<b>331</b>
<b>Hands (In- pt)</b>	<b>2578</b>	<b>N/A</b>	<b>1636</b>
<b>Hands (Out-pt)</b>	<b>425</b>	<b>27</b>	<b>132</b>
<b>Home visits</b>	<b>838</b>	<b>N/A</b>	<b>136</b>
<b>Total</b>	<b>14975</b>	<b>567</b>	<b>4886</b>

### **Each unit relates to 15 minutes of time staff spend in patient related activity**

For in-patients, the number of patient sessions has remained consistent whilst, as was the case last year, the amount of time spent with patients has increased. It is felt that this is a reflection of the complex case mix over the last year.

The hand therapy stats are down for inpatients. This can directly be attributed to the OT assistant being on long-term sick leave and then having the post vacant for several months. This post is now filled. The number of hand therapy outpatients continues to increase. This has been possible due to the maintenance of the increased hours for the Sen. 1 hand therapist.

Outpatients statistics demonstrate fewer new patients seen but more time spent with returned patients. This is reflective of the external projects the out-patient therapist has been involved in e.g. Cochrane review and establishment of the LUTM project

Unfortunately one member of staff was on sick leave for 6 months in the last year. Other than this member of staff the total sickness absence for the year was 5 days.

## **TEACHING AND TRAINING ACTIVITY**

At the National Spinal Injury Unit all qualified staff are heavily involved in education and training of patients, relatives, carers, other health care professionals, lecturing at workshops/courses and to OT and PT students at the universities

Lectures/presentations this year:

- Bio-engineering students
- Edinburgh therapy students
- Prosthetic students
- SHO – FIM training, posture and seating, role of OT with Spinal Injured, splinting
- New nursing staff – outcome potentials
- Co-ordination of OT in-house in-service training sessions on various topics
- Patient/relatives education programme

### **Courses attended by staff:**

- All staff have attended a variety of in-Trust courses including Deaf Awareness, Conflict management, Food Handling, MICRSOSOFT Excel and Access and Supervision.
- ECU course at Strathclyde University
- Mobility 2005 International Conference , Essex
- Lycra splinting

## **CLINICAL GOVERNANCE ACTIVITY**

- OT is represented at each spinal unit Clinical Governance meeting. Presented outcome on cause of skin mark, one month audit, to OT service clinical effectiveness group
- The OT Journal Club is now well established and has developed into a Research and Development group, giving the opportunity for each of the OT spinal unit staff to feedback on research/audit or other clinical effectiveness projects they are involved in. This offers peer support and opportunity for brainstorming and developing ideas.
- Literature review completed on Life Skills Groups in spinal rehabilitation. Data is being used to develop proposal for development of a pilot group in the unit in collaboration with Psychologist
- Case study underway for use of FES in upper limb in both complete and incomplete injured
- As with all OT departments all staff have annual review of their Personal/Professional Development Plan. This reviews their strengths, objectives and training needs.
- All staff have full access to the library facilities here and at GCU.



- All are encouraged to attend the OT in-service programme.
- All staff have access to the training budget as per department policy.
- There are bi-annual Spinal Unit OT and PT Heads of Department meetings where the Heads of the UK Spinal Units meet to discuss issues related to service provision and development. Every attempt is made to attend these.
- Staff are encouraged to attend the annual MASCIP and Guttman lectures which are held in one of the spinal units, on rotation. Due to staffing levels only one member of staff can attend and this depends on costs.

#### **ACHIEVEMENTS/DEVELOPMENTS**

- In collaboration with physiotherapy and key researcher and with support of the unit Director, attained ethical approval for National Wheelchair Survey project to be undertaken in Scotland
- Project with Scottish Wheelchair and seating group continues regarding use of VAS for postural management. Outcomes due to be finalized for publication in June 2006. If outcome favourable, consideration will be given to using this within the spinal unit
- Co-ordinated use of FSA pressure monitor with research project through Glasgow University and London College due to be completed at the end of May 2006. Findings to be present in the spinal unit in June 2006
- Use of LUTM programme now established in the outpatient department. This records and measures changes in pressure sores. Plans in place to train ward staff to allow roll-out of use to include in-patients
- Completed audit of cause of any skin lesion developed in the unit over a one month period. Causes were then analysed and all staff asked to identify any marks that were potentially preventable and action recommended to prevent them in the future. It is proposed that this will instruct a program of staff awareness sessions. Following this there will be a re-audit. Outcomes to date have been presented at both the Occupational Therapy and Spinal Unit Clinical Effectiveness Groups
- Continued work with Cochrane review entitled "Educational Interventions for Health Care Professionals to prevent Pressure Ulcers". Title has been accepted and literature review complete
- Attended UK spinal units' Seating and Posture Meeting
- Working with ASPIRE charity and Margaret Blackwood Housing Association with a view to a property being adapted for use as an interim housing solution for patients awaiting alterations and/or re-housing. It is hoped this will reduce patient's hospital stay
- Hosted Bi-annual Spinal Units OT/PT heads of Department Meeting

