## Main Report

## 1.0 Introduction

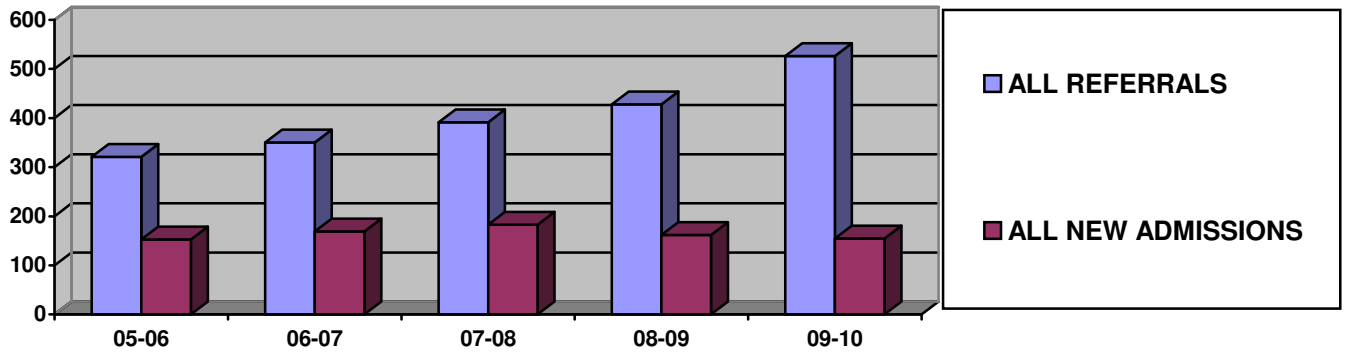
The Queen Elizabeth National Spinal Injuries Unit is responsible for the management of all patients in Scotland who have a traumatic injury to the spinal cord. Since commissioning in 1992 it has continued to develop the management of the acute injury and long term care of its patients to maximise function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

## 2.0 Activity

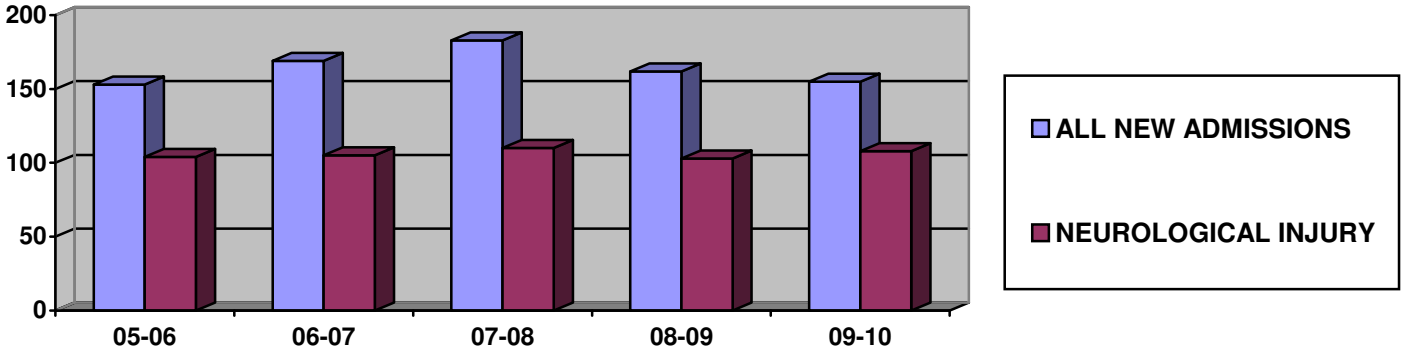
The annual report and its associated appendices contain a comprehensive analysis of the Spinal Injury Unit activity and the individual reports of each department or associated body.

### 2.1.1 New In-Patient Activity

The total number of patients (526) referred to the unit continues to increase. All patients referred with a neurological injury are admitted as soon as clinically indicated. The increasing number of simple spinal fractures referred is of concern and is addressed in Appendix One.




The number of neurological injured patients (108) has remained stable over the last five years and is consistent with the population size. There was a further decrease in the number of non-neurological injured spinal fractures (47) admitted.




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

| | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 | 92-10 |
|---|---|---|---|---|---|---|
| NEW ADMISSIONS | 153 | 169 | 183 | 162 | 155 | 2843 |
| Neurological | 104 | 105 | 110 | 103 | 108 | 1427 |
| Non-neurological | 49 | 64 | 73 | 59 | 47 | 1416 |

The number of patients with a neurological deficit is stable (103-110 median 104). The number of referrals related to spinal fractures without neurology continues to rise. These patients are referred, because of the severity of the fracture or seeking admission for conservative care. Opportunity to admit the full spectrum of fractures is limited because of the number of available beds and the varying case-mix amongst the neurological injuries.

Orthopaedic consultants or neuro-surgeons managed over three hundred and seventy one patients without neurological deficit in the referral hospital. A number of patients were managed in the Neuro-surgical and Orthopaedic wards of the Southern General Hospital because of concomitant injuries.

### 2.1.2. New Admissions: Case Mix Complexity

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

| | Anatomy | Neurology |
|---|---|---|
| GROUP I | Cervical Injury 1 - 4 | High Tetraplegia |
| GROUP II | Cervical Injury 5 - 8 | Low Tetraplegia |
| GROUP III | Thoracic, Lumbar and Sacral Injury | Paraplegia |
| GROUP IV | All levels with Paralysis | Incomplete or none |

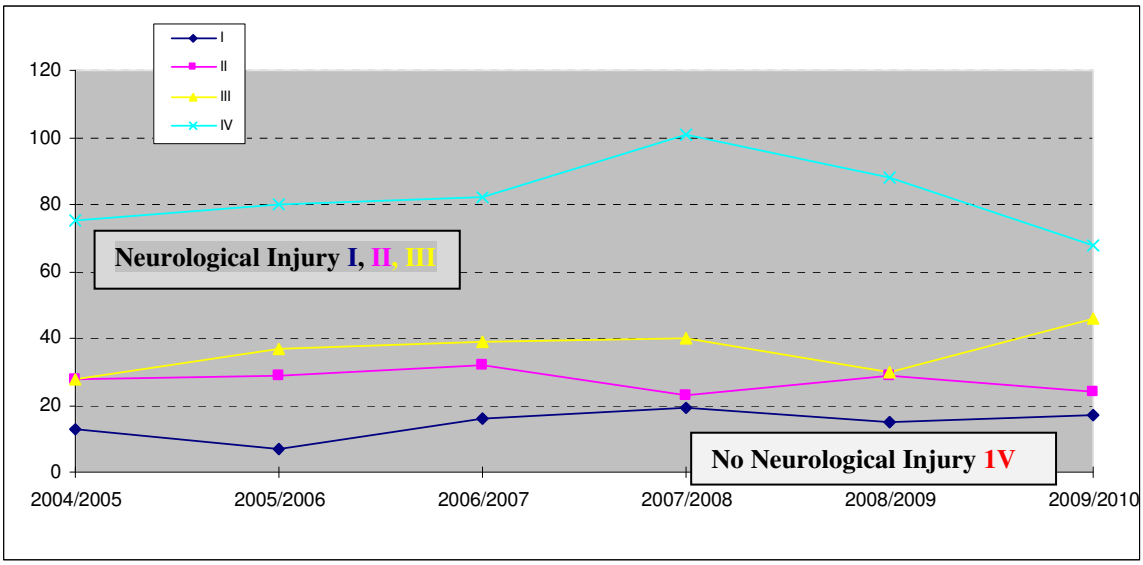
**Group 1** Patients with the most severe neurological injuries. They are the most dependant. The numbers are expected to vary considerably each year.

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

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

## 2.1.3 New Admissions by Case-Mix Complexity

Appendix DA2




| GROUP | 04/05 | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 | 92/10 |
|---|---|---|---|---|---|---|---|
| I | 13 | 7 | 16 | 19 | 15 | 17 | 209 |
| II | 28 | 29 | 32 | 23 | 29 | 24 | 454 |
| III | 28 | 37 | 39 | 40 | 30 | 46 | 637 |
| IV | 75 | 80 | 82 | 101 | 88 | 68 | 1543 |
| | | | | | | | |
| Total | 144 | 153 | 169 | 183 | 162 | 155 | 2843 |

Group I patients increased compared with the previous year. There was an increase in the other dependent group II and a decrease in Group III. The number of patients admitted with no neurology fell to the median level.
The variation in complexity in Group IV is better demonstrated by ASIA grades. The rate of throughput appears higher than any other spinal injury unit in the UK

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

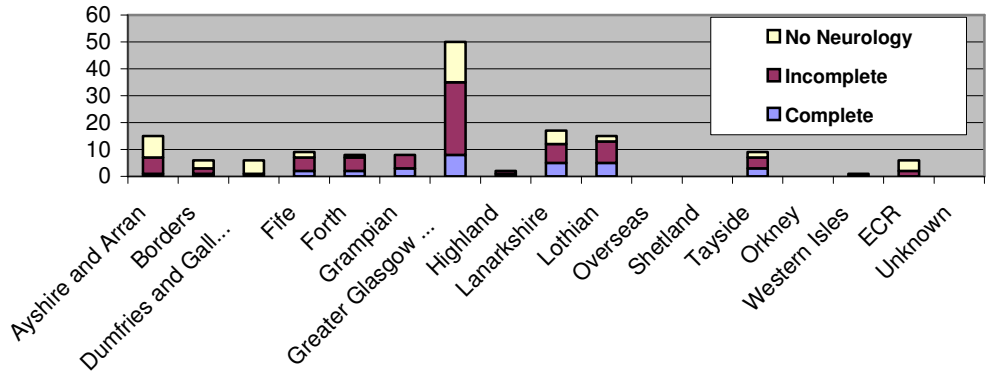
The ASIA grading system is internationally recognised as a measure of dependency and can be used to classify improvements over time.

