

# Queen Elizabeth National Spinal Injuries Unit

## Annual Report 2019/20



## NHS Greater Glasgow and Clyde

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# Table of Contents

## Executive Summary

- 1. Service Delivery**
- 2. Activity Levels**
- 3. Performance and Clinical Outcomes**
  - 3.1 *Equitable*
  - 3.2 *Efficient*
  - 3.3 *Timely*
  - 3.4 *Effectiveness*
  - 3.5 *Safe*
  - 3.6 *Person centred*
- 4. Quality and service improvement**
- 5. Governance and Regulation**
  - 5.1 *Clinical Governance*
  - 5.2 *Risks and Issues*
  - 5.3 *Adverse Events*
  - 5.4 *Complaints and Compliments*
  - 5.5 *Equality*
- 6. Financial reporting and workforce**
- 7. Audit & Clinical Research / publications**
- 8. Looking ahead**

## **Executive Summary**

### **Introduction**

The Queen Elizabeth National Spinal Injuries Unit is sited on the campus of the Queen Elizabeth University Hospital and hosted by NHS Greater Glasgow and Clyde Health Board.

### **Aim and Date of Designation of Service**

The Unit is responsible for the management of all patients in Scotland who have a traumatic injury to the spinal cord. Commissioned in 1992 it has continued to develop the management of the acute injury and life time care of all of its patients to maximise function and to prevent the complications of paralysis. Facilities include a combined Admission Ward and HDU (Edenhall) and a Rehabilitation Ward (Philipshill) with a Respiratory Care Unit. In addition there is a custom built Step-Down Unit for patients and relatives and Research Mezzanine (Glasgow University) which ensures that researchers are embedded in the Unit. Clinical services are provided at the Glasgow centre and outreach clinics throughout Scotland.

### **Description of Patient Pathways and Clinical Process**

The Unit accepts referrals for patients who are injured or domiciled in Scotland and are referred with a non-progressive (usually traumatic) spinal cord injury. In addition it accepts some patients with complex fractures without neurological injury but who are at risk of paralysis. The number of these patients is gradually reducing in accordance with national policy but the Unit continues to receive patients whose injuries exceed the capacity of the treating health board and for whom no other pathway is available. Patients are primarily referred from Acute Trauma Services but referrals are also received from Accident and Emergency Medicine, General Medicine, Neurosurgical, Vascular and Cardiovascular units throughout Scotland.

The Unit admits most new patients within hours or days of injury. There is a high dependency unit for ill and ventilated patients and spinal surgery is performed in around one-third of cases. Patients with paralysis may remain in the Unit for several months and after emergency treatment and rehabilitation the Unit provides lifelong care, support and follow-up.

There are close links with national patient support groups and charities whose teams are embedded in the Unit.

The Unit is also a major clinical trial centre for investigations in both acute and long-term spinal injury.

The national pathway to admission, designed almost thirty years ago has proven to be robust and provides a safe model for delivery of care to spinal-injured patients in Scotland. Discussion with colleagues internationally suggests that the Scottish figures would compare favourably against other international centres especially with regard to quick admission times and the model of lifelong care.

## **Key activity**

During the reporting period, April 2019 to March 2020 the Unit admitted **139** new patients, and treated **645** daycases and **1984** out-patients, including **363** patients in outreach clinics across the country. Surgeons performed **60** spinal operations.

Further details can be found on the dedicated website at [www.spinalunit.scot.nhs.uk](http://www.spinalunit.scot.nhs.uk)

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## ***Impact of Covid-19***

*This report covers Unit activity from April 2019 to March 2020. The Unit revised all working practices from 16<sup>th</sup> March 2020 so only the last two weeks of the activity in this report were affected by the crisis. Thanks are due to the management team, the team at NSD and all the staff in the Unit who have re-organised the service so quickly. The long-term effects of the virus will be apparent in next year's report.*

*At the time of writing (April 2020) the Unit continues to accept new patients without delay and has redesigned the service to minimise the impact of Covid.*

*The National Spinal Injuries Unit has been overwhelmed with offers of food and services for patients and staff donated by local and national groups. We have been touched by all the donations and the kind thoughts from people who will be going through difficult times themselves.*

## 1. Service Delivery

### Target Group

Traumatic spinal cord injury is relatively uncommon but can result in a devastating disability. It requires highly specialised multidisciplinary care to maximise the chances of recovery and reduce complications. Life expectancy outside specialised units is limited but should approach normal with appropriate immediate care and life long follow up.