- Invited to comment on Adaptations Strategy for Glasgow Housing Association
- Involved in developing Training Strategy for Glasgow's Joint Equipment Store
- All staff have been involved in the review of job descriptions for AFC and are currently involved in developing outlines for KSF
- Developed and implemented guidelines for establishing the use of SOAP notes as the standardized method of documentation for the OT service
- OT was an integral part of the team involved in Scotland's first Bicep – triceps tendon transfer
- Literature search initiated investigating housing adaptations/alterations in relation to spinal injured patients needs
- Attended national meeting of ECU providers, Falkirk
- Involved in development of competencies for Occupational Therapy Assistants
- Following audit, a review of the OT standards in Spinal Cord Injury continues in collaboration with the other UK spinal units
- ECU use on the ward has been established. This has allowed increased independence and quality of life for patients with the highest level of injury
- Collation of literature related to ECU/assistive technology and outcome measures is ongoing with new publications and developments
- Following a successful application the NHS Lottery fund a new Electronic Page Turner and voice operated ECU have recently been received. Training re: use of the voice operated ECU is pending. It is proposed this will be used for both patient training and potentially for ward use.
- Active member of Scottish Occupational Therapy Special Interest Group in Work and Productivity in Practice/ Employment Issues
- Following Spinal Unit Hand Therapist Meeting collated data for staff training pack. This will be available for use in all spinal units in the UK
  - Supported 8 patient team to inter-spinal unit games at Stoke Mandeville
  - Patients taken to both Independent Living exhibition and Mobility roadshow
  - OT policies and procedures manual revised and completely updated. Review due September 2006
  - There has been a general increase in the number and types of patient outings

## **OCCUPATIONAL THERAPY FUTURE PLAN 2005-2006**

- Develop proposal for audit of incidence of return to work post spinal cord Injury and identify limiting factors.
- Splinting – a considerable amount of staff time is spent on manufacturing splints. It is proposed that a trial of pre-fabricated splints be carried out. This potentially will ease the pressure of work on the hand therapist. This has a cost implication for the appliances budget
- Integrate electronic page-turner and voice operated ECU into SMART facility. Maintain up-to-date SMART facility and training resource
- Pilot Life Skills Group
- RE-audit Cause of Skin Mark audit
- Submit paper for publication based case study into use of FES in upper limb function in tetraplegia

### **ADDITIONAL CONSIDERATIONS FOR FUTURE**

#### **1. Hand Therapy hours**

In the last year the number of hours for the hand therapist has been temporarily increased from 18 to 25 hours. This has proven to be invaluable in maintaining a quality service. The impact of the increased hours can be seen in the figures below

- Number of days waiting for splint – on average decreased by 4.5 days
- “Quickest seen” time reduced from 10 days to 2 days.
- Waiting times for Outpatients reduced from two weeks to one week.
- Patients are re-assessed on a more regular basis.
- Numbers of patient’s sessions have increased.
- With the additional hours available there has been opportunity to be involve in clinical effectiveness projects e.g.:
  - Established data base for evidence base question for research project
  - Review of documentation for goal setting and review
  - Establish network of OTs working in the field with a view to establishing guidelines/evidence base work/educational opportunities etc

It is hoped that consideration can be given to making these hours permanent

## 2. Pressure Monitor

The current pressure monitor was gifted by a patient in 1999 and has become a valuable tool for assessment, treatment analysis and education. It is now nearing the end of its life expectancy and we are in the process of trying to identify an alternative. If this equipment is to be replaced it is estimated that there will be a potential cost of approximately £15,000.

## 3. Out patient service

As with previous years, demands on out patient services continue. Interventions are reactive and little time can be invested in re-evaluating the aging population in a planned way in an attempt to prevent deterioration in function and enhance quality of life.

Due to demand there is an inconsistency of service provision between patients that are seen here and at outreach clinics, which the OT, currently cannot always attend. Conversely, when the therapist is at outreach clinics or on visits, patients are not seen at the unit's outpatient clinic at the time of attendance. They therefore do not receive the standard review. If they require the input of an OT, they either need to return to the clinic again, or a home visit may be required. This creates a backlog.

It should also be noted that, as the therapist's expertise is increasingly acknowledged, demands for input into various projects continue to increase. This service and its demands will continue to be monitored

## 3. Halfway house

This facility is well used by patients throughout the length of stay as an integral part of the rehabilitation process. The opportunity to practice skills, allow carers to develop confidence and skills and to facilitate community integration is invaluable. With the future building of a new hospital facility the halfway house is scheduled for demolition. Plans are being reviewed with a view to replacing this valuable resource. Occupational Therapy is delighted to be involved in the review of plans

## **APPENDIX C      MOMENTUM (Rehab Scotland)**

Mr Geoff Orry is on sick leave.

Momentum had a successful year and continued to provide a comprehensive inpatient and outreach service.

Mr Orry has been instrumental in developing plans for an assistive technology development in Edenhall Ward.