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

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

| 2009/2010 | A | B | C | D | E | Total |
|---|---|---|---|---|---|---|
| **Ayrshire & Arran** | 1 | 2 | 2 | 3 | 7 | **15** |
| **Borders** | 1 | 0 | 1 | 1 | 3 | **6** |
| **Dumfries & Galloway** | 0 | 0 | 0 | 1 | 5 | **6** |
| **Fife** | 1 | 3 | 3 | 0 | 2 | **9** |
| **Forth Valley** | 2 | 0 | 4 | 1 | 1 | **8** |
| **Grampian** | 3 | 1 | 3 | 1 | 0 | **8** |
| **Greater Glasgow Clyde** | 9 | 2 | 17 | 9 | 15 | **52** |
| **Highland** | 1 | 0 | 1 | 0 | 0 | **2** |
| **Lanarkshire** | 5 | 0 | 3 | 4 | 5 | **17** |
| **Lothian** | 5 | 1 | 4 | 3 | 2 | **15** |
| **Overseas** | 0 | 0 | 0 | 0 | 0 | **0** |
| **Shetland** | 0 | 0 | 0 | 0 | 0 | **0** |
| **Tayside** | 3 | 0 | 0 | 4 | 2 | **9** |
| **Orkney** | 0 | 0 | 1 | 0 | 0 | **1** |
| **Western Isles** | 0 | 0 | 0 | 1 | 0 | **1** |
| **ECR** | 0 | 0 | 1 | 3 | 2 | **6** |
| **Unknown** | 0 | 0 | 0 | 0 | 0 | **0** |
| **TOTAL** | **31** | **9** | **40** | **31** | **44** | **155** |

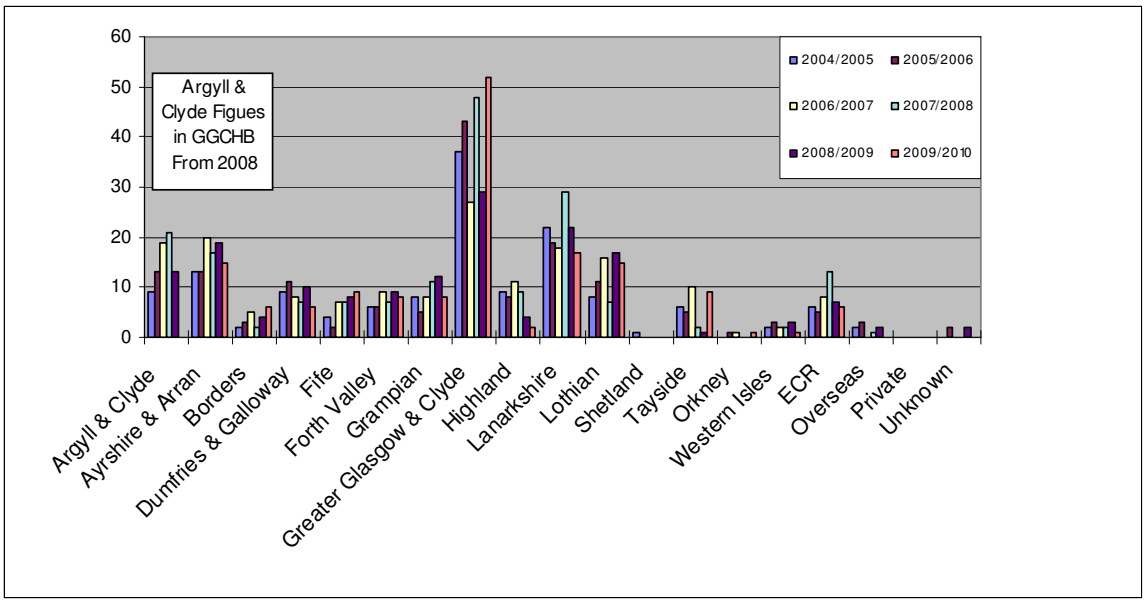
### 2.1.41 Admissions by Neurological Deficit and Health Board




GGCHB is responsible for the largest number of complete and incomplete spinal cord injuries. The distribution of complete and incomplete injuries varies by year. The distribution of admissions and the annual variation since the unit opened justifies the economic benefits of a national service.

### 2.1.5 New Admissions by Health Board of Residence 2004-2010

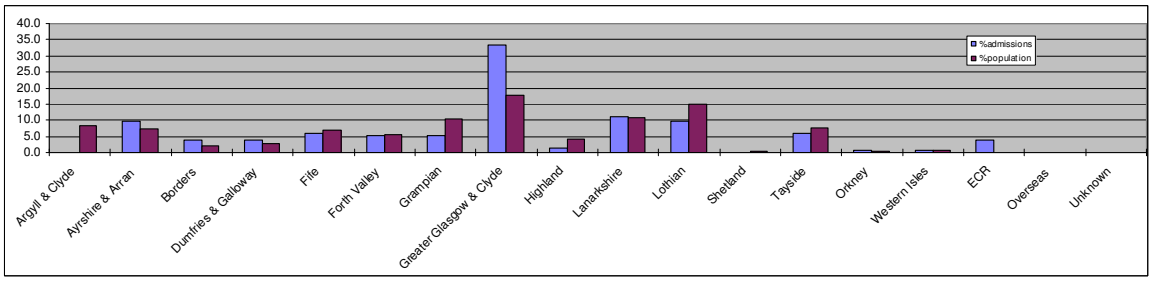
Appendix DA3




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

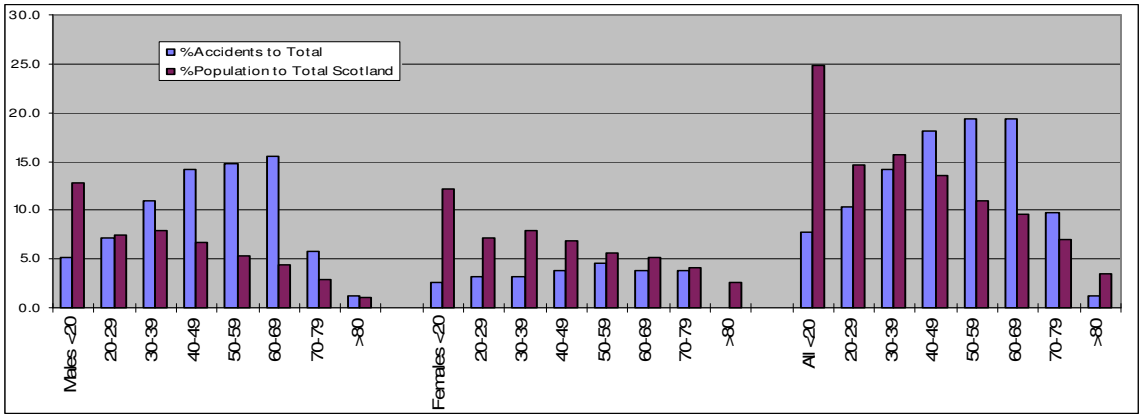
### 2.1.6 Admissions by Health Board compared with Population Size

Appendix DA4




There has been positive encouragement for consultant medical staff in Lothian, Tayside and Grampian to develop services for those patients with no neurological injury. This leads to a dis-proportionate number of admissions from other areas compared with population size. Support is always available from the unit in the management of these patients. Regions with higher than expected admissions are centres for farming and outdoor pursuits as well having a significant proportion of B roads.

### 2.1.7 New Admissions by Age Group



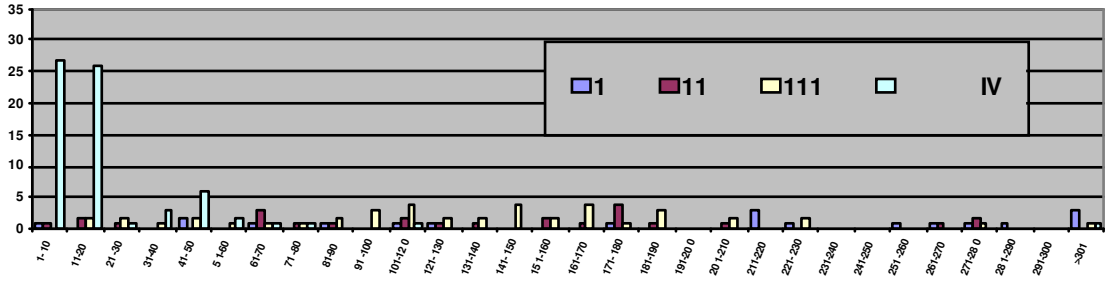

Historically young adult males predominated. The changing pattern is discussed in Appendix Two.

