

<b>1</b>	<b>Introduction</b>
<b>2</b>	<b>Activity</b>
<b>3</b>	<b>Waiting Times</b>
<b>4</b>	<b>Quality of Care Issues</b>
<b>5</b>	<b>Mechanism of Injury</b>
<b>6</b>	<b>Financial Report</b>
<b>7</b>	<b>Service Developments and Future Plans</b>
<b>8</b>	<b>Summary and Conclusions</b>
<b>9</b>	<b>Appendices</b>

Acknowledgements: This report is based on information gathered and analysed throughout the year by staff. Special thanks to Ana Bewick and Irene Clark for the final production.

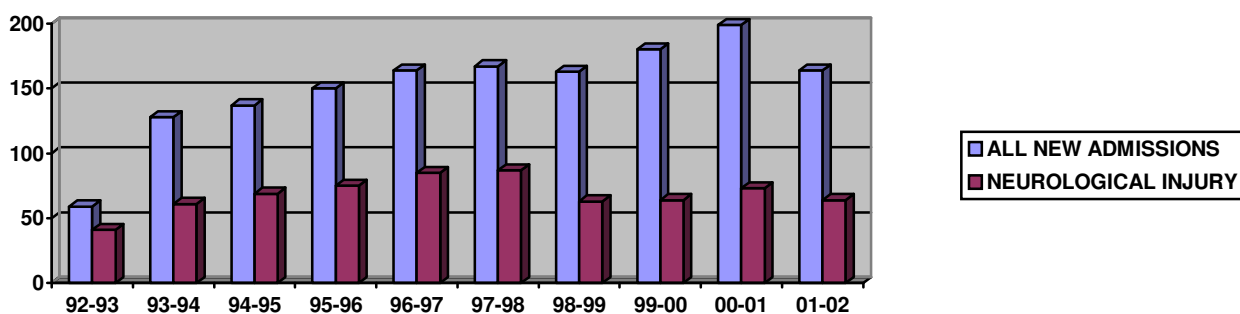
## Introduction

In 1992 the Queen Elizabeth National Spinal Injury Unit for Scotland opened at the Southern General Hospital in Glasgow. It replaced the previous services based at Edenhall Hospital Edinburgh and Philipshill Hospital In Glasgow. Funded by the National Services Division it was designed to look after the immediate care and long term follow up of any patient in Scotland with a traumatic spinal cord injury.

For many years it had been recognised that centralising spinal cord injury management could significantly improve the early management and ultimate long-term survival. Concentrating the resources enabled greater opportunities for focussed care and rehabilitation back to the community.

Significant improvements and new developments have been made to the service over ten years. These have covered all aspects of pre-hospital care, acute intervention, and rehabilitation. The ultimate aim of care being a seamless pathway of care from the time of the accident to eventual return to a home environment.

Throughout Scotland, there are over five hundred spinal fractures a year, the majority dealt with by orthopaedic surgeons in the local hospital. Approximately fifty percent are referred to the unit for advice. Patients with a neurological injury or patients with complex fractures are transferred to the unit. The referring orthopaedic surgeon manages less severely injured patients locally, often with support from medical or nursing staff from the unit.



During 1992 fifty-nine new patients were admitted to the unit. This has now risen to an average of 180 patients per year. The core activity of the unit remains the care of patients whose spinal fracture is complicated by neurological injury. Those patients may require acute surgical intervention followed by a period of ITU or HDU care before a prolonged period of rehabilitation. Rehabilitation consists of education, physiotherapy, occupational therapy, and multi-disciplinary care to maximise the full potential remaining following injury. Traditionally inpatient stays were long. Averaging almost one year for tetraplegics and six months for paraplegics. Advances in surgical stabilisation, early medical care, nursing process and approaches to rehabilitation have significantly reduced the amount of time spent in hospital.

There remains dissatisfaction with the failure to alter the natural history of spinal cord injury and is subsequent disability. The unit places great emphasis on research and teaching to improve in the clinical outcome of all patients. Partnerships in research have been forged with the University of Strathclyde, the University of Glasgow and Caledonian University. It is anticipated that this will have significant impact on patient outcomes.

## 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

The number of acute new admissions stabilised in 2001/2002 after rising in the previous three years. An increased number of patients were treated by outreach medical services or as outpatients. This was due to patient case-mix and additional pressures caused by nursing staff shortages with subsequent bed closures. The core activity of managing patients with spinal cord injury remained unaffected but an increased number of patients who had a spinal fracture but no neurological injury were managed in the referral hospital.

	1997/8	1998/9	1999/00	2000/01	2001/02	<b>TOTAL 1992-2002</b>
<b>NEW ADMISSIONS</b>	167	163	180	199	164	<b>1511</b>

Appendix DA1

Over 240 patients were referred to the unit during 2001-2002. Some were managed by local medical staff acting under advice. The Units consultant medical staff or Liaison nursing staff managed others in the referral hospital. An increasing number involved halo fixation in the referral hospital with outpatient follow up in the unit. A number of patients were managed in the Neuro-surgical and Orthopaedic wards of the Southern General Hospital because of concomitant injuries or shortage of beds. In a few cases the referrals were inappropriate for admission but could be treated as outpatients. We continue to receive referrals for advice via the Internet.

### 2.1.2. New Admissions: Case mix Complexity

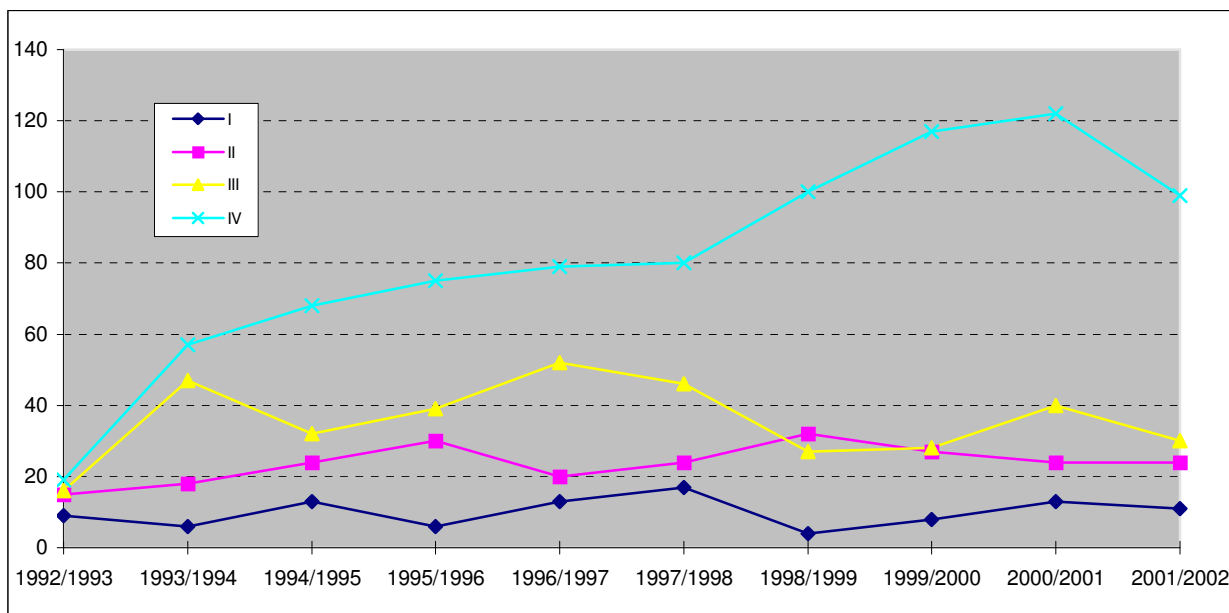
The severity of a Spinal Cord Injury is dependent on the anatomical level of and the extent of neurological damage. This has considerable bearing on the type and extent of rehabilitation each patient requires. This case mix complexity has been classified as follows.

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

Group I patients have the most severe neurological injuries and the numbers are expected to vary considerably each year. Groups II and III are the next most dependant and require significant periods of rehabilitation and long term follow-up. Group IV includes all patients

with spinal fractures and incomplete or no paralysis. This group has increased consistently since the Unit opened. In general this group can be managed conservatively or by surgical stabilisation. Conservative management requires prolonged bed rest and an increased risk of deformity or chronic mechanical back pain. The increased demand for surgical stabilisation and the increased awareness of the Unit has resulted in an increased referral pattern. Quality of care issues regarding stabilisation surgery, early mobilisation and specialised rehabilitation along with the continued development of a clinical network and the measurement of outcome indicators is likely to lead to a continued increase in the referral of Group IV patients.

### 2.1.3 New Admissions by Case-Mix Complexity



Appendix DA2

GROUP	1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	Total 1992/2002
<b>I</b>	17	4	8	13	11	<b>100</b>
<b>II</b>	24	32	27	24	24	<b>238</b>
<b>III</b>	46	27	28	40	30	<b>357</b>
<b>IV</b>	80	100	117	122	99	<b>816</b>
<b>Total</b>	<b>167</b>	<b>163</b>	<b>180</b>	<b>199</b>	<b>164</b>	<b>1511</b>

The number of high dependency Group I and Group II cases remained high. The number of patients referred with a spinal fracture but no neurological injury has continued to rise but at a slower rate than the previous three years. Fewer of those patients were admitted due to nursing shortages. Overall the throughput is seen as significantly higher than comparable spinal injury units in the UK.

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

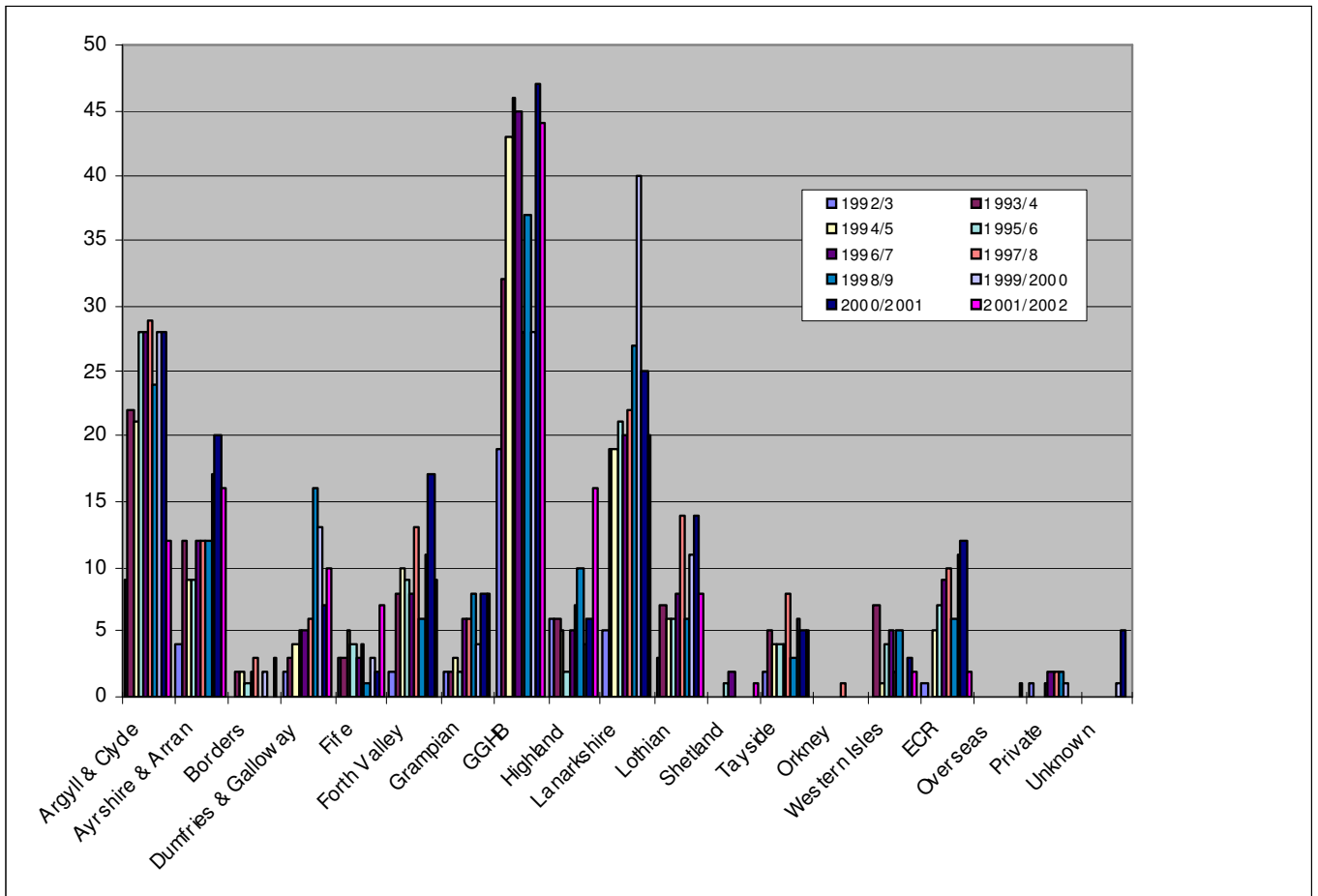
2001/2002	A	B	C	D	E	Total
Argyll & Clyde	2	1	1	3	5	12
Ayrshire & Arran	2	0	2	3	9	16
Borders	1	1	1	0	0	3
Dumfries & Galloway	2	0	0	1	7	10
Fife	2	0	2	2	1	7
Forth Valley	0	1	3	2	3	9
Grampian	3	1	1	2	1	8
Greater Glasgow	5	3	9	13	14	44
Highland	3	3	0	2	8	16
Lanarkshire	4	0	4	1	11	20
Lothian	3	2	1	1	1	8
Overseas	0	0	0	0	1	1
Shetland	0	0	0	0	1	1
Tayside	2	1	1	0	1	5
Orkney	0	0	0	0	0	0
Western Isles	0	1	0	1	0	2
ECR	0	0	0	2	0	2
Private	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
<b>TOTAL</b>	<b>29</b>	<b>14</b>	<b>25</b>	<b>33</b>	<b>63</b>	<b>164</b>

## ASIA Impairment Scale

<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

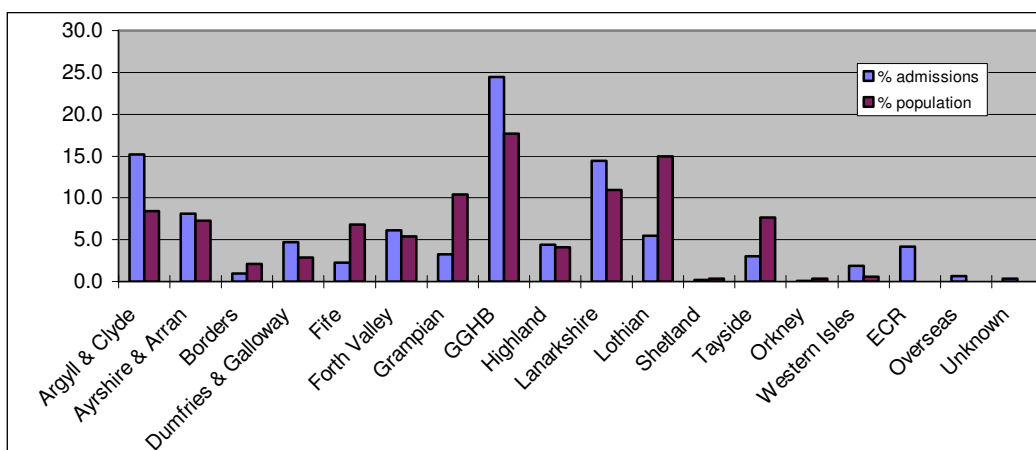
## 2.1.5 New Admissions by Health Board Of Residence

Appendix DA3



The Unit accepts patients from throughout Scotland. An increased referral pattern from Ayrshire and Arran and Highlands's health boards reflect leisure-related accidents. Patients domiciled in Scotland but who are injured abroad were repatriated when clinically indicated and recorded under their own health board.