Abbey Life has donated £ 20,000 to Momentum to support this development the remainder of the money coming from endowment funds.

Lottery Funding of £10,000 has been awarded to support and investigate outreach services.

## **APPENDIX D SPINAL INJURIES SCOTLAND**

### **Report on the work of SIS at the QENSIU from 1<sup>st</sup> April 2005 to 31<sup>st</sup> March 2006.**

SIS has continued to increase the level of services offered within the unit to what is now virtually a daily presence there. We routinely respond to requests from staff, patients and relatives.

Visits range from general 'ward rounds' where as many patients and relatives as possible are spoken to, to specific requests from individuals for advice on a wide variety of topics, to counselling newly injured patients.

One particular service, which is often a lifeline to newly injured patients', is our Legal and Welfare advice, which is available free to SIS members. Premier Personal Injury law firm, Digby Brown, offers this no-obligation assistance. The nature of spinal cord injury often dictates that some litigation may be involved and for people to be visited by an empathetic advisor who can give them best advice can go a long way to allay some of the anxiety in a very stressful situation. In addition to legal advice, welfare rights are also an important aspect of life post-injury; again, through our advisors, SIS can provide a high standard of welfare and benefit information. During this past year 17 patients used our Legal advice service and a further 23 were assisted with independent welfare guidance.

For some years now SIS has, at the request of the clinical director, had an input at the outreach clinics around the country. We endeavour to have a presence at every one either by office-based staff or suitably trained local volunteers. The charity has found this to be an invaluable means of getting in touch with the membership in more outlying parts of Scotland and as a means of reaching and recruiting spinal cord injured people who we might otherwise never have any contact with particularly if they were not treated in the QENSIU.

SIS has continued its role as part of the Joint Volunteer Group (JVG) This union of the voluntary service groups within the unit aims to serve the purpose of alleviating the tedium associated with long stays in hospital that the injury necessitates. The JVG hosts a number of themed evenings within the unit throughout the year, providing entertainment, quizzes, raffles and food. These offer patients an initial experience of socialising outside of hospital routine again, which can be pivotal in alleviating fears of doing so under their new circumstances post-discharge. They also bring patients and relatives together and creates a good atmosphere.

A new programme, borne of personal experience by SIS staff members, is that of relative's evenings. Discharged patients and their relatives who have readjusted into their own home and community life post injury host these quarterly initiatives.

These volunteers meet with the current inpatients and their relatives; allowing those who are at an early stage in their rehabilitation to see that life continues following SCI. To realise from peer example that one can become a parent, return to work, higher education or become active in sport is an invaluable aid and a positive reinforcement for those currently coming to terms with life after their spinal injury. The feedback from the evening's held so far has been extremely positive.

In addition and as a logical follow-up to our presence at outreach clinics, we now have a presence 2-3 days weekly at the spinal outpatients department. This has already borne fruit with close to 200 people met and made aware of the role of SIS and around 30 new members having also been recruited. The final part of this project is to establish a

presence at the weekly clinic held in Edinburgh and once that is in place, we can truly say that we serve the entire country at a local as well as national basis.

Other roles fulfilled by the charity within the QENSIU include three occasions of training given to health professionals (Doctors, Medical Students and Physiotherapists). Patient and relative's education events also took place on seven occasions, taking the form of presentations, or the previously mentioned relative's evenings. A further six miscellaneous events, involving outside agencies at the spinal unit; have been jointly facilitated by SIS and the QENSIU.

In conclusion, SIS has been able to retain and in some regards expand its service provision to people with spinal cord injury in Scotland. This has been achieved in no small part through the symbiotic relationship with the staff at the spinal injuries unit. We strive to cultivate and continue this very positive relationship for the ultimate aim of being available to help improve the situation of everyone in Scotland who lives with the devastating effects of Spinal Cord Injury.

## **APPENDIX E      PSYCHOLOGY**

### **SERVICE AIM**

The purpose of the Psychology Department at QENSIU is to provide assessment, support, consultation and intervention to patients, their families and staff to support the rehabilitation of those with a spinal cord injury.

### **TASKS OF THE DEPARTMENT**

Psychology can assist in determining to what degree a patient understands his or her diagnosis and prognosis. This contributes to the participation of the patient in goal planning and rehabilitation. Secondly comprehensive and timely assessment will assist in the identification of problems and the provision of intervention, further contributing to rehabilitation. The range of problems that may limit rehabilitation are many; adjustment, coping or skills deficits, motivation, anxiety, depression, serious pre-existing mental illness, drug and alcohol problems, or cognitive difficulties or social and relationship issues. Thirdly while the department's focus is primarily on the individual an awareness of the larger systems the patient inhabits is crucial to appropriate psychological care. Consequently intervention and education with family and consultation with staff are important components of the psychology care that is offered at QENSIU.

### **STAFFING**

The post of Clinical Psychologist at QENSIU has been vacant since late 2004. In January 2006, a full time 'A' grade Clinical Psychologist, Mr. James Anderson, was appointed. After a period of orientation patient referrals were accepted from late January.