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

| CASE MIX | No. of patients | Mean L.O.S. (days) | Range of L.O.S. |
|---|---|---|---|
| I | 19 | 215 | 9 – 567 |
| II | 25 | 133 | 4 – 280 |
| III | 43 | 130 | 11 – 319 |
| IV | 69 | 24 | 2 – 350 |
| All | 156 | 94 | 2 – 567 |

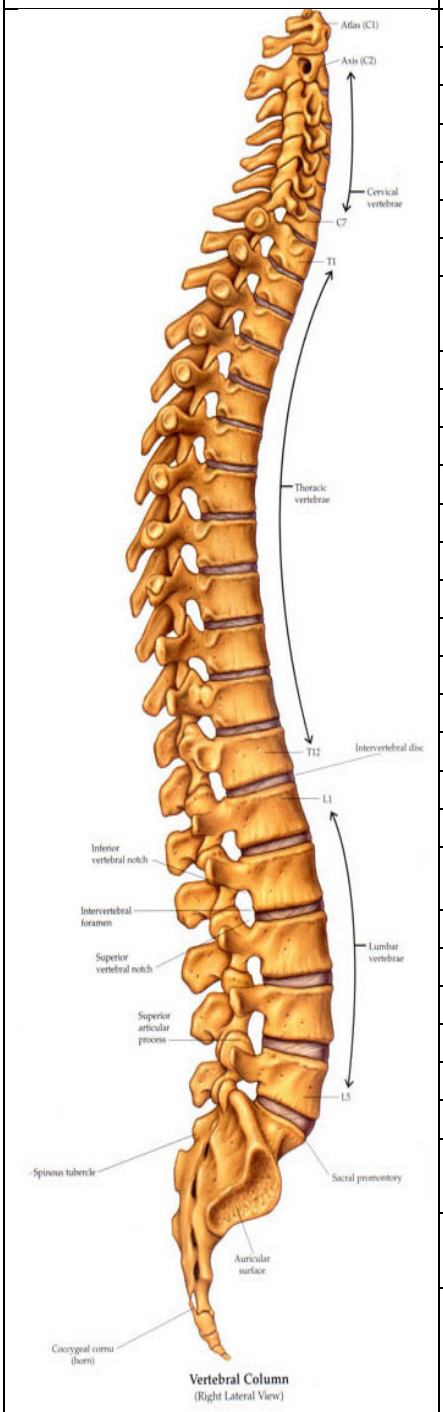
Throughout the last ten years there has been significant effort spent on reducing the length of stay within the unit. The wide variation of length of stay within each classification is indicative of the variation in the rehabilitation needs within each group.
There is a significant variation in the resources used by each group as has previously been demonstrated. The non-neurological group has a significant lower length of stay and lesser impact on the service. An in depth analysis was done in 2006.

### 2.1.9 Length of Stay by Grade of Injury




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

## 2.1 Admissions by Anatomical Level and Severity
## 2.2

| | Level | Complete | Incomplete | No Neurology | Total |
|---|---|---|---|---|---|
|  <br>Vertebral Column<br>(Right Lateral View) | **C 1** | **1** | **0** | **2** | **3** |
| | **2** | **1** | **2** | **4** | **7** |
| | **3** | **1** | **4** | **2** | **7** |
| | **4** | **7** | **12** | **1** | **20** |
| | **5** | **4** | **11** | **7** | **22** |
| | **6** | **2** | **9** | **3** | **14** |
| | **7** | **0** | **3** | **2** | **5** |
| | Sub-total | **16** | **41** | **21** | **78** |
| | | | | | |
| | **T 1** | **0** | **3** | **0** | **3** |
| | **2** | **0** | **0** | **0** | **0** |
| | **3** | **0** | **0** | **1** | **1** |
| | **4** | **2** | **2** | **1** | **5** |
| | **5** | **0** | **2** | **1** | **3** |
| | **6** | **1** | **0** | **1** | **2** |
| | **7** | **0** | **1** | **1** | **2** |
| | **8** | **1** | **2** | **0** | **3** |
| | **9** | **0** | **0** | **0** | **0** |
| | **10** | **5** | **3** | **0** | **8** |
| | **11** | **2** | **4** | **2** | **8** |
| | **12** | **3** | **6** | **4** | **13** |
| | Sub-total | **14** | **23** | **11** | **48** |
| | | | | | |
| | **L 1** | **2** | **7** | **11** | **20** |
| | **2** | **0** | **1** | **2** | **3** |
| | **3** | **1** | **3** | **1** | **5** |
| | **4** | **0** | **0** | **0** | **0** |
| | **5** | **0** | **0** | **0** | **0** |
| | Sub-total | **3** | **11** | **15** | **29** |
| | **S1-5** | **0** | **0** | **1** | **1** |
| | **TOTAL** | **33** | **75** | **47** | **155** |

Higher level counted in five multi level injuries

## 2.3 In-patient Procedures

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

### 2.3.1 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. Failure of orthotic management is a further indication for surgery. A team approach to decision making is used to optimise patient outcome.

Over the year the orthopaedic surgeon carried out thirty six thoracic-lumbar fixations and the neuro-surgical team seventeen cervical fixations on the spinal injury lists. Further stabilisation surgery and other procedures were carried out on other surgical lists. Nine patients were treated with Halo immobilisation.

### 2.3.2 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 six theatre lists were carried out over the course of the year involving fifty five individual procedures and seven surgical specialities. This included twenty two major skin procedures. Other specialist neurosurgical procedures were carried out on neurosurgery list. Four electro-ejaculations were carried out under general anaesthetic as part of the assisted conception programme. Additional upper limb and orthopaedic trauma cases were performed in the orthopaedic theatre.

### 2.3.3 Implanted Pain Control

Chronic pain and spasms are a significant problem for patients with a spinal cord injury. One approach is the surgical implantation of reservoirs of analgesic drugs or anti-spasmodic drugs.
Patients attend outpatient clinics with varying frequency to have pumps refilled or reprogrammed. Between five and twelve patients attend each clinic.
At present twenty five pumps are implanted and operational. Eighteen patients attend the QENSIU for refills and seven attend local hospitals.

| **Pumps Active 09-10** | |
|---|---|
| **Isomed** | **8** |
| **Synchromed** | **14** |
| **Archimedes** | **3** |

The overall programme is very successful but requires continued monitoring.

## 2.4 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.

**ICD805** **Fracture of vertebral column without mention of spinal cord injury**

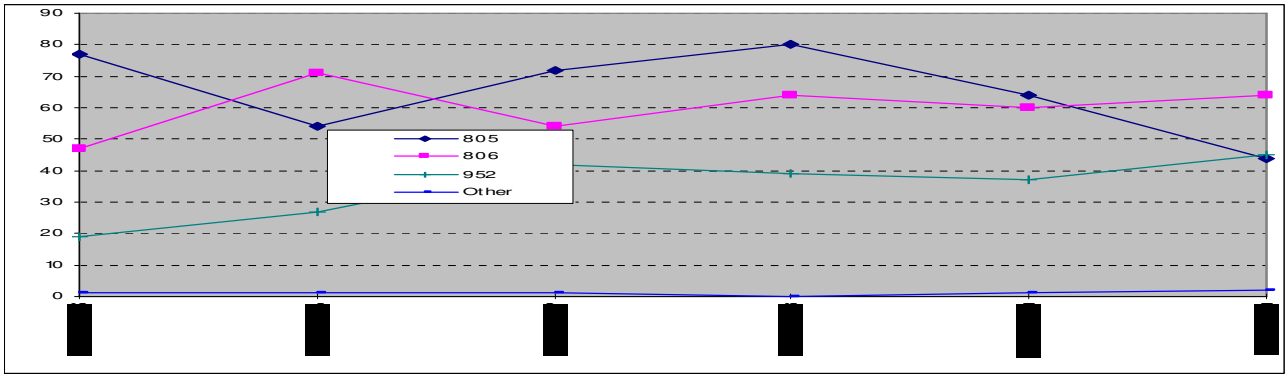
**ICD806** **Fracture of vertebral column with mention of spinal column injury**

**ICD952** **Spinal Cord Lesion without evidence of spinal bony injury**

**OTHER** **Other Spinal Cord Related Conditions**

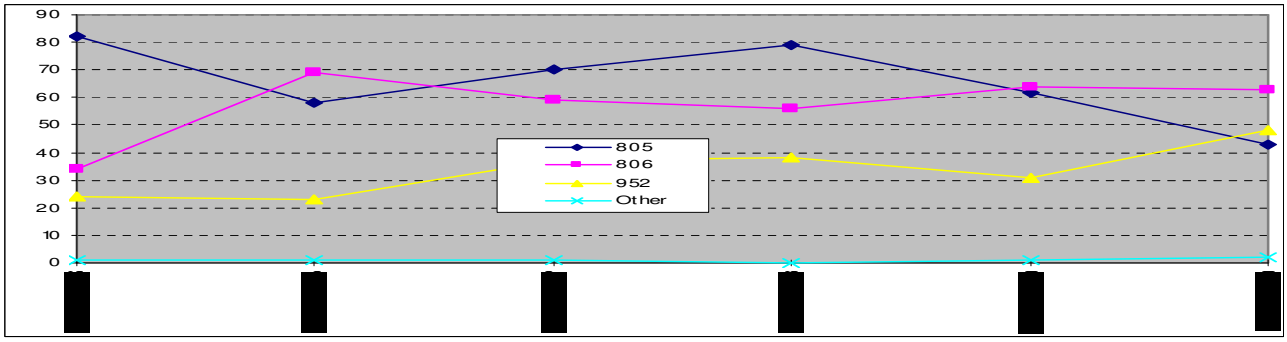
### 2.3.1 Admissions by Degree of Injury

Appendix DA5




### 2.3.2 Discharges by Degree of Injury

Appendix DA6




It is predicted that there will be around 90-100 spinal cord injuries per year for a population the size of Scotland (5.5 million). The exact nature will vary from year to year but all are admitted for treatment and rehabilitation.