## 2.1.6 Admissions by Health Board compared with Population Size

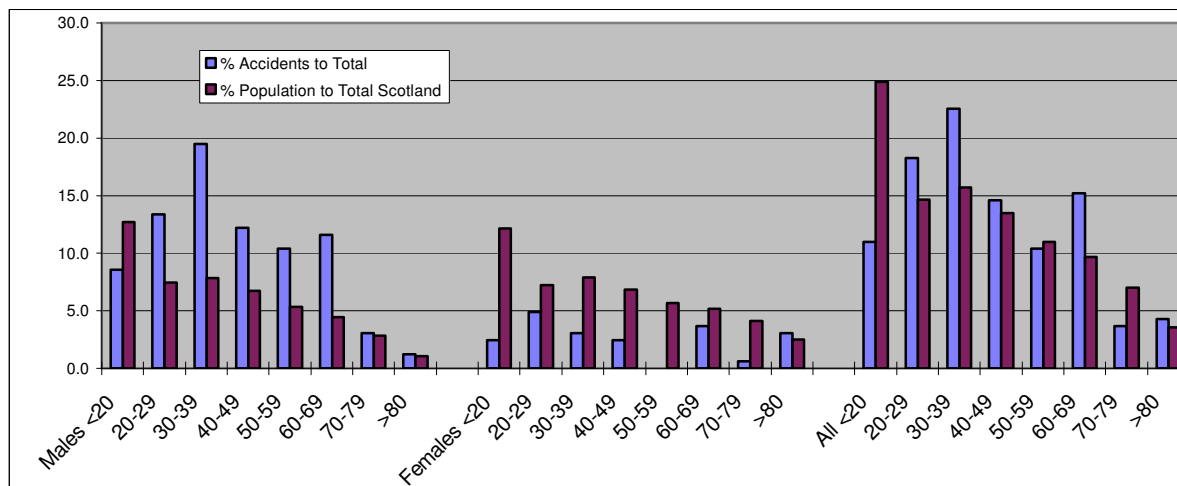


Appendix DA4

There continues to be a slight preponderance of referrals from the adjacent Health Authority of Greater Glasgow Health Board, Argyll & Clyde, Lanarkshire and Ayrshire and Arran.

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 preponderance of young males disproportionate to the population. The increase in age-related degenerative spinal fractures continues. A significant number of elderly cervical fractures are treated as outpatients and are not recorded 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.
<b>I</b>	6	228	120 - 399
<b>II</b>	19	199	3 - 456
<b>III</b>	29	145	4 - 362
<b>IV</b>	103	37	0 - 380
<b>All</b>	<b>157</b>	<b>84</b>	<b>0 - 456</b>

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. The wide variation of length of stay within each classification is indicative of the variation in the rehabilitation needs within each group. Benchmarking with other units in the United Kingdom continues to be developed but comparable figures remain unavailable.

The 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 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 in rehabilitation of the spinal injured patient can involve a significant number of in-patient 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.

There has been continued Orthopaedic and Neuro-surgical development of internal fixation devices. 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. It is probable that there is a higher rate of intervention than in other UK units. To date no comparable data is available

Over the year the orthopaedic and neuro-surgical teams carried out twenty-seven thoracolumbar fixations and eleven cervical fixations respectively.

### **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-five theatre lists were carried out over the course of the year involving fifty-eight individual procedures and ten surgical specialities. Day Case procedures carried out within the unit are recorded in a later section.

### **2.2.3 Implanted Pain Control**

Chronic pain is a significant problem for patients with a spinal cord injury. An increasingly sophisticated approach is taken to its management. One approach is the surgical implantation of reservoirs of analgesic drugs. There is a continued demand for such procedures in the long-term management of patients. Over the year nine pumps were implanted. There is continued discussion regarding funding of such implants. At present the spinal unit provides the assessment and surgical service but the cost of the implant is charged to the relevant health authority. This has worked well in the past but a number of health boards have asked that the cost should be included in the core funding. A significant problem remains over GGHB funding for such implants. The two Consultant Pain Control sessions commencing in July 2002 may significantly increase the demand for this and other surgical interventions.

## **2.3 Admissions and Discharges by Degree of Injury**

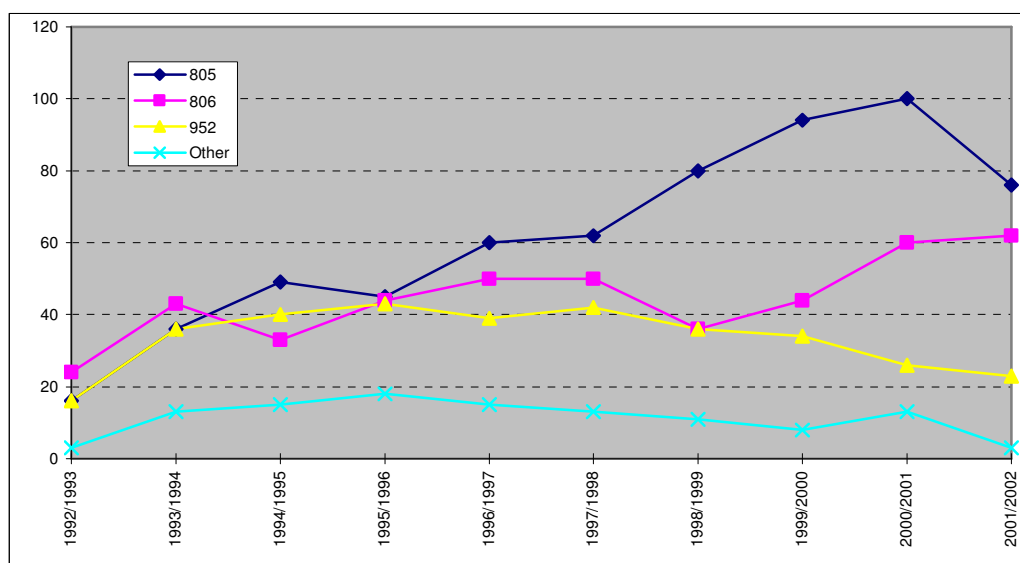


The degree of injury is dependent on the type and effect of the injury. A non-traumatic spinal cord injury may be more serious in terms of outcome and dependency than a traumatic lesion with a major neurological deficit. The spectrum of activity in the unit is shown by the appropriate ICD9 codes.

The ICD9 codes are as follows

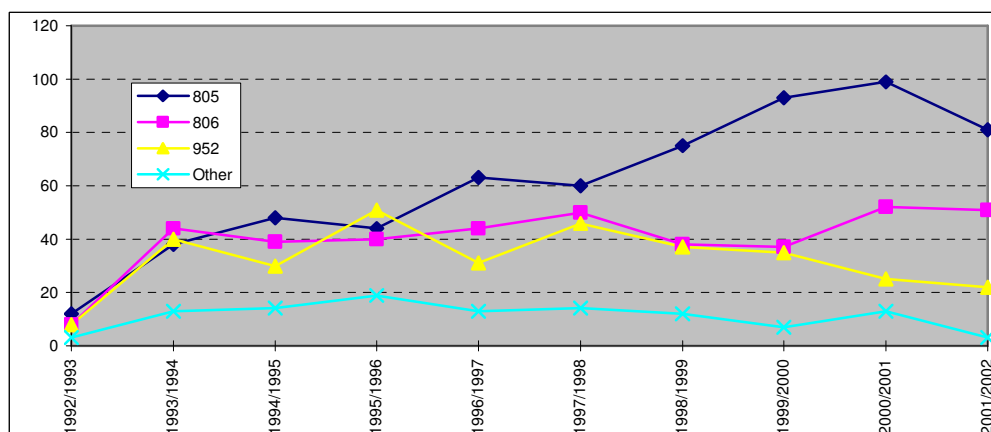
- 805 Fracture of vertebral column without mention of spinal cord injury
- 806 Fracture of vertebral column with mention of spinal column injury
- 952 Spinal Cord Lesion without evidence of spinal bony injury
- OTHER Other Spinal Cord Related Conditions

### 2.3.1 Admissions by Degree of Injury



Appendix DA5

### 2.3.2 Discharges by Degree of Injury



Appendix DA6

The number of patients referred with a spinal fracture without spinal cord injury continued to rise but the number admitted fell due to nursing shortages. This directly resulted in a reduction of the number of surgical stabilisation procedures in intact patients.

The number of patients with a neurological deficit fluctuates as expected each year. The overall numbers remains fairly constant although there was a worrying increase in the number of patients with a thoraco-lumbar injury associated with paraplegia.

Other admissions and discharges include incomplete paraplegia, incomplete quadriplegia and incomplete Cauda equina lesions.

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

2001/2002	Admissions	Discharges
<b>Central Cord Lesion</b>	11	10
<b>Infection</b>	4	3
<b>Vascular</b>	1	3
<b>Tumour</b>	1	0
<b>Intra medullary Cyst</b>	0	0
<b>Non-specific Lumbar Lesions</b>	0	0
<b>Stab Wounds</b>	2	2
<b>Other</b>	4	4
<b>Total</b>	<b>23</b>	<b>22</b>

Appendix DA7

NOTE: Non-traumatic spinal cord injury is misleading as it includes Central Cord Syndrome that is traumatic in origin but does not involve bony damage. Central Cord Syndrome often results in major paralysis. It usually occurs in the elderly populations who have osteoarthritic changes in the cervical spine and results in a severe disability with a predominantly upper limb paralysis with high dependency. It is anticipated that this type of injury will continue to increase in line with demographic changes.

### 2.3.4 In-patient Bed Days

2001/2002	Edenhall (HDU)	RCU	Philipshill (Rehab)
<b>Beds</b>	12	4	32
<b>Actual</b>	na	na	na
<b>Available</b>	na	na	na
<b>Bed Occupancy %</b>	na	na	Na
<b>ALOS</b>	17.8	39.3	79.8

Bed occupancy continued to rise and is near maximal for an acute receiving/rehabilitation unit. Intermittent bed closures occurred due to staff shortages and redecoration. The Respiratory Care Unit significantly increased the flexibility of bed usage but intra unit transfer between Edenhall, Respiratory Care Unit and Philipshill makes individual ward length of stay calculation more complex. A number of statistics are currently unavailable because new HIS system at the SGH is currently being commissioned.

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 and actual and intended date of discharge.

### 2.3.5 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>	<b>NO DELAY</b>
<b>1999/2000</b>	172	21	122	22-410	87%
<b>2000/2001</b>	189	27	68	1- 877	85%
<b>2001/2002</b>	157	11	19	1-107	92%

The vast majority of patients were discharged on their intended date (93%).

The figures show an improvement over the previous years. There was a decrease in the number of patients (11) who had an identifiable delay between the actual and intended date of discharge and in the mean delay.

There continued to be a small group of patients who had significantly delayed discharge due to difficulties with housing or finding appropriate long-term nursing care. There is an identified need for some type of step-down unit to allow continued progress in rehabilitation at a lower level of supervision than is available within the unit. Support is growing for the provision of long-term care for some highly dependant or ventilatory dependant patients.

### **2.3.6 Re-admissions to the unit**

Most patients discharged from the unit never require re-admission. They are seen annually as out patients throughout their life. In some ways readmission at any time must be regarded as a failure. Some re-admissions are inevitable and have not been prevented by greater education or increased care in the community.

There were forty-six readmissions to the unit. This is 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 the long term follow up including the management of complications. Dedicated clinics in Orthopaedics, Neurosurgery, Urology, Rehabilitation and Pain Management supplement the nurse led annual review clinics for those patients with a substantial neurological deficit. Early discharge of fully treated patients with no expectation of future disability to the General Practitioner is encouraged.

New patients are referred to the out patient clinic for consultant opinions regarding chronic neurological dysfunction secondary to spinal cord injury, pain, deformity, and bladder or bowel disturbance.

Out reach clinics are held in Raigmore Hospital (Inverness) and Edenhall Hospital Edinburgh and Foresterhill Hospital (Aberdeen) and Dumfries and Galloway Royal Infirmary, The first Borders District clinic commences in April 2002.

#### 2.4.1 Summary of Out-patient activity

	<b>1997/ 1998</b>	<b>1998/ 1999</b>	<b>1999/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>
<b>Return</b>	2407	2401	2017	2074	2229
<b>New</b>	36	73	104	139	90

The number of return outpatients has risen. There was further development of follow-up protocols enabling the Liaison Nursing Service to increase its role in out patient management.

There number of new outpatients has stabilised to a manageable level over the year. The majority of these patients are tertiary referrals involving complex medical investigation and assessment. This is a significant increased workload on the part of the Out-Patient Medical and Nursing staff.

#### 2.4.2 New Out-Patient Activity by Health Board

	<b>1999/2000</b>	<b>2000/2001</b>	<b>2001/2002</b>
<b>Argyll &amp; Clyde</b>	32	32	25
<b>Ayrshire &amp; Arran</b>	6	4	7
<b>Borders</b>	0	1	0
<b>Dumfries &amp; Galloway</b>	2	2	2
<b>Fife</b>	4	1	0
<b>Forth Valley</b>	10	15	3
<b>Grampian</b>	0	0	4
<b>Greater Glasgow</b>	31	45	29
<b>Highland</b>	0	0	1
<b>Lanarkshire</b>	13	29	16
<b>Lothian</b>	2	6	2
<b>Shetland</b>	0	0	0
<b>Tayside</b>	3	1	1
<b>Orkney</b>	0	0	0
<b>Western Isles</b>	1	2	0
<b>ECR</b>	0	1	0
<b>Total</b>	<b>104</b>	<b>139</b>	<b>90</b>

#### 2.4.3 Out -Patient Activity by Centre

	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	CHANGE PREVIOUS YEAR	TOTAL 1992- 2002
<b>New QENSIU</b>	73	103	139	90	<b>35%-</b>	472
<b>Return QENSIU</b>	2083	1740	1729	1934	<b>12%+</b>	11383
<b>Edinburgh Edenhall</b>	279	224	255	171	<b>33%-</b>	1354
<b>Raigmore Inverness</b>	39	41	51	55	<b>8%+</b>	269
<b>Aberdeen</b>	0	13	46	51	<b>11%+</b>	110
<b>Dumfries</b>	0	0	18	18	<b>0%</b>	36
	<b>2474</b>	<b>2121</b>	<b>2238</b>	<b>2319</b>	<b>4%+</b>	<b>13624</b>

The continued development of the Outreach services has been a success in promoting long-term follow-up. Distribution of patients mirrors the prevalence of spinal cord injury in Scotland. Review of the database indicates that there is a concentration of patients in Fife and a clinic in Arbroath is planned for next year. The Borders clinic, commencing in 2002 and the Dumfries clinic accounts for the fall in Edinburgh clinic numbers. It is expected that there will be a small gradual increase in all of the Outreach clinics. This should stabilise around four years.