Mr. Anderson was trained at Canterbury University, New Zealand. He relocated to Scotland in 2002 and worked in an adult mental health service. This included interventions for those with physical health and chronic pain problems. He holds full UK registration with the British Psychological Society.

### **ACHIEVEMENTS/DEVELOPMENTS**

#### **Orientation**

The provision of a psychology service has been welcomed at QENSIU and strong working relationships with inter-disciplinary staff have been formed.

#### **Teaching and Training**

A short series of lectures to nursing staff on management and intervention with aggressive or distressed patients has been held. Close links have been forged with senior colleagues in the other departments at QENSIU and teaching sessions were run for both students and staff in those departments. There is attendance at, and presentation to, in-service hospital training and education sessions.

#### **Audit/Research**

As part of good clinical practice and to support the profile of psychology within QENSIU an audit project has been initiated. This project will audit the policy of regular psychological review of all new spinal injured patients. Review will occur at three points in time (within a week of admission to the Unit, on transfer to Philipshill Ward and prior to discharge). As patients move towards discharge an additional component of the audit will be to seek formal feedback from patients on the Psychology Service.



## Clinical Links

Contacts have been made with senior psychology colleagues within the hospital and in other specialist spinal injury units in the United Kingdom. Contacts have been made with University colleagues that will hopefully contribute to psychological research.

## CLINICAL ACTIVITY

During the three months of February to April 2006 every new spinal injured patient, upon his or her admission has been introduced to the psychology service. Additionally non-spinal cord injured patients or re-admitted former patients have been reviewed at medical staff's request. Currently there is no out-patient clinical psychology service offered. Table 1 presents individual sessions for the three month period ending the 31<sup>st</sup> of April 2006. Each session represents approximately 30mins of time.

*Table 1: Patients Seen – 1<sup>st</sup> of February 2006- 31<sup>st</sup> of April 2006*

	New Contacts	Returns
In-Patients	38	107
Family/Spouse Sessions	7	3
Cognitive Assessments	5	12

### *Other Clinical Activity*

Consultation, advice to staff and participation in goal planning meetings occur regularly and constitutes part of core clinical activity.

## DEVELOPMENT GOALS FOR 2006-2007

- To continue and improve clinical work with patients and to develop more active input with patient's families.
- To continue the audit of frequency of review and time to review for new patients. To formally examine patient feedback on the psychology service.
- For the current teaching and professional development activities to continue. This will include visits to other spinal units in the United Kingdom.
- Active outreach to community psychology services will be a focus of the next year. It is hoped that liaison and referral will support the transition to the community for those with a need for ongoing psychological intervention.
- To investigate and pilot psychological groups within the unit. Options identified include pain management, alcohol and drug or life skills/adjustment to community groups.
- To build a viable and relevant psychological research programme within the unit. Firstly this will involve the appropriate collection and auditing of clinical data, secondly by the identification of appropriate research questions and thirdly by identifying contributions that can be made to the existing QENSIU research programme.
- To formalise administration and data collection procedures.

## **APPENDIX F      SOCIAL SERVICES**

### **INTRODUCTION**

Social Work Services within the Southern General Hospital comprise of four teams each managed by a Practice Team Leader. Two teams work primarily with patients/service users in the Department of Medicine for the Elderly, a third team works with patients/service users who have an acquired brain injury and a fourth team, managed by myself, works with patients who are under sixty five years of age and their families. Referrals can and do come from many wards within the hospital but it is this fourth team that works with patients referred from the Spinal Unit. Occasionally, in line with the need to adhere to the Joint Discharge Protocol timescales, referral rate and developmental learning, other staff will be asked to complete care needs assessments and compile care plans for these patients. It is intended that by using a smaller group of staff, as much as possible, to work with patients/service users and multi-disciplinary staff in the Spinal Unit, that professional relationships can more easily be established and maintained, and that an understanding of the social work role in the unit is enhanced through more frequent direct contact and communication. This approach works alongside the more formal communication mechanisms.

#### **The team comprises:**

Sheila Bowyer – Social Worker  
Jean Macdonald – Social Worker  
Yvonne Smith – Social Worker  
Ann Ward – Social Worker  
Val Stewart – Social Care Worker  
Sheena Rowlinson – Practice Team Leader.

#### **Social Work Services remit :**

Social work services staff members are required, where necessary, to complete a holistic assessment of the social care needs of any patient/ service user referred. The initial stage of assessment, following referral, will ascertain through direct contact with the patient, family members if available and involved, and health/medical staff, whether short term practical intervention and assistance is sufficient or whether a fuller examination and assessment of the patient's social care needs is required. The primary objective of a full assessment is to produce a comprehensive list of care needs to be addressed through the identification of resources which, if put in place for the patient, will enable him/her to be safely discharged from hospital whilst at the same time maximise his/her independence and quality of life. Central to this process is the active involvement of the patient/service user.