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

| 2009/2010 | Admissions | Discharges |
|---|---|---|
| Central Cord Lesion | 29 | 34 |
| Infection | 4 | 4 |
| Vascular | 4 | 4 |
| Tumour | 1 | 0 |
| Surgical | 3 | 2 |
| Non-specific Lumbar Lesions | 2 | 2 |
| Penetrating Wounds gun/stab | 0 | 0 |
| Other | 2 | 0 |
| Total | 45 | 48 |

Appendix DA7

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

### 2.3.4 In-patient Bed Days

| 2009/2010 | | | Edenhall (HDU) | | RCU | Philipshill (Rehab) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Beds | | | 12 | | 4 | 32 | | | |
| Bed Comp | Alloc staffed | Borrowed | Lent | Temp | Available staffed | Total Occ Bed Days | Pats on Pass | Actual Occ Bed Days | % Occupied |
| 48 | 17520 | 36 | 321 | 212 | 17447 | 15675 | 109 | 15566 | 90% |
| Disch | 162 | | | | | | | | |

Patients are admitted on a basis of clinical need. The majority of new injuries are admitted to Edenhall Ward for acute assessment. A few patients are admitted to Philipshill if they have had stabilisation in their referral hospital or have been treated conservatively and have entered the rehabilitation phase.

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

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

| | No. of Patients Discharged | No. of Patients Delayed | Mean delay (days) | Range of Delay (days) | NO DELAY |
|---|---|---|---|---|---|
| 2007/2008 | 173 | 14 | 96 | 8 - 957 | 92% |
| 2008/2009 | 158 | 5 | 178 | 35 - 489 | 97% |
| 2009/2010 | 156 | 3 | 92 | 29 - 151 | 98% |

### 2.3.6 Re-admissions to the unit

The majority of neurologically injured patients discharged from the unit never require re-admission. They attend annually or bi-annually as out-patients for lifelong follow up. In some ways readmission at any time must be regarded as a failure.
There were thirty readmissions to the unit during the year, a significant shortfall on the contract estimate of 200.

## 2.4 Out patient Activity

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

### 2.4.1 Summary of Out-patient activity

| | 04/05 | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 |
|---|---|---|---|---|---|---|
| **Return** | 2205 | 2235 | 2042 | 2283 | 2182 | **2182** |
| **New** | 121 | 122 | 122 | 319 | 307 | **192** |

The number of return outpatients is stable and reflects the prevalence of the spinal cord injured population in Scotland. The majority of the new patients are tertiary referrals involving complex medical investigation and assessment.

### 2.4.2 Clinic Location and Frequency

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

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

| | 04/05 | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 |
|---|---|---|---|---|---|---|
| **Ayrshire & Arran** | 8 | 7 | 8 | 18 | 20 | **18** |
| **Borders** | 1 | 0 | 1 | 3 | 3 | **3** |
| **Dumfries & Galloway** | 2 | 4 | 6 | 7 | 12 | **8** |
| **Fife** | 2 | 2 | 3 | 8 | 9 | **1** |
| **Forth Valley** | 4 | 11 | 9 | 23 | 20 | **16** |
| | | | | | | |

### 2.4.4 New Out-Patient Activity by Health Board (Cont)

| | | | | | | |
|---|---|---|---|---|---|---|
| **Grampian** | 1 | 2 | 3 | 15 | 8 | **4** |
| **Greater Glasgow Clyde** | 67 | 53 | 58 | 169 | 160 | **91** |
| **Highland** | 0 | 14 | 4 | 6 | 4 | **2** |
| **Lanarkshire** | 27 | 19 | 19 | 40 | 49 | **32** |
| **Lothian** | 4 | 3 | 8 | 18 | 11 | **11** |
| **Shetland** | 1 | 0 | 0 | 0 | 0 | **0** |
| **Tayside** | 1 | 3 | 2 | 7 | 6 | **4** |
| **Orkney** | 0 | 0 | 0 | 0 | 0 | **0** |
| **Western Isles** | 2 | 2 | 0 | 2 | 4 | **1** |
| **ECR** | 1 | 2 | 1 | 3 | 0 | **1** |
| **Unknown** | 0 | 0 | 0 | 0 | 1 | **0** |
| **Total** | **121** | **122** | **122** | **319** | **307** | **192** |

### 2.4.3 Out -Patient Activity by Centre

| | **04/05** | **05/06** | **06/07** | **07/08** | **08/09** | **09/10** | **CHANGE YEAR** | **TOTAL 92-10** |
|---|---|---|---|---|---|---|---|---|
| **New QENSIU** | 121 | 122 | 122 | 307 | 307 | **192** | **(37.5%)** | **1824** |
| **Return QENSIU** | 1851 | 1868 | 1690 | 1905 | 1830 | **1825** | **(4%)** | **26322** |
| **Edinburgh** | 192 | 193 | 187 | 212 | 169 | **168** | **(0.6%)** | **2853** |
| **Inverness** | 57 | 54 | 55 | 60 | 62 | **45** | **(27.4%)** | **677** |
| **Aberdeen** | 51 | 63 | 63 | 59 | 62 | **68** | **+ 9.7%** | **596** |
| **Dumfries & Galloway** | 15 | 19 | 16 | 18 | 28 | **14** | **(50%)** | **189** |
| **Borders** | 16 | 17 | 17 | 17 | 9 | **36** | **+ 300%** | **149** |
| **Arbroath** | 23 | 21 | 14 | 24 | 22 | **26** | **+ 18.2%** | **147** |
| **Total** | **2326** | **2357** | **2164** | **2602** | **2489** | **2374** | **(4.6%)** | **32757** |

The aim is to provide as local a service as practical and in line with need. The outreach clinics are designed to provide the same level of multidisciplinary care that is available in the parent unit. All outreach clinics are consultant led with the appointment of a further rehabilitation consultant.

### 2.4.4 Outpatient Activity by Specialty at QENSIU

| | | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 |
|---|---|---|---|---|---|---|
| **Orthopaedics** | **DBA** | 139 | 99 | 147 | 107 | **128** |
| **Neurosurgery** | **LA** | 88 | 60 | 54 | 39 | **52** |
| **Neurosurgery** | **JB** | 51 | 50 | 63 | 50 | **53** |
| **Urology** | **GC/ VG** | 292 | 336 | 407 | 467 | **475** |
| **Skin Care** | | 107 | 57 | 86 | 75 | **68** |
| **Pain / Spasm** | | 190 | 138 | 29 | 26 | **29** |
| **Neuroprosthetics** | **TH/MF** | 29 | 20 | 20 | 19 | **23** |
| **Sexual Dysfunction** | | 23 | 10 | 29 | 36 | **19** |
| **Respiratory** | | | | 6 | 9 | **7** |
| **Fertility** | | | | 6 | 0 | **8** |
| **Spinal Injury Annual Review** | TOTAL | 949 | 920 | 1058 | 1002 | **963** |
| | MEDICAL | 526 | 581 | 673 | 632 | **638** |
| | NURSING | 423 | 339 | 385 | 370 | **325** |
| **Total** | | **1868** | **1690** | **1905** | **1830** | **1825** |

The Consultant Clinics in Orthopaedics and Neurosurgery see new and return patients until they can be discharged or referred to the annual review clinics. The Spinal Injury Annual Review clinics are a large component of the commitment to life-long care. These are nurse led with only thirty six percent of patients requiring medical input. There is an open door policy for patients and inevitable some activity remains under-reported. Urology clinics are available to investigate or treat bladder dysfunction at any stage. Neuroprosthetics includes assessment and surgery for upper limb problems principally in tetraplegics.