CLINIC	FREQUENCY
NEW QENSIU	WEEKLY
RETURN QENSIU	WEEKLY
EDINBURGH	WEEKLY
ABERDEEN	THREE MONTHLY
INVERNESS	THREE MONTHLY
DUMFRIES	SIX MONTHLY
BORDERS	SIX MONTHLY
ARBROATH	YEARLY

#### 2.4.4 Outpatient Activity by Specialty at QENSIU

	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002
<b>DBA Orthopaedics</b>	98	150	123	97
<b>RAJ Neurosurgery</b>	82	109	86	133
<b>GC Urology</b>	159	277	370	356
<b>Hand</b>	-	5	10	0
<b>Skin Care</b>	224	199	200	145
<b>Pain / Acupuncture</b>	120	92	96	57
<b>Neuroprosthetics [Fraser/Hems]</b>	-	-	3	42
<b>Sexual Dysfunction</b>	53	22	27	45
<b>Spinal Injury Annual Review</b>	TOTAL	1007	989	953
	MEDICAL		564	639
	NURSING		425	420
<b>Total</b>		<b>1767</b>	<b>1843</b>	<b>1868</b>

There has been a further increase in the number of patients seen at the Consultant Specialist Clinics. Urodynamics and halo fixation are now designated as day case procedures. The numbers attending specialised clinics are stable.

Spinal Injury Annual Review clinics are a large component of the commitment to life long care. These are nurse led with only sixty percent of patients require medical input. The Hand Out-Patient service continues to be developed. This is a specialised service, which is extremely time-consuming despite the small number of patients attending.

Measurement of activity at clinic level indicates that there is a underreporting of activity by 7%. This is accounted by the system failing to capture referrals from the wards, informal “drop in” consultations and some follow up appointments.

## 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 will increase activity. The level of Day Case activity exceeds the contracted activity but will be self limited due to the finite population of spinal injured patients.

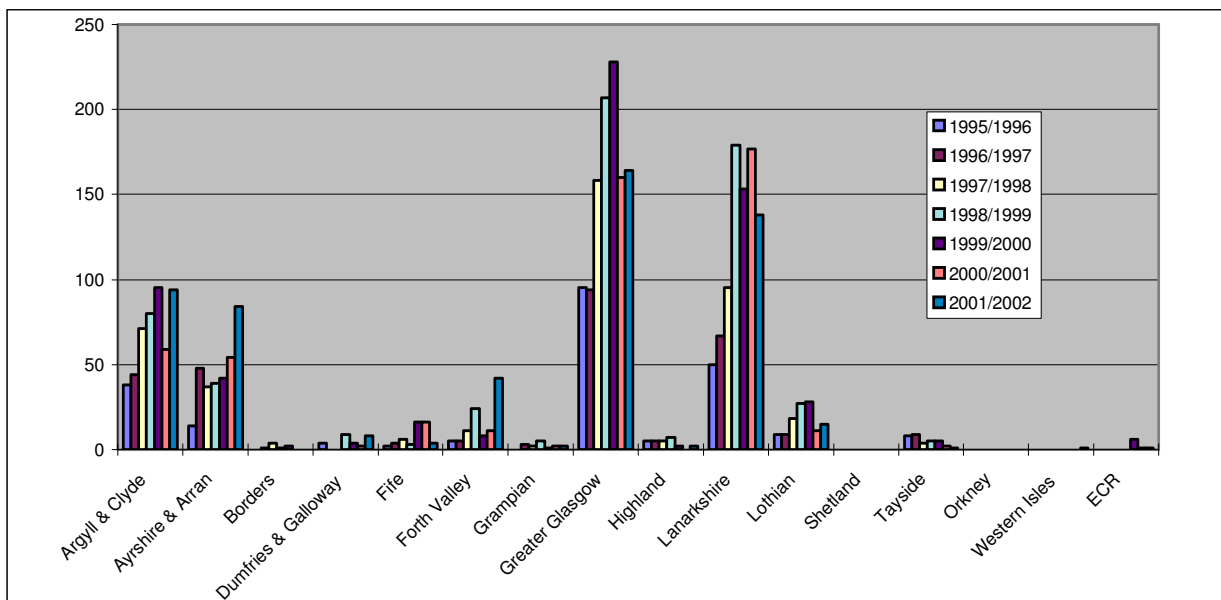
### 2.5.1 Day Case Attendances by Reason For Admission

	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002
Urology –urodynamics	44	42	15	31
Halo Fixation	133	169	234	346
Skin	6	8	7	5
Orthopaedic/Neurosurgery	60	7	1	0
Pain/Acupuncture	294	350	231	160
Sexual Dysfunction	21	14	11	12
Other	0	0	0	2
<b>Total</b>	<b>558</b>	<b>590</b>	<b>499</b>	<b>556</b>

All day case procedures involve a formal intervention carried out by medical or specially trained nursing staff. Overall there continues to be a 12% under reporting of activity. This is due to the systems currently in place to formally monitor activity.

## 2.5.2 Day Case Attendances by Health Board

As a national service Day Case activity is limited by geographical constraints. Many patients who could be managed as a day-case require in-patient stay due to difficulties in travelling. If indicated some procedures are arranged to be done in the patients locality.



Appendix DA8

## 3.0 Waiting Times

### 3.1 Waiting Times Outpatient Clinics

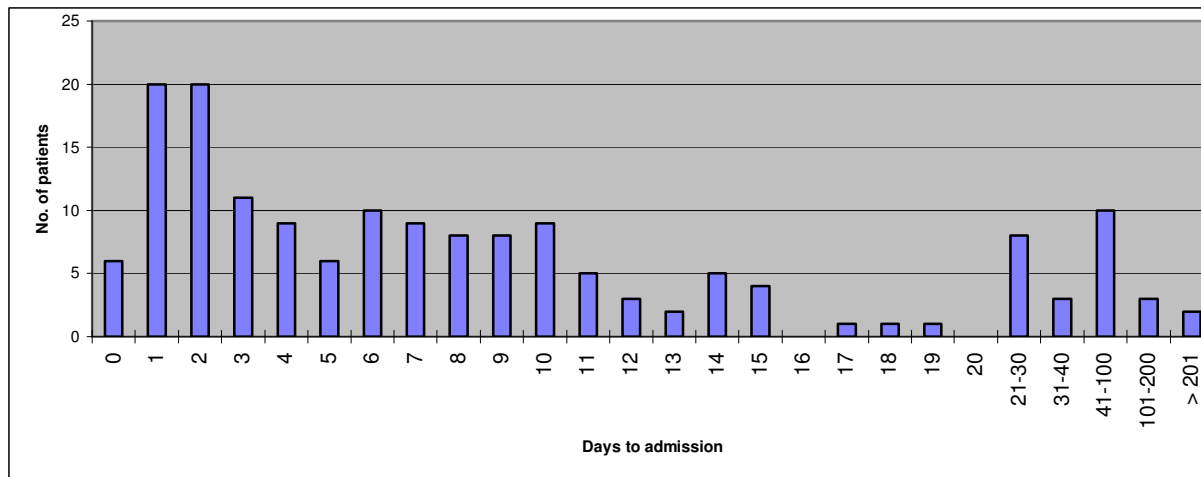
There is an open door policy to the Nurse Led Spinal Injury Clinics. Medical advice is always available and is required in sixty per cent of patients. Patient satisfaction remains high with this team approach. The maximum waiting time for elective outpatient appointments is four weeks.

### 3.2 Waiting Times Acute Admissions

Acute referrals are admitted as soon as appropriate on clinical grounds. It is Unit policy to 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.

### 3.3 Time from Injury to Admission

Early admission to the Spinal Injury Unit provides immediate support to the patient and family and aids early recovery. In 2002 sixteen per cent of patients were admitted within twenty-four hours. Thirty per cent were admitted within forty-eight hours and forty per cent within four days. Bed closures and nursing shortages had a significant adverse effect on early admission over the year.



The pattern of early admission is not being achieved in other Spinal Injury Units in the United Kingdom due to similar if not worse problems. Early admission continues to be a priority as it is seen as an advantage to the patient and relatives.

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. Direct admission to orthopaedic or neurosurgical wards for surgical stabilisation may increase the time to admission but is appropriate to minimise 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 is often 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.

	<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

This analysis includes all patients admitted. The mean time has been reduced. Some patients have an acute injury on top of a pre-existing injury, which explains the prolonged delay.

Five patients were admitted after 200 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. One patient was admitted 12, 012 days after their initial accident as a new patient for an episode of definitive care.

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

##### **4.1 Charter Mark**

The Charter Mark was renewed June 2000. The protocols and standards set at that timer are being maintained or improved. This award is a tribute to all the staff working within the Unit.

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

Staff from NSD regularly visit or are in touch with the Unit throughout the year. Continued close co-operation has ensured that standards are maintained and there is an early response to increased or changing clinical needs. The Annual and six-monthly report acts as a focus to continually evolve the service.

##### **4.2.2 Formal Complaints**

No formal complaints were received during the year. An informal complaint/suggestion system is in place. This has proved invaluable in monitoring quality and modifying the service. The two issues most concerning patients, relatives and carers were the ambulance service and the continued difficulties with the swimming pool.

The dedicated ambulance service was again withdrawn by the ambulance service due to operational reasons. The replacement system has proved less flexible to the considerable demands of the service. At times patients have suffered unacceptable delays or cancellations. Considerable effort was spent in explaining the situation to any patient affected. As a group they were very sympathetic to the difficulties that the Ambulance service experiences.

The therapy swimming pool remains closed due to difficulties with maintaining water quality. This is clearly unacceptable but is unresolved by the trust and outside agencies.

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

Regular contacts are maintained with relatives and carers throughout a patients stay. Carers are actively involved with the discharge process. All staff are encouraged to attend patient social activities and events. Formal discussion groups with patients and relatives are organised. The medical staff encourages an open dialogue with patients and relatives regarding treatment and progress. Consent issues are in constant review and the implications of the Incapacity Act in the management of the acutely injured are being implemented.

#### **4.2 Benchmarking**

Discussions continue between the Spinal Injury Units in the United Kingdom regarding appropriate benchmarking for the care of spinal injured patients. To date there are no comparable figures from other units. The QENSIU is now actively looking at Europe and the USA for appropriate benchmarking models.

### 4.3 Education

The unit has an important role in education. This extends to prevention of the initial accident, management of the early stages and the avoidance of subsequent complications in the early of late stage of rehabilitation.

The second meeting on “The First Forty Eight Hours” is planned for May 2003. Previously the meeting attracted over one hundred and twenty-five applicants. The faculty includes the Scottish Ambulance Service, Paramedical Staff, Mountain Rescue Nursing, A & E and Spinal Injury Unit Staff.

The Director gave Post-Graduate Medical lectures at Edinburgh, Aberdeen, Dundee, Oswestry and Glasgow. The Consultant medical staff lectured in Edinburgh, Glasgow University and Fort William.

The Senior Nurse Manager lectured at Paisley and Caledonian University. Further 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 organised at Aberdeen and are planned for Dumfries

The Out-Patient Sister provided training and education for University students and District Nurses at Paisley and Caledonian Universities.

Glasgow University Medical students continue to attend the unit as part of the Year Three study module and on placement.

The Unit has been fortunate in receiving a number of UK and overseas visitors at Medical and Paramedical level.

### 4.4 Hospital Acquired Infection

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

The problem of MRSA continues to be monitored. A review of the hospital policy regarding medical and nursing requirements has been carried out. Periods in isolation significantly affect the rehabilitation timetable and every attempt is made to reduce this to a minimum.

#### 4.41 Hospital Acquired Infection

	1998/1999	1999/2000	2000/2001	2001/2002

Total patients req. isolation	31	45	52	67
Clostridium Difficile	1	1	1	1
MRSA	25	42	48	64
Streptococcus pyogenes	5	1	0	1
Scabies	0	1	0	0
TB			1	1
Varicella Zoster			1	0
Patient days in isolation	1 – 82 days	-		
Ave. days in isolation	-	55.8	53.75	52.6

#### 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.

#### 4.6 Pressure Sore Prevalence

Continued education and constant vigilance is required to reduce the number of pressure sores. Monitoring of sacral splits is now included.

	No. of patients	No. of acquired sores	No. of admitted sores	Total number of sores	Point prevalence
1999/2000	38	3	3	6	16%
2000/2001	42	2	4	6	15%
2001/2002	48	4	8	12	25%

The number of pressure sores on admission and acquired has doubled. A significant factor may be delay in admission and nursing shortages.

#### 4.7 Bed & Mattress Hire

The Therapy Bed Contract has significantly reduced the cost of hire. Six beds were hired for an average of eighteen days. Four mattresses were hired for an average of twenty days.

#### 4.8 Ventilated Bed Days

The number of ventilated bed days will be dependent on the case mix presenting to the unit. Improvements in ventilation protocols continue to be developed by the respiratory care team to reduce the total time on a ventilator.

##### 4.81 Ventilated Bed Days

		<b>No. Patients</b>	<b>Ave. Ventilated Days</b>	<b>Total Ventilated Days</b>
<b>2001/2002</b>	Edenhall	19	33	643
	RCU	2	40.5	81

Appendix DA20

#### **4.9 Respiratory Care: Ventilation Needs of Low Tetraplegic Patients**

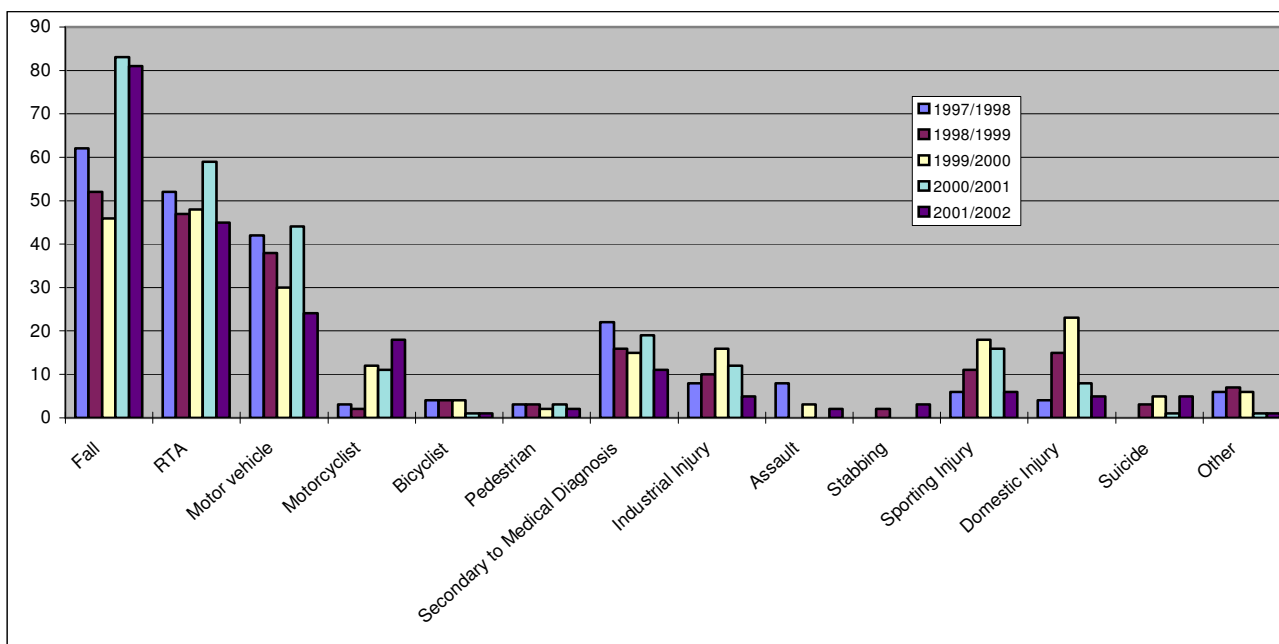
Protocols have been developed for the maintenance and weaning of low tetraplegic ventilator dependent patients. Changes in protocols have resulted in a reduction in the number of ventilated days. Continued developments are expected in this area over the next five years.