During the assessment process it is expected that our staff will adhere to agreed protocols and timescales and reasons will be given to colleagues if this is not possible. Attendance at formal meetings with multi disciplinary staff and patients to progress the assessment and rehabilitation of the patient/service user is expected and regular communication with our health and therapy colleagues in the Spinal Unit is essential to our assessment process. If and when it becomes clear that a commissioned care package will be required because of very complex care needs staff are expected to advise, liaise and progress the identification of funding resources with our commissioning team colleagues.

Following completion of an assessment which has incorporated information regarding the patient's social, physical, health, medical, psychological/psychiatric care needs a care plan is drawn up that clearly sets out what needs to be implemented to effect a safe discharge from hospital. Because the Spinal Unit is a national resource social work staff are required to complete assessments and care plans for patients who live in some other local authorities. In such cases it is expected that Social Work staff here at the Southern General Hospital will make contact with these other authorities to discuss the ongoing assessment, the need/or not for active care management following discharge and the need for funding of care packages. It is the clear responsibility of the assessing social work staff member to draw up an accurate care plan from his/her assessment so that an accurate costing of a care package can be made. Ongoing and regular communication is maintained with Social Work Services in other local authorities throughout the assessment process.

The accompanying statistical information outlines the level of demand for our services over the past year. One hundred and thirteen referrals were received from the Spinal Unit. All were screened and initial assessments completed. Fifty three initial assessments brought an outcome of no further action required, after advice and guidance were given and/or short term intervention was made to address practical queries and issues such as, for example, income maximisation, clarification of employment issues and housing issues. In total sixty full assessments of needs were completed by our staff and other local authority staff, care plans drawn up and care packages put in place to enable safe discharges home. Care packages varied from support via Enhanced Home Care/ Home Care from Direct and Care Services or equivalent in other local authorities, to more complex care packages which have required local authority funding and additional funding from alternative sources such as the Independent Living Fund.

### Statistical Information April 2005 - March 2006

Total Referrals	Total "No further action" referrals	Allocation for Assessment within Southern General Hospital	Allocated for Assessment outwith Southern General Hospital
113	53	39	21

Outcome of assessments within Southern General Hospital	
Home Care Package	24
Residential Care	0
Nursing Home Care	1
Other Assessment	0
Outstanding	4
No Assessment Required	10
<b>TOTAL</b>	<b>39</b>

**BREAKDOWN OF TOTAL NUMBER OF REFERRALS 05-06**

<b>Patient Locality</b>	<b>NFA</b>	<b>ASSESSMENTS</b>	<b>TOTAL</b>
Aberdeen	0	1	1
Aberdeenshire	0	2	2
Argyll & Bute	3	1	4
Borders	3	1	4
Dumfries & Galloway	3	4	7
Dundee	0	1	1
E/Dunbartonshire	1	2	3
E/Renfrewshire	2	2	4
E/Lothian	0	1	1
Edinburgh	1	3	4
Falkirk	0	1	1
Fife	0	1	1
Glasgow	16	14	30
Highland	5	5	10
Inverclyde	0	1	1
Lancashire	1	0	1
Midlothian	1	1	2
N/Ayrshire	3	1	4
N/Lanarkshire	2	8	10
Newcastle	1	0	1
Orkney	0	1	1
Perth & Kinross	3	0	3
S/Ayrshire	0	1	1
S/Lanarkshire	5	6	11
Stirling	1	1	2
W/Lothian	0	1	1
Western Isles	2	0	2
<b>TOTAL</b>	<b>53</b>	<b>60</b>	<b>113</b>

Sheena Rowlinson  
Practice Team Leader  
Social Work Services  
Southern General Hospital

## APPENDIX G: Raw Data

### DA1: New Admissions

	Admissions
<b>1992 - 2000</b>	<b>1148</b>
2000/2001	199
2001/2002	164
2002/2003	165
2003/2004	201
2004/2005	144
<b>2005/2006</b>	<b>153</b>
<b>Total 1992-2006</b>	<b>2174</b>

### DA2: New Admissions by Case-mix Complexity

Admissions	I	II	III	IV	Total
<b>1992/2000</b>	<b>76</b>	<b>190</b>	<b>287</b>	<b>595</b>	<b>1148</b>
2000/2001	13	24	40	122	199
2001/2002	11	24	30	99	164
2002/2003	14	23	32	96	165
2003/2004	8	28	28	137	201
2004/2005	13	28	28	75	144
<b>2005/2006</b>	<b>7</b>	<b>29</b>	<b>37</b>	<b>80</b>	<b>153</b>
<b>Total</b>	<b>142</b>	<b>346</b>	<b>482</b>	<b>1204</b>	<b>2174</b>