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## 2.5. Day Case Activity

Day case activity continues to offer an important service for minor surgical procedures, medical interventions and nursing care. The level of Day Case activity 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

| | 2004/ 2005 | 2005/ 2006 | 2006/ 2007 | 2007/ 2008 | 2008/ 2009 | 2009/ 2010 |
|---|---|---|---|---|---|---|
| Urology /Urodynamics | 24 | 18 | 18 | 26 | 37 | **27** |
| Halo Fixation | 220 | 182 | 129 | 216 | 120 | **99** |
| Skin | 21 | 12 | 18 | 26 | 29 | **13** |
| Orthopaedic/Neurosurgery | 0 | 0 | 1 | 0 | 0 | **0** |

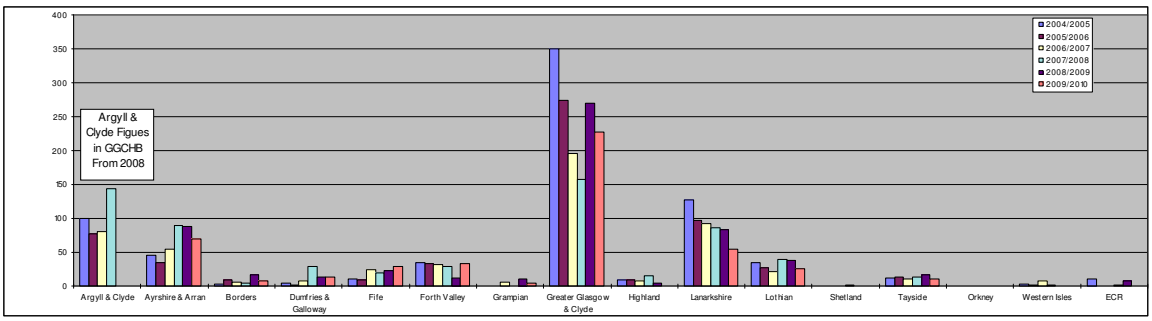
### 2.5.2 Day Case Attendances by Reason For Admission (Cont)

| | | | | | | |
|---|---|---|---|---|---|---|
| Acupuncture / Pain / Spasm | 461 | 365 | 375 | 340 | 370 | **311** |
| Sexual Dysfunction | 17 | 8 | 4 | 4 | 4 | **3** |
| Fertility | 3 | 5 | 0 | 19 | 20 | **21** |
| Other | 0 | 0 | 0 | 0 | 3 | **3** |
| **Total** | **746** | **590** | **545** | **631** | **583** | **477** |

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

### 2.53 Day Case Attendances by Health Board

Day Case activity remains limited by geographical constraints. Some patients who could be managed as a day-case require in-patient stay due to difficulties in travelling. If indicated procedures are arranged in the patients locality either by staff from the unit or appropriate specialists. One bed in Philipshill Ward is designated as an intervention bed so that patients who have to travel long distances are not disadvantaged.




Appendix DA8

### 3. 0 Waiting Times

### 3.1 Waiting Times Outpatient Clinics

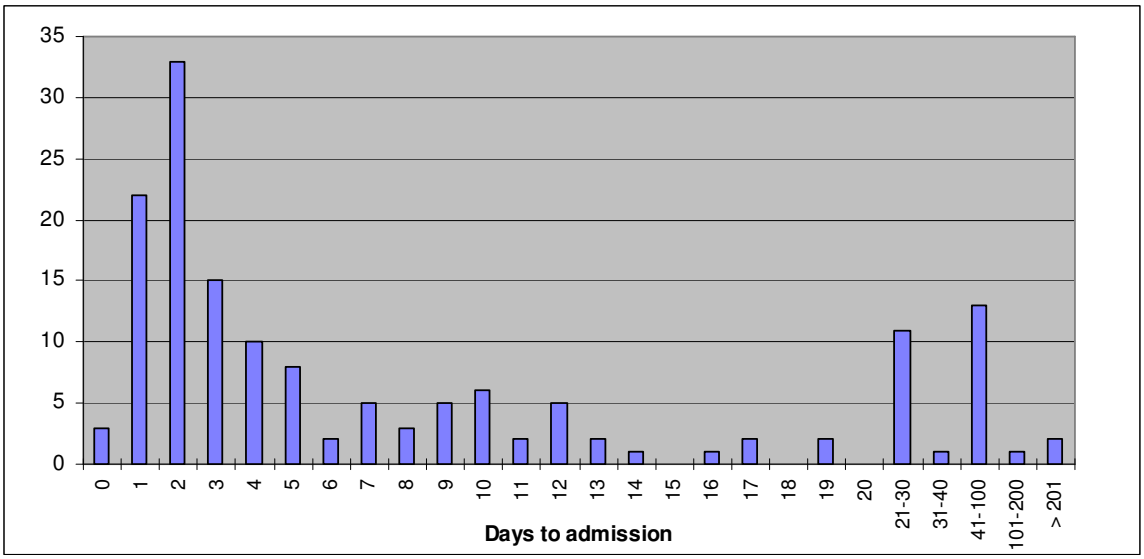
There is an open door policy to the Nurse Led Clinics. Medical advice is always available and was requested in thirty six per cent of patients. Patient satisfaction remains high with this team approach. The maximum waiting time for new elective outpatient appointments is four weeks.

### 3. 2 Waiting Times Acute Admissions

Acute referrals are admitted as soon as appropriate on clinical grounds. It is unit policy to try and admit all patients with neurological injury within forty-eight hours as long as there are no concomitant medical problems. Patients requiring specialised neurosurgical or orthopaedic care are managed in the appropriate ITU or ward prior to transfer.

### 3.3 Time from Injury to Admission

The policy is of early admission for neurological injury with non-neurological injury admitted as beds became available. Most patients are referred within twenty-four hours of injury. In 2009-10 sixteen per cent of patients were admitted within twenty-four hours of referral. Thirty seven per cent were admitted within forty-eight hours and fifty-four per cent within four days. Sixty-three percent were admitted within one week. This time pattern is consistent with previous years. Early admission to the Spinal Injury Unit provides immediate support to the patient and family. A previous audit of acute admissions indicated that in only one third of patients the time of admission was related to bed issues with the rest related to severity of injury, transport difficulties or delay in diagnosis or presentation.




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

Direct admission to orthopaedic or neurosurgical wards for surgical stabilisation may increase the time to admission but may be appropriate to reduce transfers of potentially unstable patients.
Approximately twenty-percent of patients have associated orthopaedic injuries. Co-operation between Surgical Intensive Therapy (SGH), the referring hospital and other specialised units can be required (Plastic Surgery, Burns Unit, Maxilla-Facial, Renal etc).

Most patients admitted after five days have conditions that do not require immediate treatment or have additional co-morbidities that require medical intervention in the referring hospital prior to transfer. A few new patients have undergone initial rehabilitation in another centre and are admitted to the unit for reassessment or treatment of complications.

| | No. of Patients | Mean Time (Days) | Range of Time |
|---|---|---|---|
| **2005-2006** | 153 | 518 | 0 - 21075 |
| **2006-2007** | 169 | 815 | 0 -17416 |
| **2007-2008** | 183 | 19 | 0 - 637 |
| **2008-2009** | 162 | 81 | 0 – 9582 |
| **2009-2010** | **155** | **15** | **0 – 265** |

As in previous years the mean was distorted as the figures include all new patients even those who had old injuries or had nearly completed their rehabilitation in other centres. Eighty one percent of patients were admitted within one month of injury. Three patients were admitted after one hundred days. These patients had been initially cared for in other centres or had developed a secondary complication due to a further insult at a previous fracture.

## 4. Quality of Care Issues

### 4.1.1 National Service Division Visit

Close co-operation between the staff of the unit and National Services Division has an important role in maintaining the service and permitting service development. It also ensures that there is an early response to increased or changing clinical needs. The Annual and six-monthly report acts as a focus to continually evolve and evaluate the service. Twice yearly formal meetings and regular informal contact ensures quick response to any unexpected need.

### 4.1.2 Formal Complaints

A formal complaint/suggestion system is in place at both unit and hospital level. This has proved invaluable in monitoring quality and modifying the service. The management recorded two formal complaints. They have been subject to a full investigation by management. Two informal complaints were made about the catering and were reviewed. At unit level a number of useful suggestions have been made regarding catering, parking and the ambulance service. This has resulted in a number of meetings with the relevant bodies to review areas of service.

### 4.2.1. Relatives & Patients Meetings

Relatives Education Days were held in September and March with a total of 44 attendees. .Regular contacts are maintained with relatives and carers throughout a patients stay. Significant input to the organisation and running of the unit has been obtained from the informal meetings arranged within the unit and by SIS. All staff are encouraged to attend patient social activities and events. The medical staff encourages an open dialogue with patients and relatives regarding treatment and progress. SPIN volunteers from Strathclyde University holds regular social evenings including a Burns Supper, St Andrews Night, St Patrick's night and a Fourth of July celebration.

### 4.2.2 Benchmarking

There have been continued attempts to develop benchmarking with other UK units. There is an increasing availability of figures from other units but comparisons are difficult due the varying remits of each unit. The Spinal Injury Association (SIA) has carried out a snapshot of activity in England and Wales. The Director will continue to contribute to the Commissioning Process for England.
This year the unit was successful in obtaining a Customer Service Excellence Award in Succession to the Charter Mark which they were awarded on three previus occasions.

## 4.3 Education

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

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

### 4.3.1 Nursing Staff Educational Programme

A comprehensive educational programme is organised within the unit for all staff, patients and carers. All members of staff are encouraged to see education as part of the process of rehabilitation. In addition a more formal programme is carried out.
I
**Formal Education Meetings**

| Nurse | External | Internal | Patients | Relatives | Staff | Participants | |
|---|---|---|---|---|---|---|---|
| Education | 3 | 11 | 0 | 1 | 10 | 163 | |
| Support | 9 | 49 | 26 | 2 | 21 | 603 | |
| | | | | | | | |

Subjects include SCI general overview and outcome, Life Support, bowel, bladder and skin management, KSF, and sexual function.