#### **5.0 Mechanism of Injury**

Road traffic and industrial accidents fell during the year, which mirrors the annual fatal accident figures. This comes after a rise in the RTA figures the previous year. Assault and stabbing have reappeared as a cause of significant disability. The number of falls including parasuicide remains high compared with UK figures. Sporting injury was a cause of a smaller number of injuries but they were commonly severe.

	<b>1997/ 1998</b>	<b>1998/ 1999</b>	<b>1999/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>
<b>Fall</b>	<b>62</b>	<b>52</b>	<b>46</b>	<b>83</b>	<b>81</b>
<b>RTA</b>	<b>52</b>	<b>47</b>	<b>48</b>	<b>59</b>	<b>45</b>
Motor vehicle	42	38	30	44	24
Motorcyclist	3	2	12	11	18
Bicyclist	4	4	4	1	1
Pedestrian	3	3	2	3	2
<b>Secondary to Medical Diagnosis</b>	<b>22</b>	<b>16</b>	<b>15</b>	<b>19</b>	<b>11</b>
<b>Industrial Injury</b>	<b>8</b>	<b>10</b>	<b>16</b>	<b>12</b>	<b>5</b>
<b>Assault</b>	<b>8</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>
<b>Stabbing</b>		<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Sporting Injury</b>	<b>6</b>	<b>11</b>	<b>18</b>	<b>16</b>	<b>6</b>
<b>Domestic Injury</b>	<b>4</b>	<b>15</b>	<b>23</b>	<b>8</b>	<b>5</b>
<b>Suicide</b>		<b>3</b>	<b>5</b>	<b>1</b>	<b>5</b>
<b>Other</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>1</b>
<b>Total</b>	<b>168</b>	<b>163</b>	<b>180</b>	<b>199</b>	<b>164</b>

## 5.1 Mechanism of injury by year



Overall the pattern generally 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.

## 6. Financial Report

### SPINAL INJURIES UNIT.

#### FINANCIAL REPORT FOR 12 MONTHS ENDED 31st MARCH 2002

	Budget £'000s	Actual £'000s	Variance £'000s
<u>Dedicated Staff Costs</u>			
Medical	527,556	544,792	(17,236)
Nursing	2,122,895	1,988,856	134,039
Paramedical	341,043	339,321	1,722
Administrative	87,074	100,628	(13,554)
Total Staff	<b>3,078,568</b>	<b>2,973,597</b>	<b>104,971</b>
<u>Supplies Costs</u>			
Medical	14,243	6,388	7,855
Nursing	21,349	11,225	10,124
Paramedical	13,600	17,309	(3,709)
Administrative	52,385	87,923	(35,538)
Pharmacy	507,983	581,681	(73,698)
<u>Allocated Costs</u>			
Medical Records	15,473	15,473	0
Building Costs	153,179	153,179	0
Domestic Services	60,489	60,489	0
Catering	172,977	172,977	0
Laundry	41,387	41,387	0
Neuroradiology	56,244	56,244	0
Radiology	18,571	18,571	0
Laboratories	58,366	58,366	0
Other Diagnostic Services	5,306	5,306	0
Anaesthetics	29,714	29,714	0
Equipment	11,673	11,673	0
Portering	37,142	37,142	0
Phones	23,347	23,347	0
Surgical Appliances	49,877	49,877	0
Scottish Ambulance Service	7,428	7,428	0
General Services	26,530	26,530	0
Allocated Costs	767,704	767,704	0
Total Supplies	<b>1,377,264</b>	<b>1,472,230</b>	<b>(94,966)</b>
<u>Overhead Costs</u>			
Fixed costs :-			
Rates	196,995	196,995	0
Capital Charge	614,819	614,819	0
Trust Overheads	149,490	149,490	0
Total Overheads	<b>961,304</b>	<b>961,304</b>	<b>0</b>
Total Expenditure	<b>5,417,136</b>	<b>5,407,131</b>	<b>10,005</b>
Post Graduate Dean Funding	<b>117,000</b>	<b>117,000</b>	<b>0</b>
Total Expenditure net of Post Graduate Dean Funding	<b>5,300,137</b>	<b>5,290,132</b>	<b>10,005</b>

## 7. Service Developments and Future Plans

### 7.1 Respiratory Care Unit

The Respiratory Care Unit is an established part of the National Spinal Injuries Unit. It provides a vital service for high level tetraplegic patients with ventilators who no longer require the care of the HDU (Edenhall). The six-bedded unit also functions as a step-down unit for patients with moderate respiratory compromise or a tracheostomy before transfer to Philipshill Ward.

Staffing of RCU has always been problematic in view of the nature of the work and the situation of the ward, away from Edenhall and on the periphery of Philipshill. It is currently planned to move the area and administration into Philipshill.

### 7.2 Outreach Clinics

Medical, Nursing, Occupational Therapy and Physiotherapy staff attends outreach clinics. Volunteers from SIS also attend to see and advise patients and carers. The increasing demand for the service places a strain on the core service in the Unit.

The planned programme for Outreach clinics in 2001/2002

CLINIC	FREQUENCY
NEW QENSIU	WEEKLY
RETURN QENSIU	WEEKLY
EDINBURGH	WEEKLY
ABERDEEN	THREE MONTHLY
INVERNESS	THREE MONTHLY
DUMFRIES	SIX MONTHLY
BORDERS	SIX MONTHLY
ARBROATH	YEARLY

### 7.3 Training & Development Post

The Nurse Training and Development post proved to be extremely successful. An outline of the training modules is given in Appendix E

A training package for auxiliary nurses will be developed in the coming year. Discussions continue with Cardonald College about the advancement of SVQ training for auxiliaries. This would compliment the existing competency based training for auxiliary within the unit.

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

A multidisciplinary approach to education for patients, family and carers is maintained in the unit. It was identified that there was a need for refresher courses for long-term patients who had difficulties attending events within the unit or who had been discharged before the approach was introduced. A "Road-Show" training module has been developed and was used very successfully in Aberdeen in April. The success of this model will result in further meetings on the same distribution as the outreach clinics.

## **7.5 Flexible Outpatient Department Development – Liaison Nurses**

The Discharge Co-ordinator has taken responsibility for discharges from Edenhall Ward with an increasing emphasis on formal discharge planning. They will have responsibility for immediate post-discharge care with on-going problems reported directly to the Liaison Sisters.

## **7.6 Nursing Recruitment**

Nursing recruitment is recognised as a national problem. The unit has experienced problems with nurse retention. The experience and training available on the unit makes staff very attractive when applying for promoted posts.

The Education Sister has developed links with the universities in an endeavour to capture nurses in training. A mentorship programme for student nurses working in the unit has been introduced. This has had a positive effect with three students expressing an interest in working in the unit following the completion of their training in September.

## **7.7 Medical Recruitment**

The unit continues to attract high quality applicants for the three SHO positions. The posts are designed to give comprehensive training and are suitable for candidates who wish to progress to medical or surgical specialities. The changes to the junior doctors hours are causing problems and are currently being renegotiated. The current cross-cover with general rehabilitation is less than ideal and further cross-cover moves are limited.

Of national concern is the future training of consultants in spinal cord injury. European legislation was unable to recognise such a small speciality and training was combined with general rehabilitation. This has been unable to produce enough suitable candidates for the spinal injury rehabilitation posts available. The system is currently under review. QENSIU has one training post, which is occupied by a trainee who has finished training in rehabilitation. They unusually have a special interest in spinal cord injury. Negotiations are continuing regarding the possibility of a further consultant rehabilitation post with responsibilities within the spinal unit.

## **7.8 Security**



The security of patients, staff and visitors has always been a high priority. A series of incidents during 2001 prompted a review within the unit. A continuous CCTV monitor system has been installed covering all entrances and public places. With some reluctance the front entrance is now closed in early evening and weekends with access through neuro-surgery via a video-entry phone.

### **7.9 Implanted Electrodes for Upper Limb Function**

Utilising proximal functioning shoulder girdle muscles to control an implanted distal muscle stimulator has proved to be a successful in giving tetraplegics a grasp function. Patients continue on the programme but the implant company has experienced difficulties. Negotiations are being conducted internationally to resolve the situation. Interest has been expressed in using the unit's expertise to develop further products for the upper and lower limb.

### **7.10 Phrenic Nerve Stimulators**

No patients this year have required a phrenic nerve stimulator.

### **7.11 Integrated Care Pathways**

The first ICP for cervical fractures has been completed and printed. Training and the instigation of the programme will commence following the induction of new staff.

### **7.12 Clinical Networking and National Guidelines**

The first draft of national guidelines for the immediate management and transfer of patients with a spinal cord injury have been presented at the Scottish Orthopaedic Club and circulated to all hospitals. Useful feedback has been obtained and will be incorporated in the final draft next year. The guidelines have been circulated with the immediate admission proforma. It is envisaged that the NHS net will transmit this proforma and the X-rays to the unit.

The development of drugs which may be more successful than steroids in altering the natural history of paraplegia continues. None are commercially available currently but the unit is being kept aware of any progress.

The excellent relationships we have with the Ambulance, Paramedical, Fire Brigade and Mountain Rescue services continue. All will participate in the second national "The First Twenty Four Hours" educational meeting.

### **7.13 Telemedicine**

The development of telemedicine and teleradiology continues in Scotland. So far the unit has been unsuccessful in obtaining funding to complete the route to the tertiary referral centre and the relevant clinicians. Some funding has been granted by an ex-patient who recognized the importance of immediate access to patients x-rays. It is anticipated that X-ray transfers will continue over the Internet and further developments in digital x-ray facilities in Scotland will increase this referral pattern.

The NHS Net has been utilised to refer limited patient information prior to transfer. Advice has also been transferred over the World Wide Web to The Falklands, Pakistan and India.

## **7.14 Clinical Governance**

Clinical Governance and Appraisal are playing an important role within the Unit. A programme of regular meetings is established covering both Senior and Junior Medical Staff.

Consultant Clinical Appraisal will be instituted in the forthcoming year following the development of Consultant portfolios. The Unit actively participates in SSAM (Scottish Surgical Audit of Mortality).

## **7.15 Medical Research**

Progress in the management and prognosis of spinal cord injury is dependant on an active policy of research.

The unit has developed a network of scientists and clinicians that are interested in areas pertinent to spinal cord injury. This has resulted in continued collaboration with the Universities of Glasgow, Strathclyde, Caledonian and Edinburgh.

All research to date has been clinical but we hope to provide a focus and impetus to develop basic research programmes.

### **7.15.1 Grants and Grant Applications**

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

Functional electrical stimulation augmented treadmill training for incomplete spinal cord injured patients Dr MH Granat  
Scottish Executive £77,709 in progress

A pilot study of lower limb FES cycling in paraplegia Prof K Hunt  
Inspire £3,886 completed

An Open long-term study to evaluate the efficacy and safety of Tamsulosin in the treatment of neurogenic voiding dysfunction in patients with supra-sacral spinal cord lesions Mr. M.H. Fraser  
Yamanouchi £10,000 completed

A randomised double-blind placebo-controlled study to evaluate the efficacy and safety of Tamsulosin against placebo in the treatment of neurogenic voiding dysfunction in patients with supra-sacral spinal cord lesions Mr. M.H. Fraser  
Yamanouchi £10,000 completed

A multi-centre Phase III, Double blind placebo controlled flexible dose study to evaluate the efficacy and safety of Silfamidil in women who have female sexual dysfunction resulting from spinal cord injury. D.B.Allan etc in progress  
Pfizer £ 20,000

Prof K.Hunt Six month secondment  
Royal Academy of Engineering Secondment Scheme

Development of Systems for tetraplegic Arm Cranking using Functional Electrical Stimulation: a pilot study Prof K Hunt  
ROPA completed

FES cycling systems for paraplegic people Prof K Hunt Dr N Donaldson  
EPSRC completed

Upper Limb Arm Cranking using FES Dr H. Gollee  
European Commission: two year funding in progress

Neurocontrol Implants for the upper and lower limbs Dr M.Granat  
Scottish Executive grant applied for

### **7.15.2 Projects**

Non-invasive electrophysiological assessment of cortical spinal pathways in subjects with spinal cord injury  
Gillian McColl Mres student completed

Development and testing of a visual feedback system for the Freehand upper limb Prosthesis  
S. Coupaud Mres student completed

Reflex Modulation during sitting and walking  
B, Conway T.Eldho

The Suitability of a ten-week circuit class to increase physical capacity  
And activity levels in paraplegics  
K.Cunningham MSc student completed

### **7.15.3 Publications**

Deep K., Jigajinni M.V., McLean A.N., Fraser M.H. Prophylaxis of thromboembolism in spinal injuries - results of Enoxaparin used in 276 patients. *Spinal Cord* 2001 39:88-91

Prempeh R., Gibson J. Battacharya J. Mid-Line cleft atlas-a diagnostic dilemma. *Spinal Cord* 2001. In press

### **7.15.4 Recent Submissions**

Deep K., Jigajinni M.V., McLean A.N., Fraser M.H. Prophylaxis of thromboembolism in spinal injuries - survey of practice in spinal injury units in the British Isles, Accepted *Injury* April 2001

Prasad R., Fraser M.H., Urquhart G.D.K., McLean A.N. Extension of tuberculous spinal abscess with diaphragmatic rupture and chylothorax. Submitted to *Thorax* April 2001.

Prempeh R., Gibson J., Johnston R.A., Mid-line myotomy secondary to stab wound. Submitted to *Spinal Cord* March 2001

Mitchell A.D., McLean A.N., Henretty M., McGee C. Dysphagia in spinal injury: review of mechanisms and associated factors. Submitted to *Spinal Cord* March 2001.