### DA3: New Admissions by Health Board of Residence

	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Total
Argyll & Clyde	28	12	18	27	9	<b>13</b>	296
Ayrshire & Arran	20	16	17	21	13	<b>13</b>	187
Borders	0	3	2	2	2	<b>3</b>	24
Dumfries & Galloway	7	10	10	13	9	<b>11</b>	114
Fife	2	7	4	6	4	<b>2</b>	51
Forth Valley	17	9	4	12	6	<b>6</b>	121
Grampian	8	8	9	7	8	<b>5</b>	78
Greater Glasgow	47	44	47	48	37	<b>43</b>	544
Highland	6	16	6	5	9	<b>8</b>	95
Lanarkshire	25	20	23	22	22	<b>19</b>	304
Lothian	14	8	8	14	8	<b>11</b>	124
Shetland	0	1	0	0	1	<b>0</b>	5
Tayside	5	5	3	5	6	<b>5</b>	65
Orkney	0	0	0	2	0	<b>1</b>	4
Western Isles	3	2	3	5	2	<b>3</b>	42
ECR	12	2	8	9	6	<b>5</b>	91
Unknown	5	0	2	1	0	<b>2</b>	11
Overseas / Private	0	1	1	2	2	<b>3</b>	18
<b>TOTAL</b>	<b>199</b>	<b>164</b>	<b>165</b>	<b>201</b>	<b>144</b>	<b>153</b>	<b>2174</b>

#### DA4: Admissions by Health Board compared with population size

	1992/2005	2005/2006	Total	% to Total	Population Size	% to Total
Argyll & Clyde	283	13	296	8.5%	430500	8.4
Ayrshire & Arran	174	13	187	8.5%	376500	7.3
Borders	21	3	24	2%	106100	2.1
Dumfries & Galloway	103	11	114	7.2%	147600	2.9
Fife	49	2	51	1.3%	349300	6.8
Forth Valley	115	6	121	3.9%	274600	5.4
Grampian	73	5	78	3.3%	531200	10.4
GGHB	501	43	544	28%	909600	17.7
Highland	87	8	95	5.2%	208700	4.1
Lanarkshire	285	19	304	12.4%	560800	10.9
Lothian	113	11	124	7.2%	767800	15.0
Shetland	5	0	5	0%	23020	0.4
Tayside	60	5	65	3.3%	393600	7.7
Orkney	3	1	4	0.6%	19800	0.4
Western Isles	39	3	42	2%	28880	0.6
ECR	86	5	91	3.3%		
Overseas / Private	15	3	18	2%		
Unknown	9	2	11	1.3%		
<b>TOTAL</b>	<b>2021</b>	<b>153</b>	<b>2174</b>		<b>5128000</b>	

#### DA5: Admissions by Degree of Injury

	805	806	952	Other	Total
1992-2000	442	324	286	96	1148
2000/2001	100	60	26	13	199
2001/2002	76	62	23	3	164
2002/2003	71	58	36	0	165
2003/2004	112	49	35	5	201
2004/2005	77	47	19	1	144
2005/2006	54	71	27	1	153
<b>Total</b>	<b>932</b>	<b>671</b>	<b>452</b>	<b>119</b>	<b>2174</b>

#### DA6: Discharges by Degree of Injury

Discharges	805	806	952	Other	Total
1992-2000	433	300	278	95	1106
2000/2001	99	52	25	13	189
2001/2002	81	51	22	3	157
2002/2003	70	68	34	1	173
2003/2004	94	56	32	5	187
2004/2005	82	34	24	1	141
2005/2006	58	69	23	1	151
<b>Total</b>	<b>917</b>	<b>630</b>	<b>438</b>	<b>119</b>	<b>2104</b>

**DA7: Admissions and Discharges for Non Traumatic Spinal Cord Injury  
(ICD 9 Code 952) by aetiology**

<b><u>Admissions</u></b>	<b>1998/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>	<b>2002/ 2003</b>	<b>2003/ 2004</b>	<b>2004/ 2005</b>	<b>2005/ 2006</b>
Central Cord Lesion	37	12	11	23	24	12	14
Infection	4	4	4	1	2	1	1
Vascular	15	3	1	4	1	0	3
Tumour	5	0	1	1	0	0	1
Surgical	0	0	0	0	0	3	3
Non-specific Lumbar Lesions	0	2	0	3	3	0	0
Penetrating Wounds gun/stab	0	0	2	4	3	0	1
Other	9	4	4	0	2	3	4
<b>Total</b>	<b>70</b>	<b>25</b>	<b>23</b>	<b>36</b>	<b>35</b>	<b>19</b>	<b>27</b>

<b><u>Discharges</u></b>	<b>1998/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>	<b>2002/ 2003</b>	<b>2003/ 2004</b>	<b>2004/ 2005</b>	<b>2005/ 2006</b>
Central Cord Lesion	34	16	10	23	23	18	12
Infection	5	1	3	2	2	1	0
Vascular	15	5	3	4	2	2	4
Tumour	4	0	0	1	1	0	1
Surgical	1	0	0	0	0	2	1
Non-specific Lumbar Lesions	3	1	0	0	3	0	0
Penetrating Wounds gun/stab	3	1	2	4	1	1	0
Other	7	1	4	0	0	0	5
<b>Total</b>	<b>72</b>	<b>25</b>	<b>22</b>	<b>34</b>	<b>32</b>	<b>24</b>	<b>23</b>