## 4.4 Hospital Acquired Infection

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

| | 2004/ 2005 | 2005/ 2006 | 2006/ 2007 | 2007/ 2008 | 2008/ 2009 | 2009/2010 |
|---|---|---|---|---|---|---|
| Total patients req. Isolation | 44 | N/A | 12 | N/A | N/A | **N/A** |
| Salmonella | 1 | 0 | 0 | 0 | 0 | **0** |
| Clostridium Difficile | 4 | 0 | 2 | 2 | 2 | **4** |
| MRSA | 39 | 38 | 31 | 32 | 24 | **15** |
| Streptococcus pyogenes | 0 | 0 | 0 | 0 | 1 | **0** |
| Scabies | 0 | 0 | 0 | 0 | 0 | **0** |
| TB | 0 | 0 | 0 | 0 | 0 | **0** |
| Varicella Zoster | 0 | 0 | 0 | 0 | 0 | **0** |
| Patient days in isolation | 3480 | 3160 | 339 | N/A | N/A | **N/A** |
| Ave. days in isolation | 79 | 83 | 28 | N/A | N/A | **N/A** |

| 2009-2010 | MRSA | C.Diff | Other HIA |
|---|---|---|---|
| | | | Gp A Strep |
| **Edanhall** | **5** | **2** | **0** |
| **Philipshill** | **10** | **2** | **0** |

The figures are gratifying, especially as Philipshill Ward had a full complement of beds throughout and includes long term ventilated patients. Edenhall Ward receives patients in the early stage after multiple trauma and many come from ITU or HDU areas and are a high risk group. It is unit policy to screen for MRSA prior to transfer but some patients require admission despite being possible MRSA positive. The low rates of infection are a tribute to the standard of nursing care and policies within the unit especially as regards bowel care.

### 4.5 Pressure Sore Prevention

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. The aetiology of pressure sores is multi factorial and some are out with our control e.g. age and co-morbidity of patients admitted. In other ways pressure sores can act as a surrogate measure of patient care and nursing procedure.

### 4.6 Pressure Sore Prevalence

| | No. of patients | No. of acquired sores | No. of admitted sores | Total number of sores | Point prevalence |
|---|---|---|---|---|---|
| **2007/2008** | 40 | 7 | 6 | 13 | 32.5% |
| **2008/2009** | 42 | 2 | 11 | 13 | 30.95% |
| **2009/2010** | **42** | **3** | **5** | **8** | **19%** |

## 4.7 Therapy Beds

| | Average Units in use | Average per month - days | Days |
|---|---|---|---|
| **Therapy beds** | 17.09 | 530 | 6361 |

Primo, Respistar, Respistar + Evolution, Duo, Duo2 and AF Uplift beds are utilised as appropriate.

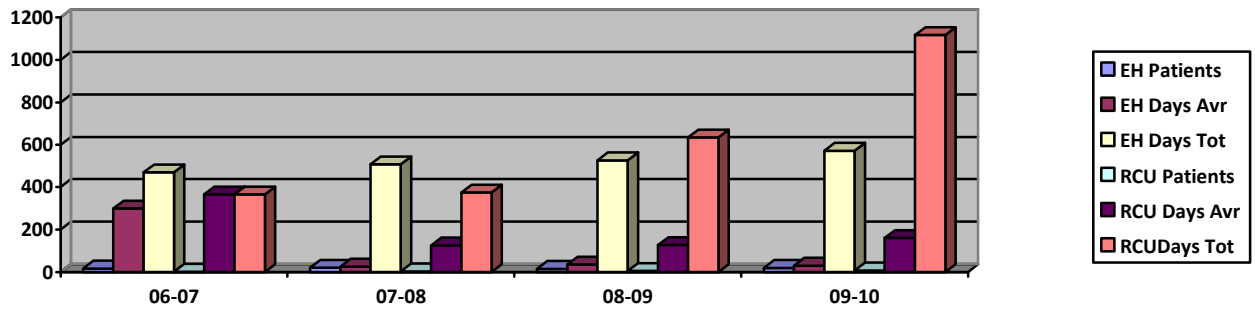
## 4.8 Ventilated Bed Days

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

Appendix DA20

| | | No. Patients | Ave. Ventilated Days | Total Ventilated Days |
|---|---|---|---|---|
| **06-07** | **Edenhall** | **16** | **29** | **469** |
| | **RCU** | **1** | **365** | **365** |
| **07-08** | **Edenhall** | **20** | **25** | **508** |
| | **RCU** | **3** | **125** | **374** |
| **08-09** | **Edenhall** | **15** | **35** | **527** |
| | **RCU** | **5** | **127** | **635** |
| **09-10** | **Edenhall** | **19** | **30** | **572** |
| | **RCU** | **7** | **160** | **1117** |

Each patient is counted only once but may be responsible for multiple episodes of care or inter ward transfers if their condition varies. The increasing number of patients requiring ventilation and the increasing importance of RCU mirrors changes in the age and type of patient needing respiratory support.



## 5.0 Mechanism of Injury

The mechanism of injury of all admissions reflects changes seen in other areas of social activity and change. The number of Car related RTAs is decreasing with a persistent increase in the number of motorcyclist admitted .Bicycling injuries whither on or off road have decreased perhaps due to greater awareness, improved sfty and the effects of publicity from this unit and others. Medical causes, domestic and Para suicide remain stable. The number of sporting injuries has reduced. Following publicity and the change in rules of schoolboy rugby no significant injuries were recorded in this sport. Industrial injuries have increased and may by due to changes in the types of industry and the relevant support.

### 5.1 Mechanism of Injury

| | 2004/ 2005 | 2005/ 2006 | 2006/ 2007 | 2007/ 2008 | 2008/ 2009 | 2009/ 2010 |
|---|---|---|---|---|---|---|
| **Fall** | **63** | **70** | **68** | **101** | **73** | **77** |
| **RTA** | **46** | **49** | **55** | **45** | **40** | **40** |
| Motor vehicle | 35 | 40 | 35 | 36 | 27 | 19 |
| Motorcyclist | 6 | 5 | 8 | 4 | 8 | 12 |
| Bicyclist | 1 | 3 | 10 | 4 | 3 | 9 |
| Pedestrian | 4 | 1 | 2 | 1 | 2 | 0 |
| **Secondary to Medical Diagnosis** | **6** | **10** | **17** | **18** | **18** | **15** |
| **Industrial Injury** | **4** | **1** | **3** | **3** | **1** | **6** |
| **Assault** | **2** | **3** | **4** | **1** | **1** | **0** |
| **Penetrating Injuries*** | **0** | **0** | **3** | **1** | **3** | **3** |
| **Sporting Injury** | **16** | **10** | **12** | **13** | **19** | **10** |
| **Domestic Injury** | **3** | **1** | **1** | **0** | **1** | **1** |
| **Suicide** | **2** | **6** | **4** | **1** | **1** | **3** |
| **Other** | **2** | **3** | **2** | **0** | **5** | **0** |
| **Total** | **144** | **153** | **169** | **183** | **162** | **155** |

*** includes Stabbing (1) and gunshot wounds (2)**

### 5.2 Mechanism of Injury: Rugby Union

Concerns were raised in previous reports regarding the number of injuries sustained during rugby union particularly among adolescent males. Similar difficulties were experienced in South Africa but not in France. In August 2009 the Scottish Rugby Union altered the rules pertaining to under 18 Rugby. A detailed review of all sporting injuries including rugby union is underway.