Deep K., Allan D.B., The acute abdomen in spinal cord injury. Submitted to *Injury*

### **7.15.5 Recent Presentations and Papers in Progress**

Hearns S., McLean A.N., Fraser M.H. Spinal Injuries in Scottish mountaineers. Presented at British Association of Accident and Emergency Medicine Meeting, Spring 2001. MS under preparation.

Thomas S.J., Fraser M.H., McLean A.N. Is rehabilitation possible in patients with known malignant disease? Outcome of twenty cases. Presented at British Society of Rehabilitation Medicine, Winter 2001. MS under preparation.

Hussein M. Fraser M.H., Johnston R.A., McLean A.N., Allan D.B. Outcome of halo jacket fixation in 104 cases of cervical injury Poster Scottish Orthopaedic Meeting June 2000.

Hussein M. Fraser M.H., Johnston R.A., McLean A.N., Allan D.B. Outcome of halo jacket fixation in 104 cases of cervical injury. Submitted Injury.

McLean A.N., Fraser M.H., Jackson S. Prospective, randomised comparison of T-piece and ventilator weaning in spinal injury.

### **7.16 Pain Management**

Acute and chronic pain management is a priority in the management of patients with spinal cord injury. Philipshill Hospital had consultant led pain service which lapse when the unit transferred to the SGH. An adequate service was developed utilising the spinal rehabilitation consultants and appropriately trained out-patient nursing staff. This was very successful but required the addition of sophisticated pain management techniques and interventions. With the support of NSD two additional consultant sessions have been made available to the unit. Two experienced pain management anaesthetic consultants have been appointed to the unit. The additional pain clinics will commence in July 2002 and the activity will be presented in next years report.

### **7.17 Paramedical staffing**

The last ten years have seen significant advance in para medical therapy for spinal cord injury. The incorporation of adaptive technology into the routine rehabilitation of patients and the use of environmental control systems for highly dependant patients has stretched the occupational therapy department significantly. The recognition of the improvements in

patient's independence and medical health with sophisticated physiotherapy has all been carried out with restricted staffing levels. There is an immediate need for additional support in occupational therapy and the requirements of the physiotherapy department require a review.

## **8. Summary and Conclusions**

The Queen Elizabeth National Spinal Injuries Unit was commissioned in 1992 to provide the highest level of care for patients from Scotland with a spinal cord injury. The success of the unit over the last ten years is a testimony to its original design and funding as a national service. Throughout the period it has received excellent support from its host trust and the National Service Division. Working within this framework the unit owes a debt of gratitude to all of the staff who have worked with dedication, energy and innovation over the last ten years. In addition acknowledgement must be made to the many staff within the Southern General Hospital and NHS Scotland whose efforts have helped the unit.

From its inception the unit has received support from volunteer bodies, patient support groups and outside agencies. Special mention must be made of Spinal Injury Scotland, Rehab Scotland, SPIN and a huge number of patients' families who have in many different ways contributed to the success of the unit.

Working together a successful model has been developed for a continued process of improvement and innovation.

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

The unit looks forward to the next ten years. There is an expectation of continued challenges and much progress. Although some satisfaction can be taken from the success that has been achieved the unit must constantly evolve to respond to the needs of the patients.

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

Appendix A	Physiotherapy Report
Appendix B	Occupational Therapy Report
Appendix C	Rehab Scotland Report
Appendix D	Spinal Injuries Scotland Report
Appendix E	Nurse Training and Education
Appendix F	Social Work Report
Appendix G	Psychology Report
Appendix H	Social Work Report
Appendix I	Raw Data
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 Report**

### **Service Aim.**

#### **Introduction.**

The QENSIU is the only specialist spinal injuries unit in Scotland and as such serves the entire population of Scotland. As a national service it is currently funded directly by the Scottish Executive.

The unit consists of three ward areas: Edenhall the acute admitting ward with 12 high dependency beds, Respiratory Care Unit with 4 beds for domiciliary ventilator dependent patients and 2 beds for high level tetraplegic patients, and Philipshill ward with 32 beds for rehabilitation patients. Occasionally a few of these beds are used to readmit patients with post discharge complications.

The physiotherapy service to the Q.E.N.S.I.U. is provided by the Physiotherapy Department of the South Glasgow University Hospital NHS Trust.

#### **Staffing Levels:**

1 Superintendent Lead Clinical Specialist

2 Permanent Senior 1 posts

1 Permanent Senior 11 post

1 Nine month rotating Senior 11 post.

2 Four month rotating Basic grade posts.

(When comparing this level of staffing, for 48 beds, with the other eleven British spinal injuries units it is seen that we currently hold the worst patient to physiotherapist ratio of all the units at 6.8 patients/physiotherapist [range 4.2/physio- 6.8/physio].

Between June 2001 and February 2002 we had one fifth of a whole-time Senior One Physiotherapist, on a fixed term contract, to providing the Physiotherapy input for the joint QENSIU/Glasgow University FES Cycling Research Project.

Since November 2001 to date we have had a half time Senior 1 physiotherapist to staff the joint Physiotherapy Department/University of Strathclyde Bioengineering research project "FES Augmented Partial Bodyweight support treadmill training".

Our four permanent physiotherapists provide an excellent base of experience and expertise totalling 64 years of spinal cord injury rehabilitation demonstrating stability, reliability and dedication.

#### **Service Access.**

- Weekday Service Hours: 8.30am- 4.30 Mon-Thurs and 8.30-4.15 Fri.

Weekend Service Hours: One of the unit 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 unit physiotherapist has left the hospital, usually from midday onwards until 8.30 the following morning.

#### **Service Activity.**

### Breakdown of patient groups treated.

<u>New admissions:</u>	<u>99 / 00</u>	<u>00 / 01</u>	<u>01/02</u>
<u>Neurological Deficit</u>	<u>Total</u>	<u>Total</u>	<u>Total</u>
Incomplete Quadraplegia	26	29	28
Incomplete Paraplegia	9	14	14
Cauda Equina lesions	12	3	12
Complete Quadraplegia	17	17	14
Complete Paraplegia	16	22	15
Monoplegia	--	4	5
Incomplete Others	--	4	2
No deficit/ Intact.	100	106	74
Total:	180	199	164

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, although seen daily, 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. (15-minute units)

April-March	<u>99/00.</u>	<u>00/01</u>	<u>01/02</u>
Attendance's	11538	11592	12760
Units.	29559	27470	29272
New patients	180	190	164

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

99/00: 10938      00/01: 10363      01/02 : 10830

### Weekend cover.

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>99/00.</u>	<u>00/01.</u>	<u>01/02.</u>
Attendance .....	1126	903	1006
Direct units:	2093	1839	2039
Indirect units:	774	680	754
Ave hours/wkd:	14	12	13

### 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 callouts from a Registrar or Consultant.

During the past 2 years the figures were:

Year:	<u>99/00.</u>	<u>00/01.</u>	<u>01/02.</u>
Attendance	229	105	74
Direct units	440	198	158
Total hours	110	50	40

The monthly breakdown of these figure's for 00/01 and 01/02 were as follows:

<u>Weeknights.</u>		<u>Weeknights.</u>		<u>Weekends. (01/02)</u>							
<u>Pre- arranged.</u>		<u>Emergency call out.</u>		<u>Emergency call out.</u>							
				<u>Day.</u>		<u>Night.</u>					
<u>Attendance (A)</u>	<u>Units (U)</u>	<u>Attendance</u>	<u>Units.</u>	<u>A.</u>	<u>U.</u>	<u>A.</u>	<u>U.</u>				
00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02				
April	6	3	12	6	2	0	3	0	0	0	0
May	0	4	0	7	0	5	0	10	0	0	0
June	15	1	29	1	9	1	17	2	4	0	2
July	3	10	5	14	1	2	1	4	0	0	0
Aug	4	1	7	1	2	3	7	5	0	0	0
Sept	5	5	10	9	3	2	7	5	0	0	0
Oct	0	9	0	18	3	2	7	4	0	0	0
Nov	0	1	0	2	1	2	3	4	0	0	0
Dec	9	6	17	13	1	1	2	2	0	0	0
Jan	5	0	10	0	3	3	6	10	0	0	1
Feb	4	3	8	6	2	2	3	4	0	0	1
Mar	0	1	0	3	0	1	0	4	0	0	0

### Out Patients.

There are four types of out patient seen by the physiotherapy department. Firstly those patients continuing their rehabilitation have 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 figures were as follows:

Year:	<u>99/00</u>	<u>00/01</u>	<u>01/02</u>
Attendance	377	209	256
Direct units	1064	535	611
New patients	65	54	28

It should be noted that we remain understaffed to treat outpatients as thoroughly as we would like to.

#### **Education/ Training.**

As in years past we have been very active in the education of Physiotherapy students. The management of the patient with a spinal cord lesions is a largely post graduate area and so all the Scottish training establishments send their students to us to cover the basics of this specialist area.

During the year we ran 4 courses here in the unit for the physiotherapy students of the following universities:

Caledonian University. Glasgow.

Robert Gordon University. Aberdeen

Queen Margaret University. Edinburgh.

We also gave clinical supervision placements to 13 students from these universities. These placements vary in length from 4 weeks to 8 weeks. In all a total of 58 weeks of student supervision were given in 2001/02.

Presentations were also given to the "Seating and Wheelchairs" course at the University of Strathclyde.

The physiotherapy department organised and hosted an inter spinal injury unit workshop on the use of partial bodyweight support treadmill training in incomplete SCI.

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 participate in the units recording of our patient's FIM scores.

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

The Superintendent attended this years Odstock FES users conference in Birmingham. He presented the QENSIU findings of the "Crest" research project to the conference.

The Superintendent attended both of the Inter Spinal Injury Unit OT Heads and PT Superintendents meetings. At all of these meetings he was able to keep abreast of, and share, the latest developments within spinal cord injury physiotherapy, standards of care, and related topics of interest.

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.

Our staff lectured to patients within the patient education programme.

#### **Service Clinical Governance Framework.**

- Clinical effectiveness.
- 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.

- Current research/development papers are sometimes reviewed during in-service training and by attending specialist conferences.
- 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.

- Audit of our success in achieving the CSP Cord Standards was undertaken with an 82% documented compliance rate being achieved. The main areas of weakness were mainly due to the necessary information not having been documented (ie tel no).

- Clinical Risk Management.

- This is also discussed between the SIU's.
- 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 this year:  
Computer skills Word Basic.  
MASCIP annual conference.  
RYA Level 2 Sailing, enabling those staff who completed the course to "buddy" disabled sailors.  
EMG guided treatment of spasticity with Botulinum toxin.  
Basic spasticity management.

- The following research projects have been undertaken:

- Jon Hasler, Superintendent Physiotherapist, graduated in the summer of 2001 gaining a MPhil from the University of Strathclyde. This was as a result of the research project investigating the effects of FES on the gait of Incomplete SCI individuals.
- Willie Stewart, Senior 1 physiotherapist, working along side the engineering team from Glasgow University completed a nine-month pilot research project investigating the possibilities of FES leg cycling and the effects of such cycling within the complete paraplegic population.
- Jon Hasler, Superintendent Physiotherapist, has commenced a joint project with the Bioengineering Department Strathclyde University to investigate the effects of FES Augmented Partial Bodyweight Support Treadmill Gait Training with Incomplete SCI patients. This one year pilot study is funded by the Chief Scientists Office and is the first such research project to be undertaken with this subject group any where in the world. See Appendix 1 for a project progress report.
- Finally we have undertaken a questionnaire study entitled "Correlation between quality of life, sport/recreation and education/employment in spinal cord injured

people". This has been a joint project with Stoke Mandeville Hospital and the physiotherapy department here.

### **Developments in 01/02.**

A review of the provision and servicing of loan wheelchairs to patients within the Queen Elizabeth National Spinal injuries Unit (Q.E.N.S.I.U) was undertaken. As a result a satisfactory agreement was reached with WESTMARC as follows:

A variety of assessment wheelchairs numbering 28 in all were identified as on permanent loan to the QENSIU. These are for our sole use to enable us to mobilise and assess our patients as soon as possible. These wheelchairs will also be serviced and repaired by WESTMARC whenever necessary. However if any of the wheelchairs are deemed irreparable they will be condemned and scraped. They will not be replaced by WESTMARC. *This will necessitate replacement of such a wheelchair by the QENSIU itself.*

This year the Inter Spinal Injury Unit Games were held away from the home of wheelchair sport (The Guttman sports centre Stoke Manderville). This was due to the facilities being redeveloped. The British Wheelchair Sports Association chose Glasgow as the new venue for 2001 and 2002.

All the teams stayed at the Erskine Bridge Hotel and the sports events were held at Scotstoun sports centre.

The team from QENSIU performed outstandingly achieving overall second place, missing out by just 2 points on first place. This was by far the best performance at the games since QENSIU started sending a team 8 years ago.

### **Future Research.**

Further funding is being sought to extend the research project "FES Augmented Partial Bodyweight Support Treadmill Gait Training with Incomplete SCI Patients". The current project is a pilot study. We wish to extend it over a longer period. All future funding would be for staffing as all the equipment is already in place.

### **Areas for Development.**

#### **Respiratory Physiotherapist**

As the role of Dr A McLean our new Consultant, and his interest in the respiratory management of high tetraplegia patient develops, and the Domiciliary Ventilation Service continues to develop, we strongly believe that a specialist Physiotherapist should oversee the breadth of physiotherapy input these patients could benefit from. 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 patients now have a physiotherapist leading the work with this group of patients. This would necessitate an additional Senior IWTE being employed.

#### **Patient Community Reintegration.**

The physiotherapy and occupational therapy departments of the spinal injuries unit have long believed that a 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. This should be a part of our role as rehabilitation therapists. In the past it has been difficult to undertake this kind of activity as no transport has been available to access the wider community. This has also been problematic because of the increased staffing implications it necessitates. The first of these issues has been addressed with the purchase of the minibus, through Options fund raising, and many trips for patients have been organised out with the spinal injuries unit, but these are still very limited due to the limitation of staff availability. These staffing issues still need to be addressed.

With the number of out patients that we see each year a case could be made for increasing staffing levels to meet this caseload, and to take on a role in assessing patients at the out-patient clinics.

For any of these developments to occur the appropriate resources need to be put in place as soon as possible. It is worth noting that of the twelve spinal injury units in Britain we, along with Belfast, are the only physiotherapy department without a physiotherapy assistant. The recruitment of physiotherapy assistants would enable more senior staff to devote more time to new developments and to meeting some of the issues raised above.