**DA8: Daycase attendances by Health Board**

	<b>1994- 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>	<b>2002/ 2003</b>	<b>2003/ 2004</b>	<b>2004/ 2005</b>	<b>2005/ 2006</b>	<b>Total</b>
Argyll & Clyde	351	59	94	65	93	100	78	840
Ayrshire & Arran	201	54	84	62	43	46	35	525
Borders	8	0	0	0	0	3	9	20
Dumfries & Galloway	21	2	8	8	12	4	2	57
Fife	31	16	4	4	6	11	9	81
Forth Valley	69	11	42	10	25	35	34	226
Grampian	11	2	2	0	1	0	0	16
Greater Glasgow	850	160	164	195	240	350	275	2234
Highland	25	0	2	3	0	9	9	48
Lanarkshire	565	177	138	125	100	128	97	1330
Lothian	91	11	15	16	48	35	28	244
Shetland	0	0	0	0	0	0	0	0
Tayside	32	2	1	2	17	12	13	79
Orkney	0	0	0	0	0	0	0	0
Western Isles	1	0	1	3	2	3	1	11
ECR	6	1	1	2	10	10	0	30
<b>Total</b>	<b>2262</b>	<b>495</b>	<b>556</b>	<b>495</b>	<b>597</b>	<b>746</b>	<b>590</b>	<b>5741</b>

**DA9 : Admissions by age group**

<b>Males</b>										
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	>90	Total
<b>1992-2000</b>	87	181	156	120	125	80	47	12	0	<b>808</b>
<b>2000/2001</b>	17	30	23	22	18	15	9	4	0	<b>138</b>
<b>2001/2002</b>	14	22	32	20	17	19	5	2	0	<b>131</b>
<b>2002/2003</b>	6	20	25	20	16	15	12	2	0	<b>116</b>
<b>2003/2004</b>	10	20	23	16	18	26	13	0	1	<b>127</b>
<b>2004/2005</b>	9	20	19	16	17	17	7	2	1	<b>108</b>
<b>2005/2006</b>	11	15	13	17	20	14	8	5	0	<b>103</b>
<b>Total</b>	<b>154</b>	<b>308</b>	<b>291</b>	<b>231</b>	<b>231</b>	<b>186</b>	<b>101</b>	<b>27</b>	<b>2</b>	<b>1531</b>
<b>Females</b>										
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	>90	Total
<b>1992-2000</b>	47	55	63	44	42	36	33	16	4	<b>340</b>
<b>2000/2001</b>	1	13	9	11	8	6	5	7	1	<b>61</b>
<b>2001/2002</b>	4	8	5	4	0	6	1	4	1	<b>33</b>
<b>2002/2003</b>	4	9	4	9	8	4	6	4	1	<b>49</b>
<b>2003/2004</b>	3	17	10	17	6	11	7	3	0	<b>74</b>
<b>2004/2005</b>	4	5	3	4	10	5	5	0	0	<b>36</b>
<b>2005/2006</b>	8	6	7	10	7	5	6	1	0	<b>50</b>
<b>Total</b>	<b>71</b>	<b>113</b>	<b>101</b>	<b>99</b>	<b>81</b>	<b>73</b>	<b>63</b>	<b>35</b>	<b>7</b>	<b>643</b>
<b>All Admissions</b>										
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	>90	Total
<b>1992-2000</b>	134	236	219	164	167	116	80	28	4	<b>1148</b>
<b>2000/2001</b>	18	43	32	33	26	21	14	11	1	<b>199</b>
<b>2001/2002</b>	18	30	37	24	17	25	6	6	1	<b>164</b>
<b>2002/2003</b>	10	29	29	29	24	19	18	6	1	<b>165</b>
<b>2003/2004</b>	13	37	33	33	24	37	20	3	1	<b>201</b>
<b>2004/2005</b>	13	25	22	20	27	22	12	2	1	<b>144</b>
<b>2005/2006</b>	19	21	20	27	27	19	14	6	0	<b>153</b>
<b>Total</b>	<b>225</b>	<b>421</b>	<b>392</b>	<b>330</b>	<b>312</b>	<b>259</b>	<b>164</b>	<b>62</b>	<b>9</b>	<b>2174</b>

**DA 10: Age & Sex of New Patients by Category of Injury  
Female Patients 2005/2006**

<b>Casemix</b>	<b>No. of patients</b>	<b>Mean Age</b>	<b>Range of Ages</b>
I	2	44	16-71
II	7	52	31-88
III	10	45	19-73
IV	31	41	13-78
<b>Females</b>	<b>50</b>	<b>43</b>	<b>13-88</b>