## 6.0 Finance Report

| | | 2008/09 | 2009/10 Value | Budget YTD | Actual YTD | Variance YTD | Year End Forecast | Variance Forecast |
|---|---|---|---|---|---|---|---|---|
| | WTE | £ | £ | £ | £ | £ | £ | |
| **Staff Costs** | | | | | | | | |
| **Administrative 4** | 6.50 | 110,718 | 138,677 | 138,677 | 150,570 | -11,893 | 150,570 | -11,893 |
| **Administrative 3** | 0.14 | 2,543 | 2,594 | 2,594 | 2,817 | -223 | 2,817 | -223 |
| **Administrative 2** | 2.49 | 39,462 | 40,251 | 40,251 | 48,142 | -7,891 | 48,142 | -7,891 |
| **Medical** | 9.19 | 935,393 | 954,101 | 954,101 | 934,214 | 19,887 | 934,214 | 19,887 |
| **Senior Manager 1** | 0.50 | 32,450 | 33,099 | 33,099 | 33,475 | -376 | 33,475 | -376 |
| **Nursing 7** | 7.80 | 287,555 | 340,721 | 340,721 | 317,408 | 23,313 | 317,408 | 23,313 |
| **Nursing 6** | 9.36 | 369,297 | 376,683 | 376,683 | 406,057 | -29,374 | 406,057 | -29,374 |
| **Nursing 5** | 52.30 | 1,670,794 | 1,704,210 | 1,704,210 | 1,764,721 | -60,511 | 1,764,721 | -60,511 |
| **Nursing 2** | 23.88 | 446,053 | 454,974 | 454,974 | 507,665 | -52,691 | 507,665 | -52,691 |
| **Housekeepers 2** | 2.00 | | 54,121 | 54,121 | 22,973 | 31,148 | 22,973 | 31,148 |
| **Paramedical 7** | 13.26 | 481,740 | 491,375 | 491,375 | 549,014 | -57,639 | 549,014 | -57,639 |
| **Total Staff** | **127.4** | **£ 4,376,005** | **£ 4,590,806** | **£ 4,590,806** | **£ 4,737,056** | **- £ 146,250** | **£ 4,737,056** | **- £ 146,250** |
| **Supplies Costs** | | | | | | | | |
| **Administrative** | | 106,338 | 108,465 | 108,465 | 117,234 | -8,769 | 117,234 | -8,769 |
| **Medical** | | 4,059 | 4,140 | 4,140 | 4,140 | 0 | 4,140 | 0 |
| **Nursing** | | 11,541 | 11,772 | 11,772 | 11,466 | 306 | 11,466 | 306 |
| **Paramedical** | | 18,432 | 18,801 | 18,801 | 4,893 | 13,908 | 4,893 | 13,908 |
| **Pharmacy** | | 595,848 | 607,765 | 607,765 | 586,333 | 21,432 | 586,333 | 21,432 |
| **Surgical Appliances** | | 102,492 | 104,542 | 104,542 | 172,401 | -67,859 | 172,401 | -67,859 |
| **Direct Supplies** | | **£ 838,710** | **£ 855,485** | **£ 855,485** | **£ 896,466** | **- £ 40,981** | **£ 896,466** | **- £ 40,981** |
| **Allocated Costs** | | | | | | | | |
| **Medical Records** | | 99,515 | 101,505 | 101,505 | 105,334 | -3,829 | 105,334 | -3,829 |
| **Building Costs** | | 194,343 | 198,230 | 198,230 | 198,230 | 0 | 198,230 | 0 |
| **Domestic Services** | | 65,066 | 66,367 | 66,367 | 68,871 | -2,504 | 68,871 | -2,504 |
| **Catering** | | 179,020 | 182,600 | 182,600 | 189,489 | -6,889 | 189,489 | -6,889 |
| **Laundry** | | 63,993 | 65,273 | 65,273 | 65,273 | 0 | 65,273 | 0 |
| **Neuroradiology** | | 74,544 | 76,035 | 76,035 | 78,903 | -2,868 | 78,903 | -2,868 |
| **Laboratories** | | 85,962 | 87,681 | 87,681 | 90,989 | -3,308 | 90,989 | -3,308 |
| **Anaesthetics** | | 35,587 | 36,299 | 36,299 | 37,669 | -1,370 | 37,669 | -1,370 |
| **Portering** | | 69,301 | 70,687 | 70,687 | 73,353 | -2,666 | 73,353 | -2,666 |
| **Phones** | | 46,978 | 47,918 | 47,918 | 47,918 | 0 | 47,918 | 0 |
| **Scottish Ambulance Service** | | 8,723 | 8,897 | 8,897 | 8,897 | 0 | 8,897 | 0 |
| **General Services** | | 26,904 | 27,442 | 27,442 | 28,477 | -1,035 | 28,477 | -1,035 |
| **Allocated Costs** | | **£ 949,936** | **£ 968,934** | **£ 968,934** | **£ 993,403** | **- £ 24,469** | **£ 993,403** | **- £ 24,469** |
| **Total Supplies** | | **£ 1,788,646** | **£ 1,824,419** | **£ 1,824,419** | **£ 1,889,869** | **- £ 65,450** | **£ 1,889,869** | **- £ 65,450** |
| **Overhead Costs** | | | | | | | | |
| **Fixed costs** | | | | | | | | |
| **Rates** | | 57,104 | 58,246 | 58,246 | 58,246 | 0 | 58,246 | 0 |
| **Capital Charge** | | 550,978 | 550,978 | 550,978 | 550,978 | 0 | 550,978 | 0 |
| **Trust Overheads** | | 145,613 | 148,525 | 148,525 | 148,525 | 0 | 148,525 | 0 |
| **Total Overheads** | | **£ 753,695** | **£ 757,749** | **£ 757,749** | **£ 757,749** | **£ 0** | **£ 757,749** | **£ 0** |
| **Total Expenditure** | **127.4** | **£ 6,918,346** | **£ 7,172,974** | **£ 7,172,974** | **£ 7,384,674** | **- £ 211,700** | **£ 7,384,674** | **- £ 211,700** |
| **Postgraduate Dean Funding** | | -116,806 | -119,142 | -119,142 | -119,142 | 0 | -119,142 | 0 |
| **Total Income Net** | | **£ 6,801,540** | **£7,053,832** | **£ 7,053,832** | **£ 7,265,532** | **- £ 211,700** | **£ 7,265,532** | **- £ 211,700** |
| **Income from non Scottish Residents** | | | 0 | 0 | -25,790 | 25,790 | -25,790 | 25,790 |
| **Total Net Expenditure** | | **£ 6,801,540** | **£ 7,053,832** | **£ 7,053,832** | **£ 7,239,742** | **- £ 185,910** | **£ 7,239,742** | **- £ 185,910** |

## 7.0 Service Developments and Future Plans

### 7.1 Family Unit/Step-down Unit

Equality of access and support prior to final discharge is paramount in a national service. The step-down unit is available to support families out with the Strathclyde region and all families in preparation of discharge. Forty separate episodes have been recorded, totalling one hundred and three nights including six mid-week. This has involved twenty families. The relatives' room within the unit remains in use due to its convenience for relatives of acute admissions.

### 7.2 Research Mezzanine

Glasgow University support of the Research Mezzanine has allowed continued development of the research programme. A portfolio has been developed including FES, Robotics training, Osteoporosis, Brain Computer Interfaces, Stem Cell harvesting and clinical assessment. In 2009-2010 The SCISCI collaboration produced twenty three papers and 10 presentations. Five Universities (Glasgow, Strathclyde, Caledonian, Herriot Watt and Stirling) and three European Centres are active in current projects.

### 7.3 Sexual Dysfunction and Assisted Conception

Sexual health is a significant issue for the majority of SCI patients. Management of the issues is a core responsibility of all in the multidisciplinary team but availability and access to specialist service is important. Sexual dysfunction merits increased input and will continue to be expanded in the coming year. The fertility service is being developed in-house and with GGC Assisted Conception Services.

### 7.4 Respiratory Care

There has been an increased demand for respiratory support with twenty two patients in the community with some form of respiratory support including permanent full time ventilation.

### 7.5 Provision of Spinal Injury Services

Spinal Injury Services in the UK developed in orthopaedic rehabilitation hospitals predominately based in rural locations associated with TB Sanatoriums. Most, if not all, of these hospitals are now obsolete and being replaced. This process occurred relatively early in Scotland and is a potential model for the future development of services in England and Wales. The Director and Clinical Services manager are continuing to contribute to the process. This is done through BASCIS, MASCIP, SIA, ASPIRE and government bodies. The key features advocated are a dedicated geographical service integrated into a trauma centre based within a teaching hospital with full access to all disciplines and research opportunities.

## 7.7 Venous Thrombo-Embolism Prophylaxis

SCI patients are at high risk of DVT. New NICE and SIGN guidelines will be published in the current year and current polices are being reviewed.

## 8.0 General Clinical Services

## 8.1 Out-Patient Department

The out-patient department has a key role in the management of the acute injuries and in preventing long term complications. The provision of ready access and the varieties of specialist clinics are fundamental to the service. The service includes an ultrasound and bladder function service which is integral to preventing renal damage, high morbidity and premature death. Unfortunately the urodynamics equipment originating from Edenhall hospital is now obsolete and the portable ultrasound machine will need replacing in the near future. Following discussions with NSD a quote was obtained for a new urodynamics machine and this has been passed to Regional Services for their approval. The ultrasound machine was last replaced utilising endowment monies but is seen as fundamental to the service as it is a requisite examination for each annual review.

## 8.2 Spinal Nurse Specialists

There is a continued demand for nurse specialists to provide important in-patient and outpatient rolls. As well as two Liaison Sisters there is an Educational Sister, Respiratory Sister, Discharge Planner and Support Nurse. They all provide assistance to the Clinical Support Manager/Senior Nurse Manager. As a national service it is important to provide out patient and domiciliary services throughout Scotland. These has resulted in the development of the liaison sister service and out-reach clinics in areas identified on our database as having a concentration of patients. All clinics are now Consultant led and Nursing and Occupational Therapy staff attends outreach clinics as required. Volunteers from SIS see and advise patients and carers. To support services in the North East a clinic will be held in Huntly Jubilee Hospital relieving demand on Aberdeen and Inverness. Dundee and Larbert are other potential sites of new outreach clinics but would require further staffing.

## 8.2 Clinics

| **Location** | % Attendance 08-09 | % Attendance 09-10 |
|---|---|---|
| Aberdeen | 86 | 96 |
| Inverness | 87 | 87 |
| Dumfries | 90 | 81 |
| Arbroath | 81 | 100 |
| Borders | 95 | 100 |
| Ave Rate | 88 | 93 |
| | | |

## 8.3 Outreach Clinics Community Visits

| Home Visits | Mileage | CLINICS | Aberdeen | Inverness | Arbroath | Dumfries | Borders |
|---|---|---|---|---|---|---|---|
| 357 | 15,078 | | 5 | 5 | 3 | 2 | 2 |

In 2009-10 the number of visits increased by sixty one (twenty one per cent). Travel reduced by 3,566 miles.