**Appendix 1. FES Augmented Partial Bodyweight Support Treadmill Gait Training with Incomplete SCI patients. (Progress Report).**

**Original Aims**

- To pilot the application of Partial Weight Bearing Support (PWBS) treadmill gait training augmented by Functional Electrical Stimulation (FES) with incomplete spinal cord injured subjects

- To determine the range and variability in outcome measures obtained using FES augmented PWBS treadmill gait training
- To describe the treatment effect and to predict the patient population required for a Randomised Control Trial (RCT)

### Equipment Development

The initial three months of the project were spent purchasing and developing the necessary equipment for the project. The major components of the system are as follows :

- Customised treadmill (HP Cosmos, Nussdorf, Germany) with further modifications by the Bioengineering Unit (University of Strathclyde).
- Partial Body Weight Support (PWBS) system comprising
  - Overhead pulley system (developed by the Bioengineering Unit, University of Strathclyde)
  - Ceiling mounted hoist (Chiltern Invadex Ltd, Bicester, UK)
  - Weight stack (Leisure Lines Ltd, Nuneaton, UK)
  - Harnesses (Reha-Stim Berlin, Germany, & Bodycare, Southam, UK)
- Neuromuscular electrical stimulators (Medical Physics Dept, Salisbury District Hospital, UK)
- Insole data collection system (developed by the Bioengineering Unit, University of Strathclyde)

The treadmill is designed for medical use and capable of operating at very low speed. The sidebars of the treadmill have been removed to allow free access to the subject. Attachment points at the front of the treadmill allow adjustable length ropes to be connected to the harness worn by the subject at pelvic level. Two uprights have been added to the rear of the treadmill to provide two similar attachment points behind the subject. In all four ropes assist stability and reduce lateral sway when walking on the treadmill.

The ceiling mounted hoist was supplied with a customised carry bar to which the harness is attached. The modified carry bar is also linked to the weight stack via the overhead pulley system. The weight stack is used to support a percentage of the subject's body weight (typically 25 to 40%) whilst walking on the treadmill. The ceiling hoist does not support any of the subject's weight when walking but acts as a safety mechanism, arresting the subject's fall should they trip. The hoist complies with the relevant British Standard for lifting patients and is designed to support a maximum load of 200kg. Three different harnesses were tested for suitability for supporting the patient whilst walking on the treadmill. The harnesses were rated for comfort and unrestricted range of movement allowed at the hip joint. Two harnesses were deemed suitable for the project and the final selection is made on the basis of subject preference.

The modified treadmill and custom designed PWBS system have several major advantages over the commercially available alternatives. The therapists have largely unrestricted access to the patient to assist with movement of the lower limbs if required. Removing the sidebars from the treadmill also permits a clear view of the patient when walking, thus facilitating observational gait analysis. The four point pelvic support system removes the need for a therapist to provide support at this level and can be adjusted to provide more or less support as required. The use of the powered ceiling mounted hoist provides a safe method of assisting subjects who are unable to sit to stand independently, in particular those individuals with limited upper limb function.

The technique of employing FES to facilitate swing limb advancement and foot placement aims to reduce the amount of physical input from the therapists who may otherwise be required to manually assist limb movement. FES also has the advantage of inducing active muscle contractions and invoking reflex stepping actions that may enhance motor relearning.

The foot switch data collection system was developed in house at the Bioengineering Unit to record foot contact patterns. As stated previously, use of this system has so far been limited by staff time constraints. Other temporal and spatial gait parameters are being recorded as planned.

### Subject Recruitment And Testing

The original aim was to recruit 14 subjects. To date ten acute incomplete spinal cord injured patients have been recruited from within the Queen Elizabeth National Spinal Injuries Unit. Four subjects have completed all phases of the study and data collection for these subjects is complete. A further five subjects are currently undergoing either the control (A) or intervention (B) phase. These subjects are scheduled to complete the study by mid May. One subject withdrew from the study.

The duration of each phase is four weeks, including a three-day assessment session at the end of each phase. During the control phase (A) subjects undergo their standard physiotherapy regimen. A daily record is kept of time spent performing gait-training activities, to allow comparisons with the intervention phase (B) to be made. During the intervention phase subjects undergo daily gait training on the treadmill. Each session lasts for approximately one hour, including donning and doffing of the system and rest periods. Time spent walking, total distance walked, mean walking speed, percentage of partial body weight support, number of rests and FES parameters are recorded for each session. Outcome measures are being recorded as planned at the end of each phase.

### Preliminary Results

The amount of body weight support required has progressively reduced across the four-week treatment period for all subjects thus far. This has been accompanied by increases in mean walking speed and total distance walked on the treadmill. The use of FES in conjunction with the partial body weight support system has enabled three of the four subjects who have completed the study to walk on the treadmill with no physical assistance from the therapist.

### Dissemination

An overview of the project was presented at the annual FES User Group meeting hosted by the City Hospital, Birmingham. A second presentation was made at an annual workshop for physiotherapists who work in spinal cord injury units. Representatives from the majority of spinal units in Britain attended, including Stoke Mandeville, Stanmore, Southport and Cardiff. Both presentations were well received. Physiotherapists from other units specialising in spinal injuries commented on the advantages of the customised treadmill and PWBS system over commercially available systems. The novel use of the Chiltern Invadex ceiling mounted hoist prompted the company to produce an article on the project for their newsletter. This is due to be published in the near future.

## **Appendix B: Occupational Therapy Report**

### **SERVICE AIM STATEMENT**

To provide a quality 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.

Individual 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
- \* Home Environment
- \* Work Environment
- \* School
- \* Community Skills
- \* Lifestyle/Leisure
- \* Key worker/Needs assessment
- \* Driving assessment screening (informal)
- \* Power wheelchair control needs
- \* Pre and post-op assessment in tendon transfer surgery
- \* Pre and post-op assessment in neuro-control implantation (From Neurocontrol are no longer marketing in the UK. Therefor there are no planned surgical implantations at present.)

## **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 training
- \* Tendon transfer post-of training
- \* Mouthstick training
- \* Environmental Control Unit training
- \* 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
- Splinting the tetraplegic hand and fabrication of splints to aid specific functions e.g. Writing, shaving.
- Patient Education:
  - Skin care/pressure sore prevention in ADL
  - Community resources
  - Cushion care
  - Recreation and leisure
- Environmental control unit and assessment for switch selection
- Mouthstick training
- Home assessment training and 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, 6 are within the Respiratory Care Unit and 30 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

The service is staffed by 3.75 WTE –

Head 111 Occupational Therapist x 1. Average caseload 20 patients, ward based  
Senior 1 x 0.75 WTE. Out-patient service 8 sessions per week plus 5 in-patients  
Senior 1 Hand Therapist x 0.5 WTE. In-patient hand service, average 15 pts plus follow up.  
Senior 11 x 1 (rotational) Average 22 patients  
Occupational Therapy Assistant x 0.5

The Head Occupational Therapist is responsible for

- \* The day-to-day management of the National Spinal Service
- \* Co-ordination of service development within what was the Rehabilitation Directorate
- \* Staff supervision and development
- \* A full caseload that typically comprises 20 spinal injured patients of whom 5 is in the High Dependency Ward
- \* 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

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

- \* Assessment and treatment to the out-patient 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
- \* Patients contacting the service on the open door policy
- \* development of and administration of out-patient service

Senior 1 x 0/5 WTE - (Hand Therapist) - is responsible for,

- \* co-ordination of the all spinal unit upper limb assessment and treatment service
- \* identification of patients who would benefit from or be suitable candidates for
  - \* tendon transfer surgery
  - \* neuromotor control implantation
- \* Hand Service development
- \* Out-patient follow-up as appropriate
- \* Supervision of the Occupational Therapy Assistant

Senior 11 is responsible for,

- \* assessment, treatment and rehabilitation of newly injured patients. Average caseload 22.
- \* Fieldwork educator
- \* Other duties as assigned by the Head OT

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 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

## **SERVICE ACTIVITY**

### IN-PATIENTS

	<u>98/99</u>	<u>99/00</u>	<u>00/01</u>	<u>01/02</u>
Patient contacts	3279	3719	3568	4201
Patient units	9136	9224	7580	9986
Home visits	100	69	72	70
Home visit units	971	713	659	608
Total direct contacts	3519	3788	3640	4271
Total direct units	10107	9937	8239	10594
Total indirect contacts	2644	2704	2460	2828
Total indirect units	3809	3650	2991	3419

Total patient units	13916	13587	11230	14013
---------------------	-------	-------	-------	-------

### OUT-PATIENTS

	<u>98/99</u>	<u>99/00</u>	<u>00/01</u>	<u>01/02</u>
Patient contacts	644	707	774	870
Patient units	1504	1755	1394	1432
Home visits	78	66	103	91
Home visit units	500	508	881	709
Total direct contacts	722	773	877	961
Total direct units	2004	2263	2275	2141
Total indirect contacts	1022	1101	1445	1476
Total indirect units	1471	1566	1787	1863
Total patient units	3475	3829	4062	4004
<b>TOTAL COMBINED UNITS</b>	<b>17391</b>	<b>17416</b>	<b>15292</b>	<b>18017</b>

There has been a significant increase in the number of patient contacts and units in this last year. This can be partially attributed to the improved sickness absence record: 0.8% in the year 2001/02. This is compared with 7% in the year 2000/2001, 4.5% in 99/00, 4% in 98/99.

### OUT-PATIENT SERVICES

There continues to be an annual increase in the number of episodes of out-patient contact. This is in line with the increasing demands of outreach clinics and the year on year increase in the number of new patients seen as outpatients.

1998/99	440
2000/01	532
2001/02	643

**In 4 years there has been a 46% increase in demand. There has also been a 15 % increase in the total time spent on outpatients. This is partially due to the increased demand for out-patient upper limb services and has been accomodated due to the decrease in the number of intact patients admitted this year. However, due to the increased demand less time is being spent on individual cases pro-rata.**

## **A review of staffing needs is attached.**

With the additional following service demands, a review of staffing levels is required to accommodate the developments. (Please refer to attached document for resource implications)

- ❖ the increased demand for OT input to satellite clinics
- ❖ increased demands on the hand service for pre and post surgery treatment
- ❖ development of hand clinic
- ❖ increased use and potential for IT within the unit

## **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. In addition the Head OT and Senior 11 are fieldwork educators.

Lectures/presentations this year

- Posture management – OT staff and assistants, Victoria Infirmary
- Review of audit on Pressure sore occurrence the spinal injured population – Scottish Wheelchair and Seating Group
- MASCIP – An evaluation of voice
- Skin and posture - Patient and relatives education sessions
- 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
- Medical Surgical Society – demonstration of IT used in Spinal Cord Injury rehab

## **COURSES ATTENDED BY STAFF**

Treatment of Upper Limb Spasticity  
Mobile Arm Support demonstration  
Postural management  
Scottish Seating and Wheelchair Conference  
MASCIP  
Rheumatoid Arthritis Update

## **CLINICAL GOVERNANCE ACTIVITY**

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.

The Occupational Therapy Department within the Trust now has regular Clinical Effectiveness Meetings at which the Spinal Unit staff play an active part

Within the Spinal Unit there are monthly audit meetings where staff present projects they are working on. Also 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**

- ❖ OT Journal Club established
- ❖ Housing Adaptations satisfaction survey completed. However with a response rate of 24% results are inconclusive. The questionnaires are being sent out again with a covering letter kindly requesting a response.
- ❖ Compliance in wearing splints in Spinal injured patients. A Study was carried out by a OT student for her dissertation looking at factors which influence whether or not patients follow the splinting regime as outlined by the OT. Several questions were raised which we now hope will be carried forward.
- ❖ Environmental Control Units set up on the Respiratory Care Unit allowed the most dependent of patients to control their immediate environment eg Television, lamp, fan. This reduced the demands on nursing staff for what could be seen as incidental needs but are a very real issue in quality of life and personal control. However it must be noted that the units did have to be set up around the patient every time they change position which added to nursing care, albeit in a small way. We have found that the patients who value this resource most are those who are motivated and have no significant cognitive impairment.

## **Appendix C: Rehab Scotland**

Rehab Scotland  
Spinal Injury Service

Year April 2001 to March 2002

Rehab Scotland saw 93 patients during the reporting period. This represents a drop of 18% over same period the previous year. This drop was caused by two reasons.

1. The service was closed for six weeks in April / May last year due to illness of the Rehab Scotland employee.
2. More ventilator dependent patients were seen during the period 2001 – 2002. These patients need extended time for assistive technology assessment and training.

The analysis of the 93 patients is as follows: -

55 Inpatients

15 Outpatients (Seen in the unit)  
23 Outreach Patients (Domiciliary visit)

---

93 Total

---

Patient achievements during the measurement period are: -

A) 29 Successfully explored their potential for using assistive technology to improve their future quality of life.

B) 4 Patients used computers as part of a planned therapy programme.

C) 7 Patients with high-level injuries successfully completed training to use either headset technology or speech recognition systems. Achieving independence in computer access.

D) 12 Patients' family and / or carers needed training / assistance by way of technical advice or training to provide computer support for the person in their care.

E) 4 Patients received support from the service to retain employment.

F) 10 Patients improved their basic computing skills in the use of various common application programs, so improving their independence at home.

Developments:

Observations are that more computer literate people are admitted to the unit. This is obviously following the trend in society where more people are familiar with home computers and the Internet.

Our reaction to this trend is to investigate the introduction of "drop-in" workstations in various parts of the unit for patients. This will leave the Computer Room free to concentrate high-level injury patients who are in need of Assistive Technology development, exploration training and pre-vocational training.

Developments in speech recognition have been toward making it a more "user friendly" technology. Accuracy and continuous speech has been at the expense of those requiring a totally "hands free" environment.

Currently our patients requiring a totally "hands free" environment have to rely on obsolete discrete speech technology, with all its problems associated with accuracy and correction.

The next generation of speech recognition technology will address this situation, making it accessible for all. The downside is an increase in product price and higher specification base computer.

Headset technology development has improved over the last two years. The latest sets are driven by a high resolution CCD camera controlled by an infrared beam. We will be performing trials later this year with a view of purchase in 2003.

Developments in miniature LCD screens has led us to purchase a DVD Player and some Olympus "Eye Trek" Personal Displays. Within the guidelines of some safety regulations, they allow patients to watch feature films while on bedrest and / immobile.



Available shortly will be the Intranet website, designed for professionals within the South Glasgow University Hospitals Trust to obtain information about the unit.

June 2002

## **Appendix D: Spinal Injuries Scotland**

Report on the work of SIS (Spinal Injuries Scotland) at QENSIU from 1<sup>st</sup> April 2001 to 31<sup>st</sup> March 2002

### **Introduction**

Throughout the past year SIS has maintained its close links to the National Spinal Injuries Unit, providing seamless and appropriate care for spinal cord injured people across the country. The working relationship has proved essential for current and former patients of the unit in their rehabilitation process. SIS conduct regular visits to the unit to meet with in-patients and also attend Outreach clinics conducted by the Unit staff at hospitals across Scotland.

SIS provides medical students from the Spinal Unit with a day of first hand experience of day to day life with SCI through partnering them with a spinal cord injured person and sending them off for the day. The discussion session at the end of the day always results in students expressing their amazement at the difference between real life and theory.

All SIS volunteers are fully trained by a spinal cord injured Psychologist. We have a strict policy of only allowing fully trained persons who have developed both appropriate visiting skills and a knowledge of SCI into the unit.

### **Visiting Scheme**

- Our representatives carried out twice monthly visits on the first Wednesday of the month from 6p.m. - 8p.m. and the third Wednesday of the month from 2p.m. – 4p.m. Our representatives visit in pairs of a spinal cord injured person and an able bodied volunteer. This pairing has proved effective in catering for the both the needs of the patient and also the family circle.
- SIS aims to address the long term concerns and issues raised by patients and their families e.g. housing, adaptations and aids, holidays, etc.
- 51 new members were recruited to SIS during the year. Their first year's membership is free and allows them full access, for themselves and their family, to the services that SIS provide.
- SIS was unable to visit on 3 of the 24 occasions this year due to the unavailability of fully trained volunteers on those days.