**DA 11: Age & Sex of New Patients by Category of Injury  
Male Patients 2005/2006**

Casemix	No. of patients	Mean Age	Range of Ages
I	5	48	24-71
II	22	48	15-88
III	27	47	17-84
IV	49	46	17-83
<b>Males</b>	<b>103</b>	<b>47</b>	<b>15-88</b>

**DA 12: Age & Sex of New Patients by Category of Injury  
All Patients 2005/2006**

Casemix	No. of patients	Mean Age	Range of Ages
I	7	47	15-71
II	29	49	15-88
III	37	45	17-84
IV	80	44	13-83
<b>All Patients</b>	<b>153</b>	<b>45</b>	<b>13-88</b>

**DA 13: Length of Stay for Traumatic Injury by level of Spinal  
Cord Lesion 2005/2006**

Casemix	No. of patients	Mean L.O.S. (days)	Range of L.O.S.
I	6	211	96-312
II	30	176	1-344
III	34	140	2-559
IV	81	22	2-169
<b>All</b>	<b>151</b>	<b>87</b>	<b>1-559</b>

**DA 14: All Discharges**

<b>1992/2000</b>	1106
<b>2000/2001</b>	189
<b>2001/2002</b>	157
<b>2002/2003</b>	173
<b>2003/2004</b>	187
<b>2004/2005</b>	141
<b>2005/2006</b>	<b>151</b>
<b>Total</b>	<b>2104</b>

### DA15: Discharges by Casemix Complexity

Discharges	I	II	III	IV	Total
1992-2000	70	171	276	589	1106
2000/2001	10	28	34	117	189
2001/2002	6	19	29	103	157
2002/2003	18	28	31	96	173
2003/2004	6	24	30	127	187
2004/2005	5	28	30	78	141
2005/2006	6	30	34	81	151
<b>Total</b>	<b>121</b>	<b>328</b>	<b>464</b>	<b>1191</b>	<b>2104</b>

### DA16: Discharges by ASIA Impairment Level & Health Board

2005/2006	A	B	C	D	E	Total
Argyll & Clyde	1	0	0	1	9	11
Ayrshire & Arran	0	1	0	2	10	13
Borders	1	0	0	1	3	5
Dumfries & Galloway	3	0	1	2	4	10
Fife	1	0	0	1	2	4
Forth Valley	2	0	3	2	2	9
Grampian	4	0	1	1	0	6
Greater Glasgow	5	1	1	18	17	42
Highland	4	0	1	4	3	12
Lanarkshire	5	0	2	6	4	17
Lothian	5	0	0	1	3	9
Overseas / Private	0	0	0	1	2	3
Shetland	0	0	0	0	0	0
Tayside	1	0	0	1	1	3
Orkney	0	0	0	1	0	1
Western Isles	0	0	0	0	2	2
ECR	0	0	0	3	1	4
Unknown	0	0	0	0	0	0
<b>TOTAL</b>	<b>32</b>	<b>2</b>	<b>9</b>	<b>45</b>	<b>63</b>	<b>151</b>

### DA17: Discharges by ASIA Impairment Level & Health Board

Discharges	A	B	C	D	E	Total
2000/2001	35	9	8	30	107	189
2001/2002	23	7	10	43	74	157
2002/2003	21	10	13	52	77	173
2003/2004	21	6	9	51	100	187
2004/2005	31	3	7	34	66	141
2005/2006	32	2	9	45	63	151

**DA18: Delay between actual and Intended date of discharge**

	<b>No. of patients discharged</b>	<b>No. of patients delayed</b>	<b>Mean delay (days)</b>	<b>Range of delay (days)</b>
2000/2001	189	27	68	1 – 877
2001/2002	157	11	19	1 – 107
2002/2003	173	8	46	2 - 212
2003/2004	187	7	52	1 - 188
2004/2005	141	0	0	N/A
<b>2005/2006</b>	<b>151</b>	<b>9</b>	<b>65</b>	<b>7 - 174</b>

**DA19: Time between accident & admission**

	<b>No.of patients</b>	<b>Mean Time (Days)</b>	<b>Range of Time</b>
2000-2001	199	163.3	0 - 12575
2001/2002	164	103	0 - 12012
2002/2003	165	62	0 - 4948
2003/2004	201	83	0 - 6596
2004/2005	144	231	0 - 11237
<b>2005/2006</b>	<b>153</b>	<b>518</b>	<b>0 -21075</b>

**DA20: Ventilated Bed Days**

		<b>No. Patients</b>	<b>Ave. Ventilated Days</b>	<b>Total Ventilated Days</b>
2000/2001	Edenhall	12	71.5	858
	RCU	10	80.9	809
2001/2002	Edenhall	19	33	643
	RCU	2	40.5	81
2002/2003	Edenhall	11	28	304
	RCU	4	102	408
2003/2004	Edenhall	17	25	427
	RCU	3	160	481
2004/2005	Edenhall	21	39	813
	RCU	4	527	567
<b>2005/2006</b>	Edenhall	<b>10</b>	<b>29</b>	<b>285</b>
	RCU	<b>1</b>	<b>365</b>	<b>365</b>