## 8.4 Respiratory Support Nurse

The Respiratory Support Sister has been a tremendous success in coordinating in-patient and domiciliary ventilation. All patients requiring assisted ventilation at home have been visited during the year with 7197 road miles travelled and air trips to Shetland and Stornaway completed.

| MONTH | MEETINGS | CLINICS | VISITS | EXTERNAL TEACHING | Respiratory Referrals |
|---|---|---|---|---|---|
| APRIL | 1 | | 6 | 3 nurses + carers | RAH |
| MAY | 2 | 1 | 8 | | Gartnavel Inverclyde |
| JUNE | | 1 | 6 | 28 nurses + carers | Inverclyde |
| JULY | 2 | 1 | 4 | | |
| AUGUST | 1 | 1 | 10 | 5 nurses + carers | |
| SEPTEMBER | 5 | | 5 | 10 nurses + carers | Edinburgh |
| OCTOBER | 5 | 1 | 8 | 9 carers | Ninewells Invercylde |
| NOVEMBER | 2 | 1 | 3 | 6 carers | |
| DECEMBER | 3 | 1 | 1 | 70 doctors + nurses | |
| JANUARY | 2 | | 2 | 18 family | Hairmyres |
| FEBRUARY | 3 | 2 | 3 | 70 doctors + nurses + carers | |
| MARCH | 2 | 1 | 7 | 34 trained + untrained | |
| TOTAL | 28 | 8 | 63 | 253 | 8 |

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

## 8.3 Assistive Technology

Continued support is given to the unit by Momentum. A full report is in Appendix Three. Of note is the completion of the Abbey Bank Trust funded flatscreen TV/PCs for recumbent patients in Edanhall Ward.

## 8.6 Further Developments within Multi-Disciplinary Team

A multidisciplinary approach to education for patients, family and carers is followed in the unit. It is recognised that there is a need for continued education and an outreach service for patients discharged before the introduction of modern practice. There is a continued dialogue with other units to explore new methods of providing care.

## 8.7 Nursing Recruitment

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

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

## 8.8 Medical Recruitment

A full complement of core consultant medical staff is in place. Supporting consultant sessions are full apart from the Pain Sessions and the EMG service. The attending junior staff remains at three F1 F2 grades. Currently there are no observers from rehabilitation medicine. One staff grade supplies clinical support

## 8.9 Pain Management

Despite continued pressure it has not been possible to obtain support or interest in filling the vacant Consultant Pain Sessions. A review has been carried out and it would seen appropriate that these funds revert to NSD. (Appendix Two)

## 8.10 Paramedical staffing

We are fortunate in having a very stable and experienced paramedical support team. Continued and anticipated changes in the provision of initial and maintenance rehabilitation means this is continually under review. Exercise Physiology and sports medicine continue to offer areas for development as well as the planned Olympic and Commonwealth games. Opportunities will be investigated as how these and be utilised for the benefits of all patients.

## 9.0 Capital Development and Equipment Replacement

NSD have reviewed the service and have been able to additionally fund the following special items during the current year.

| | |
|---|---|
| Urodynamics Machine | £21,881 |
| Bedside Lockers | £17,500 |
| Laundry Machines | £9,100 |
| | |

## 9.1 Charitable Funding - Endowment Funds

The unit is very fortunate in attracting significant donations from patients, relatives, friends, individuals and corporate bodies. These are used to provide facilities and services, which cannot be reasonably expected from central funding Research grants, have provided equipment and partial staff costs. There have been significant donations in time and equipment from Celtic FC, The Murrayfield Trust, the Clydesdale Bank, Momentum, SPIN and SIS.
This has occurred without any concerted fund raising activity but has been dependant on individuals. The contribution made by these individuals is gratefully acknowledged.

## 9.2 Endowment Purchases

The unit opened in 1992 and inevitably items are constantly in need of replacement Insufficient funds were available from Regional Services to fund essential replacements and to complete works in the step-down unit, OT and Philipshill Ward. It was anticipated that certain funds would be available from Hospital Charity funds but this has not transpired.

| | | | |
|---|---|---|---|
| Landscaping Step-Down Unit | £9,742 | New Chairs and Tables | £2,495 |
| New Signage | £2,025 | New Curtains Day Room | £790 |
| Nursing Station P/Hill | £1,474 | OT Storage Cabinets | £1,900 |
| | | | |
| Sky Television Subscription | £1200 | Whole body Vibration | £3,500 |

The funds utilised were from a legacy and enable us to maintain the fabric of the building and add to the facilities to promote early rehabilitation. Further funds will be used to update the large screen TV in the dayroom for the World Cup and cookery programmes.

## 10.0 Clinical Networking and National Guidelines

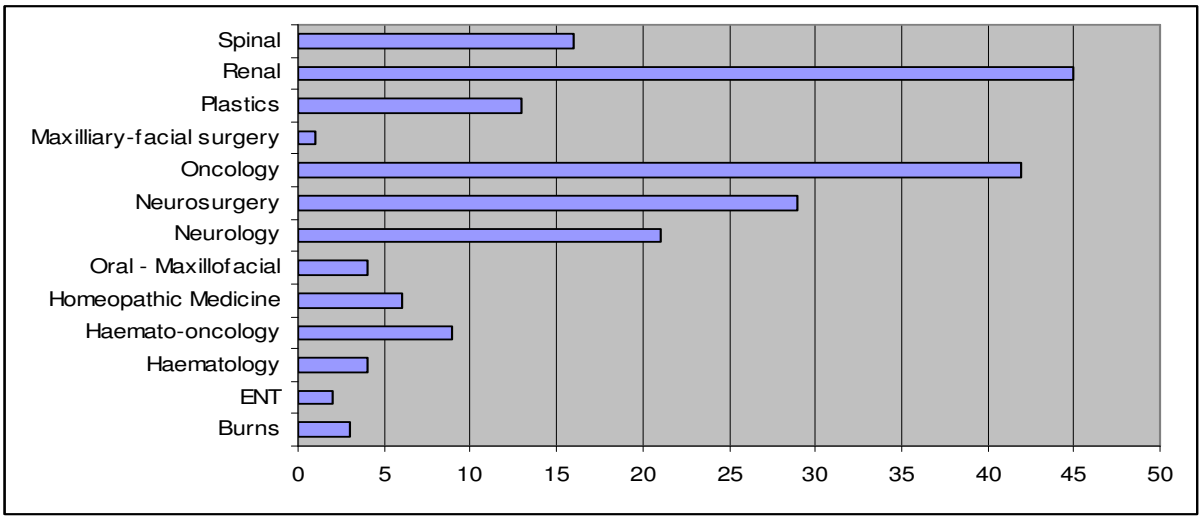
Admission guidelines were issued to all hospitals in Scotland during 2002. This was of great benefit standardising the immediate management of patients and their subsequent referral. Standard referral proformas, transfer guidelines and admission proformas are now in place.
A review of admission and transfer guidelines is taking place to accommodate changes in thinking and in preparation for early intervention trials.

## 11.0 Clinical Governance

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

## 11.1 Clinical Governance - Critical Incident Reporting

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




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

The vast majority of incidents reported are Slips, trips and falls. All incidents in the spinal unit were reported to be of this nature and none serious (3, 4, or 5)

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

| | |
|---|---|
| 1 - Negligible | 47 |
| 2 - Minor | 71 |
| 3 - Moderate | 49 |
| 4 - Major | 1 |
| 5 - Extreme | 0 |
| Totals: | 168 |

### 11.2 Clinical Governance- Hand Washing

| Ward / Area | Monthly Compliance % | | |
|---|---|---|---|
| | January | February | March |
| **Renal** | 90% | 96% | 91% |
| **Spinal Unit** | 100% | 95% | 90% |
| **Neurosciences** | 94% | 94% | 99% |
| **Specialist Oncology** | 89% | 90% | 85% |
| **Burns and Plastics** | 93% | 98% | 96% |
| **Overall Compliance** | **91%** | **94%** | **93%** |

A routine audit of hand-washing as part of the infection control policy is carried out. The results are displayed as an aid to maintain a high level of compliance

## 12.0 Medical Research

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

In 2009-10 the unit team published twenty research papers with further six submitted and gave 30 scientific presentations.

A detailed research profile for the inauguration of the **Scottish Centre for Innovation In Spinal Cord Injury (SCI $^{2}$)** is given in Appendix Two.

## 13.0 Summary

The original concept, funding and organisation of the care of spinal cord injury in Scotland have proved durable and flexible over the last eighteen years. This is reinforced by international recognition, a successful track record in research and its influence in service planning in the UK. It is inevitable that with time the concept on which it was based needs to be constantly reinforced for the benefit of all the patients.

This became more obvious throughout the last few years as the emphasis is some areas of healthcare have shifted towards elective practice and a lack of understanding in the concept of a national service.

The service continues to develop and plans significant changes in the delivery of the medical care over the next two years.

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

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