### **Outreach clinics**

Throughout the year a representative from SIS attended three Spinal Injury Outpatient clinics at Woodend Hospital, Aberdeen and three at Raigmore Hospital, Inverness. On the two occasions that a SIS representative was not present, QENSIU staff took SIS material with them to make available to patients attending. Many outpatients were grateful of the opportunity to speak with SIS and our presence is highly valued by the clinic staff. SIS has sustained and developed our commitment to these clinics and medical staff regard us as providing an extra resource to patients.

### **Round the World Challenge**

SIS co-ordinated the visit of Mike Nemesvary, who founded the Back-up Trust, to the QENSIU. Mike met with Unit staff and patients as part of his Round the World Challenge. Mike saw the importance of visiting Scotland's only Spinal Unit during the British leg of his World Tour. His visit offered inspiration in particular to high level tetraplegics who could see first hand the achievements possible with determination and planning.

### **Social/ Sport Activities**

SIS has continued to help develop the Joint Volunteers Group alongside Options, the SGH volunteer group, Spin and Rehab Scotland.

The activity of the Joint Volunteers Group has significantly increased over the past year. The group has now organised five very successful and popular "Nights in" events for in-patients, former patients and their families.

On top of the social aspect, the Joint volunteers group now oversees all volunteer activity within the unit. Our main aim is to develop the quality and relevance of volunteer input to the unit.

To encourage SCI's to try new sports, we continue to award the Manny Forwell Bursary, an annual award of £500 given to assist a newly injured person back into a recreational activity.

### **Community involvement**

SIS has been delighted to develop the three-way link between ourselves, the Spinal Unit and St. Constantine's Children's Liturgy, a group of 4-14 year olds from a local Govan Parish. The children now visit the unit regularly to perform at the "nights in" and have fundraised tirelessly for SCI's. It is inspiring to see the children's acceptance and awareness of the situation of the patients in the unit – their practicality would put many adults to shame.

### **Conclusion**

SIS is delighted to continue to maintain and increase its role within the unit itself and in the long-term support of those with SCI. Regular review of our work with the Clinical Director ensures continuity in tandem with relevant progression.

John O'Neill  
Chief Executive      04/06/02

## **Appendix E: Nurse Training and Education**

### **Teaching Sessions For External Professionals Commencing January 2001.**

<b>Date</b>	<b>Hours study</b>	<b>Location</b>	<b>For whom</b>	<b>No's attended</b>
24 <sup>th</sup> & 25 <sup>th</sup> Jan	1.5 days	SIU	Nurses from Belfast ITU - M&H guidelines, bracing and acute care of SCI	<b>4</b> MP
8 <sup>th</sup> Mar	2 hours	Ibrox Parish Church	St. Andrews Ambulance - dealing with a suspected SCI	<b>30</b> MP
12 <sup>th</sup> Mar	2 hours	Caledon-University	District Nursing Staff - doing D/N course	<b>16</b> MP / SP
13 <sup>th</sup> March	3 hours	Maryhill H/C	District Nursing Staff - Bowel Management / Guidelines	<b>18</b> MP / MB / EL / SG
15 <sup>th</sup> March	3 hours	Easterhouse H/C	District Nursing Staff - Bowel Management / Guidelines	<b>20</b> MP / MB
19 <sup>th</sup> March	Full day	SIU	Western General Nurses in Edinburgh - Neurosciences	<b>7</b> MP / LD

27 <sup>th</sup> March	3 hours	Beresford Centre	District Nursing Staff - Bowel Management / Guidelines	<b>20</b> MP / MB / SG
28 <sup>th</sup> March	3 hours	Beresford Centre	District Nursing Staff - Bowel Management / Guidelines	<b>20</b> MP / MB / SG
3 <sup>rd</sup> April	3 hours	Beresford Centre	District Nursing Staff - Bowel Management / Guidelines	<b>30</b> MP / MB / SG
5 <sup>th</sup> April	3 hours	Beresford Centre	District Nursing Staff - Bowel Management / Guidelines	<b>34</b> MP / MB / SG / EL
31 <sup>st</sup> May	Full day ½ hr as part of a team	Walton	Spinal Injuries the first 48 hours	<b>130</b> MP / Multi-discip.
30 <sup>th</sup> Aug	1 hour	Practice Develop. Dept	E/N Refresher Course – Coping with Aggressive & Violent Patients	<b>7</b> MP
5 <sup>th</sup> Sept	1 hour	Cowglen	Trust Orientation Programme - Coping with Aggression & Violence	<b>14</b> MP
26th & 27th Sept	2 full days	Cowglen	Trust Wide - Management of Aggression	<b>6</b> MP / JS
20th Dec	2 hours	SIU	Continance Advisor Edinburgh Neuropathic bladder & bowels	<b>2</b> MP

### **In-House Teaching Sessions**

### ***Commencing Jan 2001***

Dates	Topic	Speaker	No.s attended
10th Jan	Relatives Information Day	Michele Paterson	6
18 <sup>th</sup> & 19 <sup>th</sup> Jan	Keyworker Training - SIU	Michele Paterson & Audrey Walker	2
22 <sup>nd</sup> Jan	Tracheostomy Training – PDRU	Michele Paterson	3
23 <sup>rd</sup> Jan	CPR Training - YDU	Michele Paterson	10
30 <sup>th</sup> Jan	CPR Training - YDU	Michele Paterson	2
14th Feb	SHO Teaching - M+ H, Bowels & skin	Michele Paterson	4
15 <sup>th</sup> & 16 <sup>th</sup> Feb	Keyworker Training SIU	Michele Paterson & Audrey Walker	1
22nd Feb	SHO Teaching - GP	Michele Paterson	3
23 <sup>rd</sup> Feb	Tracheostomy Training – YDU	Michele Paterson	6
1 <sup>st</sup> May	Tracheostomy Training – PDRU	Michele Paterson	2

9th May	Patient's Outcomes Day for new staff	Michele Paterson	4
21 <sup>st</sup> May	Tracheostomy Training - PDRU	Michele Paterson	1
30 <sup>th</sup> May	KCI Vac system update on its use for wounds - Spinal and PDRU.	Jeannie (the rep from KCI)	14
9 <sup>th</sup> & 10 <sup>th</sup> July	Keyworker Training - SIU	Michele Paterson & Audrey Walker	1
1 <sup>st</sup> & 2 <sup>nd</sup> Aug	Management of Aggression – PDRU	Michele Paterson & Larry Callery	10
13 <sup>th</sup> Aug	CPR Update	Michele Paterson	2
28 <sup>th</sup> & 30 <sup>th</sup> Aug	Keyworker Training	Michele Paterson & Audrey Walker	3
7th Sept	SHO Teaching - Bowels & Skin	Michele Paterson	2
17th Sept	CPR Update - YDU	Michele Paterson	3
20th Sept	CPR Update - Philipshill	Michele Paterson	2
28th Sept	Bowel Training - PDRU	Michele Paterson & Mary Ballentyne	4
2nd Oct	Patient's Outcome Day for new staff	Michele Paterson	5
3rd October	CPR Update - Philipshill	Michele Paterson	6
4th October	CPR Update - Ward 53	Michele Paterson	4
5th October	Bowel Training - PDRU	Michele Paterson & Mary Ballentyne	4
8th October	CPR Update - Ward 53	Michele Paterson	3
9th October	CPR Update - Philipshill	Michele Paterson	5
12th October	Bowel Training - PDRU	Michele Paterson	2
29th Oct	CPR Update - PDRU	Michele Paterson	3
19th & 26th Nov	Keyworker Training	Michele Paterson & Audrey Walker	3
20th Nov	Relatives Information Day	Michele Paterson	20
12th Dec	CPR – Physios Spinal	Michele Paterson	5

### **In-House Teaching Sessions**

### ***Commencing Jan 2002***

Dates	Topic	Speaker	No.s attended
16th Jan	Infection Control - Aux Comp	Michele Paterson	2
25th Jan	Communication - Handling A&V - Aux Comp	Michele Paterson	2
13th & 14th Feb	Keyworker Training - SIU & PDRU	Michele Paterson & Fiona Brown	10
18th Feb	SHO Teaching - M&H	Michele Paterson	5
12th Mar	Patients Outcomes Day	Michele Paterson & Laurie Duffy	8

14th & 15th Mar	Keyworker Training – PDRU	Michele Paterson & Fiona Brown	5
-----------------	------------------------------	-----------------------------------	---

**Teaching Sessions For External Professionals**  
**Commencing January 2002.**

Date	Hours study	Location	For whom	No's attended
29th Jan	1.5 hours	SIU	SPIN volunteers - Autonomic Dysreflexia	<b>8</b> MP
30th & 31st Jan	2 days	Walton	Trust – Management of Aggression	<b>5</b> MP/LC
25th Feb	1 day	SIU	Western General Nurses in Edinburgh – Neurosciences degree	<b>2</b> MP
11th Mar	2 hours	Cali Uni	District Nurses - Community Nursing Course	<b>18</b> MP/LW

### **Appendix G: Psychology Report**

Dr Audrey Walker is currently on maternity leave. Support has been received from the Departement of Psychological Medicine.

### **Appendix H: Social work Report**

Report unavailable due to sickness absence and study leave. Major issues incorporated in body of report.

## **APPENDIX I: Raw Data**

### **DA1: New Admissions**

	<b>Admissions</b>
<b>1992/1993</b>	59
<b>1993/1994</b>	128
<b>1994/1995</b>	137
<b>1995/1996</b>	150
<b>1996/1997</b>	164
<b>1997/1998</b>	167
<b>1998/1999</b>	163
<b>1999/2000</b>	180
<b>2000/2001</b>	199
<b>2001/2002</b>	164
<b>Total</b>	<b>1511</b>

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

<b>Admissions</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>Total</b>
<b>1992/1993</b>	9	15	16	19	<b>59</b>
<b>1993/1994</b>	6	18	47	57	<b>128</b>
<b>1994/1995</b>	13	24	32	68	<b>137</b>
<b>1995/1996</b>	6	30	39	75	<b>150</b>
<b>1996/1997</b>	13	20	52	79	<b>164</b>
<b>1997/1998</b>	17	24	46	80	<b>167</b>
<b>1998/1999</b>	4	32	27	100	<b>163</b>
<b>1999/2000</b>	8	27	28	117	<b>180</b>
<b>2000/2001</b>	13	24	40	122	<b>199</b>
<b>2001/2002</b>	11	24	30	99	<b>164</b>
<b>Total</b>	<b>100</b>	<b>238</b>	<b>357</b>	<b>716</b>	<b>1511</b>



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

	1992/ 1993	1993/ 1994	1994/ 1995	1995/ 1996	1996/ 1997	1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	Total
<b>Argyll &amp; Clyde</b>	9	22	21	28	28	29	24	28	28	12	229
<b>Ayrshire &amp; Arran</b>	4	12	9	9	12	12	12	17	20	16	123
<b>Borders</b>	0	2	2	1	2	3	0	2	0	3	15
<b>Dumfries &amp; Galloway</b>	2	3	4	5	5	6	16	13	7	10	71
<b>Fife</b>	3	3	5	4	3	4	1	3	2	7	35
<b>Forth Valley</b>	2	8	10	9	8	13	6	11	17	9	93
<b>Grampian</b>	2	2	3	2	6	6	8	4	8	8	49
<b>GGHB</b>	19	32	43	46	45	28	37	28	47	44	369
<b>Highland</b>	6	6	5	2	5	7	10	4	6	16	67
<b>Lanarkshire</b>	5	19	19	21	20	22	27	40	25	20	218
<b>Lothian</b>	3	7	6	6	8	14	6	11	14	8	83
<b>Shetland</b>	0	0	0	1	2	0	0	-	0	1	4
<b>Tayside</b>	2	5	4	4	4	8	3	6	5	5	46
<b>Orkney</b>	0	0	0	0	0	1	0	-	0	0	1
<b>Western Isles</b>	0	7	1	4	5	2	5	-	3	2	29
<b>ECR</b>	1	0	5	7	9	10	6	11	12	2	63
<b>Private</b>	1	0	0	1	2	2	2	1	0	1	10
<b>Unknown</b>								1	5	0	6
<b>TOTAL</b>	<b>59</b>	<b>128</b>	<b>137</b>	<b>150</b>	<b>164</b>	<b>167</b>	<b>163</b>	<b>180</b>	<b>199</b>	<b>164</b>	<b>1511</b>

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

	1992/1993 - 2000/2001	2001/ 2002	Total	% to Total		Population Size	% to Total
<b>Argyll &amp; Clyde</b>	217	12	<b>229</b>	15.2		<b>430500</b>	8.4
<b>Ayrshire &amp; Arran</b>	107	16	<b>123</b>	8.1		<b>376500</b>	7.3
<b>Borders</b>	12	3	<b>15</b>	1.0		<b>106100</b>	2.1
<b>Dumfries &amp; Galloway</b>	61	10	<b>71</b>	4.7		<b>147600</b>	2.9
<b>Fife</b>	28	7	<b>35</b>	2.3		<b>349300</b>	6.8
<b>Forth Valley</b>	84	9	<b>93</b>	6.2		<b>274600</b>	5.4
<b>Grampian</b>	41	8	<b>49</b>	3.2		<b>531200</b>	10.4
<b>GGHB</b>	325	44	<b>369</b>	24.4		<b>909600</b>	17.7
<b>Highland</b>	51	16	<b>67</b>	4.4		<b>208700</b>	4.1
<b>Lanarkshire</b>	198	20	<b>218</b>	14.4		<b>560800</b>	10.9
<b>Lothian</b>	75	8	<b>83</b>	5.5		<b>767800</b>	15.0
<b>Shetland</b>	3	1	<b>4</b>	0.3		<b>23020</b>	0.4
<b>Tayside</b>	41	5	<b>46</b>	3.0		<b>393600</b>	7.7
<b>Orkney</b>	1	0	<b>1</b>	0.1		<b>19800</b>	0.4
<b>Western Isles</b>	27	2	<b>29</b>	1.9		<b>28880</b>	0.6
<b>ECR</b>	61	2	<b>63</b>	4.2			
<b>Privet / Overseas</b>	9	1	<b>10</b>	0.7			
<b>Unknown</b>	6	0	<b>6</b>	0.4			
<b>TOTAL</b>	<b>1347</b>	<b>164</b>	<b>1511</b>			<b>5128000</b>	

**DA5: Admissions by Degree of Injury**

	805	806	952	Other	Total
<b>1992/1993</b>	16	24	16	3	<b>59</b>
<b>1993/1994</b>	36	43	36	13	<b>128</b>
<b>1994/1995</b>	49	33	40	15	<b>137</b>
<b>1995/1996</b>	45	44	43	18	<b>150</b>
<b>1996/1997</b>	60	50	39	15	<b>164</b>
<b>1997/1998</b>	62	50	42	13	<b>167</b>
<b>1998/1999</b>	80	36	36	11	<b>163</b>
<b>1999/2000</b>	94	44	34	8	<b>180</b>
<b>2000/2001</b>	100	60	26	13	<b>199</b>
<b>2001/2002</b>	76	62	23	3	<b>164</b>
<b>Total</b>	<b>618</b>	<b>446</b>	<b>335</b>	<b>112</b>	<b>1511</b>

**DA6: Discharges by Degree of Injury**

<b>Discharges</b>	<b>805</b>	<b>806</b>	<b>952</b>	<b>Other</b>	<b>Total</b>
<b>1992/1993</b>	12	8	8	3	<b>31</b>
<b>1993/1994</b>	38	44	40	13	<b>135</b>
<b>1994/1995</b>	48	39	30	14	<b>131</b>
<b>1995/1996</b>	44	40	51	19	<b>154</b>
<b>1996/1997</b>	63	44	31	13	<b>151</b>
<b>1997/1998</b>	60	50	46	14	<b>170</b>
<b>1998/1999</b>	75	38	37	12	<b>162</b>
<b>1999/2000</b>	93	37	35	7	<b>172</b>
<b>2000/2001</b>	99	52	25	13	<b>189</b>
<b>2001/2002</b>	81	51	22	3	<b>157</b>
<b>Total</b>	<b>613</b>	<b>403</b>	<b>325</b>	<b>111</b>	<b>1452</b>

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

<b><u>Admissions</u></b>	<b>1998/ 1999</b>	<b>1999/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>
<b>Central Cord Lesion</b>	22	15	12	11
<b>Infection</b>	2	2	4	4
<b>Vascular</b>	7	8	3	1
<b>Tumour</b>	3	2	0	1
<b>Intra medullary Cyst</b>	0	0	0	0
<b>Non-specific Lumbar Lesions</b>	0	0	2	0
<b>Stab Wounds</b>	0	0	0	2
<b>Other</b>	2	7	4	4
<b>Total</b>	<b>36</b>	<b>34</b>	<b>25</b>	<b>23</b>

<b><u>Discharges</u></b>	<b>1998/ 1999</b>	<b>1999/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>
<b>Central Cord Lesion</b>	18	16	16	10
<b>Infection</b>	3	2	1	3
<b>Vascular</b>	9	6	5	3
<b>Tumour</b>	2	2	0	0
<b>Intra medullary Cyst</b>	0	1	0	0
<b>Non-specific Lumbar Lesions</b>	0	3	1	0
<b>Stab Wounds</b>	0	3	1	2
<b>Other</b>	5	2	1	4
<b>Total</b>	<b>37</b>	<b>35</b>	<b>25</b>	<b>22</b>

**DA8: Daycase attendances by Health Board**

	1994/ 1995	1995/ 1996	1996/ 1997	1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	Total
Argyll & Clyde	23	38	44	71	80	95	59	94	409
Ayrshire & Arran	21	14	48	37	39	42	54	84	297
Borders	0	0	1	4	1	2	0	0	6
Dumfries & Galloway	4	4	0	0	9	4	2	8	27
Fife	0	2	4	6	3	16	16	4	35
Forth Valley	16	5	5	11	24	8	11	42	114
Grampian	0	0	3	2	5	1	2	2	14
Greater Glasgow	68	95	94	158	207	228	160	164	946
Highland	1	5	5	5	7	2	0	2	25
Lanarkshire	21	50	67	95	179	153	177	138	727
Lothian	0	9	9	18	27	28	11	15	89
Shetland	0	0	0	0	0	0	0	0	0
Tayside	1	8	9	4	5	5	2	1	30
Orkney	0	0	0	0	0	0	0	0	0
Western Isles	1	0	0	0	0	0	0	1	2
ECR	0	0	0	0	0	6	1	1	8
<b>Total</b>	<b>156</b>	<b>230</b>	<b>289</b>	<b>411</b>	<b>586</b>	<b>590</b>	<b>495</b>	<b>556</b>	<b>2729</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>1992/1993</b>	9	15	9	6	3	3	4	1	0	50
<b>1993/1994</b>	11	24	16	9	11	10	4	4	0	89
<b>1994/1995</b>	8	26	17	14	17	12	4	1	0	99
<b>1995/1996</b>	11	19	20	19	15	6	4	0	0	94
<b>1996/1997</b>	12	19	19	17	20	11	9	1	0	108
<b>1997/1998</b>	12	22	26	23	19	11	13	3	0	129
<b>1998/1999</b>	9	30	21	16	18	16	4	2	0	116
<b>1999/2000</b>	15	26	28	16	22	11	5	0	0	123
<b>2000/2001</b>	17	30	23	22	18	15	9	4	0	138
<b>2001/2002</b>	14	22	32	20	17	19	5	2	0	131
<b>Total</b>	<b>128</b>	<b>233</b>	<b>211</b>	<b>162</b>	<b>160</b>	<b>114</b>	<b>61</b>	<b>18</b>	<b>0</b>	<b>1077</b>

<b>Females</b>										
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	>90	Total
<b>1992/1993</b>	1	1	1	2	2	2	0	0	0	9
<b>1993/1994</b>	11	7	6	7	1	4	2	1	0	39
<b>1994/1995</b>	2	6	11	3	5	4	5	2	0	38
<b>1995/1996</b>	6	9	11	12	6	4	3	5	0	56
<b>1996/1997</b>	6	7	10	7	9	8	6	3	0	56
<b>1997/1998</b>	5	7	9	2	5	5	3	0	2	38
<b>1998/1999</b>	8	8	6	4	6	3	9	3	0	47
<b>1999/2000</b>	8	10	9	7	8	6	5	2	2	57
<b>2000/2001</b>	1	13	9	11	8	6	5	7	1	61
<b>2001/2002</b>	4	8	5	4	0	6	1	4	1	33
<b>Total</b>	<b>52</b>	<b>76</b>	<b>77</b>	<b>59</b>	<b>50</b>	<b>48</b>	<b>39</b>	<b>27</b>	<b>6</b>	<b>434</b>

<b>All Admissions</b>										
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	>90	Total
<b>1992/1993</b>	10	16	10	8	5	5	4	1	0	59
<b>1993/1994</b>	22	31	22	16	12	14	6	5	0	128
<b>1994/1995</b>	10	32	28	17	22	16	9	3	0	137
<b>1995/1996</b>	17	28	31	31	21	10	7	5	0	150
<b>1996/1997</b>	18	26	29	24	29	19	15	4	0	164
<b>1997/1998</b>	17	29	35	25	24	16	16	3	2	167
<b>1998/1999</b>	17	38	27	20	24	19	13	5	0	163
<b>1999/2000</b>	23	36	37	23	30	17	10	2	2	180
<b>2000/2001</b>	18	43	32	33	26	21	14	11	1	199
<b>2001/2002</b>	18	30	37	24	17	25	6	6	1	164
<b>Total</b>	<b>170</b>	<b>309</b>	<b>288</b>	<b>221</b>	<b>210</b>	<b>162</b>	<b>100</b>	<b>45</b>	<b>6</b>	<b>1511</b>

**DA 10: Age & Sex of New Patients by Category of Injury**  
Female Patients 2001/2002

<b>Casemix</b>	<b>No. of patients</b>	<b>Mean Age</b>	<b>Range of Ages</b>
I	0	0	0 - 0
II	2	52.5	37.3 - 68.0
III	6	51.1	20.0 - 69.3
IV	25	44.5	15.7 - 92.0
<b>Females</b>	<b>33</b>	<b>46.2</b>	<b>20 - 92</b>

**DA 11: Age & Sex of New Patients by Category of Injury**  
Male Patients 2001/2002

<b>Casemix</b>	<b>No. of patients</b>	<b>Mean Age</b>	<b>Range of Ages</b>
I	11	57.0	16.4 – 74.9
II	22	43.0	16.5 – 70.1
III	24	39.7	18.3 – 62.2
IV	74	39.6	16.0 – 88.8
<b>Males</b>	<b>131</b>	<b>41.6</b>	<b>16.0 – 88.8</b>

**DA 12: Age & Sex of New Patients by Category of Injury**  
All Patients 2001/2002

<b>Casemix</b>	<b>No. of patients</b>	<b>Mean Age</b>	<b>Range of Ages</b>
I	11	57.0	16.4 – 74.9
II	24	43.8	16.5 – 70.1
III	30	42.0	18.3 – 69.3
IV	79	30.7	15.7 – 92.0
<b>All Patients</b>	<b>164</b>	<b>36.5</b>	<b>15.7 – 92.0</b>

**DA 13: Length of Stay for Traumatic Injury by level of Spinal Cord Lesion 2001/2002**

<b>Casemix</b>	<b>No. of patients</b>	<b>Mean L.O.S. (days)</b>	<b>Range of L.O.S.</b>
<b>I</b>	6	228	120 - 399
<b>II</b>	19	199	3 - 436
<b>III</b>	29	145	4 - 362
<b>IV</b>	103	37	0 - 380
<b>All</b>	<b>157</b>	<b>84</b>	<b>0 - 456</b>

**DA 14: All Discharges**

<b>1992/1993</b>	31
<b>1993/1994</b>	135
<b>1994/1995</b>	131
<b>1995/1996</b>	154
<b>1996/1997</b>	151
<b>1997/1998</b>	170
<b>1998/1999</b>	162
<b>1999/2000</b>	172
<b>2000/2001</b>	189
<b>2001/2002</b>	157
<b>Total</b>	<b>1452</b>

**DA15: Discharges by Casemix Complexity**

<b>Discharges</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>Total</b>
<b>1992/1993</b>	2	7	8	14	<b>31</b>
<b>1993/1994</b>	9	19	47	60	<b>135</b>
<b>1994/1995</b>	10	20	33	68	<b>131</b>
<b>1995/1996</b>	11	34	38	71	<b>154</b>
<b>1996/1997</b>	7	16	49	79	<b>151</b>
<b>1997/1998</b>	19	22	46	83	<b>170</b>
<b>1998/1999</b>	7	26	33	96	<b>162</b>
<b>1999/2000</b>	5	27	22	118	<b>172</b>
<b>2000/2001</b>	10	28	34	117	<b>189</b>
<b>2001/2002</b>	6	19	29	103	157
<b>Total</b>	<b>86</b>	<b>218</b>	<b>339</b>	<b>809</b>	<b>1452</b>

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

2001/2002	A	B	C	D	E	Total
Argyll & Clyde	2	2	0	5	9	18
Ayrshire & Arran	1	0	0	5	11	17
Borders	1	0	1	0	0	2
Dumfries & Galloway	1	0	0	0	8	9
Fife	1	0	1	2	1	5
Forth Valley	1	2	1	2	4	10
Grampian	3	0	2	3	1	9
Greater Glasgow	3	1	3	13	17	37
Highland	0	1	0	0	9	10
Lanarkshire	5	0	1	6	10	22
Lothian	1	1	1	3	0	6
Overseas	0	0	0	0	1	1
Shetland	0	0	0	0	1	1
Tayside	2	0	0	0	1	3
Orkney	0	0	0	0	0	0
Western Isles	0	0	0	2	0	2
ECR	2	0	0	2	0	4
Private	0	0	0	0	0	0
Unknown	0	0	0	0	1	0
<b>TOTAL</b>	<b>23</b>	<b>7</b>	<b>10</b>	<b>43</b>	<b>74</b>	<b>157</b>

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

Discharges	A	B	C	D	E	Total
1999/2000	25	1	12	25	108	172
2000/2001	35	9	8	30	107	189
2001/2002	23	7	10	43	74	157

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

	No. of patients discharged	No. of patients delayed	Mean delay (days)	Range of delay (days)
1999/2000	172	21	122	22 - 410
2000/2001	189	27	68	1 - 877
2001/2002	157	11	19	1 - 107



**DA19: Time between accident & admission**

	<b>No.of patients</b>	<b>Mean Time (Days)</b>	<b>Range of Time</b>
<b>1999-2000</b>	180	158.3	0 - 18770
<b>2000-2001</b>	199	163.3	0 - 12575
<b>2001/2002</b>	164	103	0 - 12012

**DA20: Ventilated Bed Days**

		<b>No. Patients</b>	<b>Ave. Ventilated Days</b>	<b>Total Ventilated Days</b>
<b>1998/1999</b>		12	121	1452
<b>1999/2000</b>	Edenhall	12	63.4	761
	RCU	4	187	748
<b>2000/2001</b>	Edenhall	12	71.5	858
	RCU	10	80.9	809
<b>2001/2002</b>	Edenhall	19	33	643
	RCU	2	40.5	81

**STAFF LIST**

ALLAN DB  
ARMSTRONG N  
BARR KN  
BERRY J  
BEWICK A  
BRADLEY C  
BROWN F  
CALDWELL M  
CAMERON S  
CAMERON S  
CAMPBELL D  
CARR A  
CASSIDY D  
CHISHOLM S  
CLARK I  
CONN G  
CRAIG K  
CRAWFORD S  
CRAWFORD W  
CURRIE J  
DARGAN H  
DAVIES K  
DONNELLY S  
DUFFY L  
DUNCANSON T  
DUNSMORE I  
EDEN C  
FARREN P  
FERRY D  
FLANNIGAN E  
FOLEY C  
FORREST S  
FRASER M  
GOODALL C  
GOVAN E M  
GRANT E  
GRAY A  
GRIFFIN M  
HAMILTON R  
HANDS L  
HANNAH MM  
HASLER J  
HEMS T  
HENDRY E A  
HONEYMAN M A  
HOWAT A  
HUNTER S  
IRVINE G  
JACK M  
JIGAJINNI M V  
JOHNSON F  
JOHNSTON R A  
KELLY V A

KENNEDY L A  
LANG L  
LAZZERINI C  
LEVY C  
LILLEY S  
LOCHRIE T  
LOWE M  
MACDONALD L  
MACDONALD S  
MACKAY M  
MACLEAN L J  
MACLENNAN K  
MAGEE E  
MAKARIOS C  
MANN C A  
MARTIN D  
McALISTER K  
McALOON E  
McCABE A  
McCALLUM T  
McCARRON K  
McCUE M  
McDONALD J  
McDONALD J  
McFADYEN M M  
McGROARTY J  
McKEAND A  
McKILLOP M  
McLEAN A  
McMAHON R C  
McMURTRIE I  
MENZIES J  
MERCHANT P  
MERRY J A  
MONTEITH M  
MULHOLLAND L  
MURPHY J  
NELSON E  
NORMANS S  
ORRY G  
PATERSON S  
PATERSON M  
PATTISON M  
POSTANS N  
PREMEPH R  
PREMEPH S  
PRITCHARD L  
RENNIE K  
RICHMOND H  
ROBERTS P P  
ROBERTSON C  
ROBERTSON K  
ROBERTSON P

ROONEY B  
ROONEY M  
SCOTT J  
SMILLIE V  
SMITH L  
STEWART W  
STURGESS K  
THOMSON C  
THOMSON N P  
TOBIN D  
TURNER M  
VALLERY J  
WAKER A  
WALES J  
WALLACE L  
WATSON J B  
WEBB G  
WOODS