### Care Pathway for Service or Programme

The Unit is commissioned to care for all cases of non-progressive spinal cord injury in Scotland. The majority of these are traumatic injuries. Immediate care, comprehensive rehabilitation and life-long care is provided at the centre in Glasgow and followed by visits at outreach clinics throughout the country. If appropriate an integrated service is provided with local medical, nursing and AHP services. Close cooperation is sought with social services and voluntary groups to ensure that the difficult transition to secondary care either at home or a care establishment is achieved.

**Table 1**  
**Out-patient Clinic Location and Frequency**

FREQUENCY	LOCATION
DAILY	GLASGOW: DROP IN CLINIC
WEEKLY	GLASGOW: NEW, RETURNS, SKIN, HALO, URODYNAMICS, SPASM, PUMP, ACUPUNCTURE, GENERAL SPINAL REVIEW, NEUROSURGERY
BI WEEKLY	GLASGOW: AHP - ORTHOTIST
BI MONTHLY	GLASGOW: FERTILITY, SEXUALITY, RESPIRATORY
MONTHLY	EDINBURGH
THREE MONTHLY	ABERDEEN, INVERNESS
SIX MONTHLY	DUMFRIES, BORDERS, ARBROATH
ANNUALLY	HUNTLY

The location and frequency of out-patient clinics and outreach services are based on the demographic data held on the National Database and ensure convenient local access for patients across Scotland. Medical, nursing and AHP staff attend the clinics accompanied by partner organisations for peer group support.

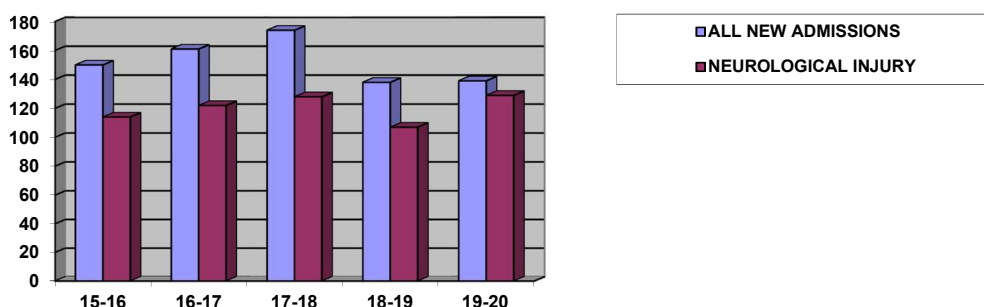
## 2. Activity Levels

QENSIU admits acutely injured spinal patients as soon as their condition allows. There is no waiting list for admission. In 2019-20 24% of patients were admitted within one day of injury, 41% within two days, and 66% within one week. 53% of patients with traumatic injuries were admitted within two days of injury. The time to admission from injury is difficult to decrease further because some polytrauma patients will always require several days for resuscitation and treatment of life and limb-threatening injuries before they are fit for transfer. By

comparison the mean admission times to most other UK spinal units are two to three months. Patients paralysed by stroke or infection increase the mean time to admission because these patients usually have a much more complicated pathway to diagnosis than the trauma group.

All 129 patients referred with a neurological injury were admitted as soon as clinically stable. Numbers of paralysed patients are stable and the national figure remains at around 100-120/year, a crude incidence rate of 2.3/100,000.

**Figure 1**  
**New Admissions: total and neurologically injured**



**Table 2**  
**New Admissions: total and neurologically injured**

	15/16	16/17	17/18	18/19	19/20	92-20
<b>ALL NEW ADMISSIONS</b>	150	161	174	138	139	4417
<b>Neurological</b>	114	122	128	107	129	2546
<b>Non-neurological</b>	36	39	46	31	10	1871

Numbers of neurologically intact patients have reduced. This is in keeping with national and health board policy to treat such patients locally whenever possible. There is likely to be a long-term small number of patients without cord injury because of uncertainty of paralysis at time of referral. There are also a small number of patients with complex fractures but no neurology whose injuries exceed the capacity of the local hospital.

Two hundred and eighty-eight patients were referred but not admitted as they fell outside the scope of the service and were not identified as being of a risk of neurological compromise. They were managed in the referral hospital with appropriate advice and support from consultant medical staff.

Some patients were seen by consultant staff in the neurosurgical and orthopaedic wards of the Queen Elizabeth University Hospital (QEUP) and other hospitals. The QEUP attracts increasing numbers of major trauma from a very wide area and this has led to demands of consultants' time to see patients who would have previously merited telephone advice only.

## New Admissions: Case Mix Complexity

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

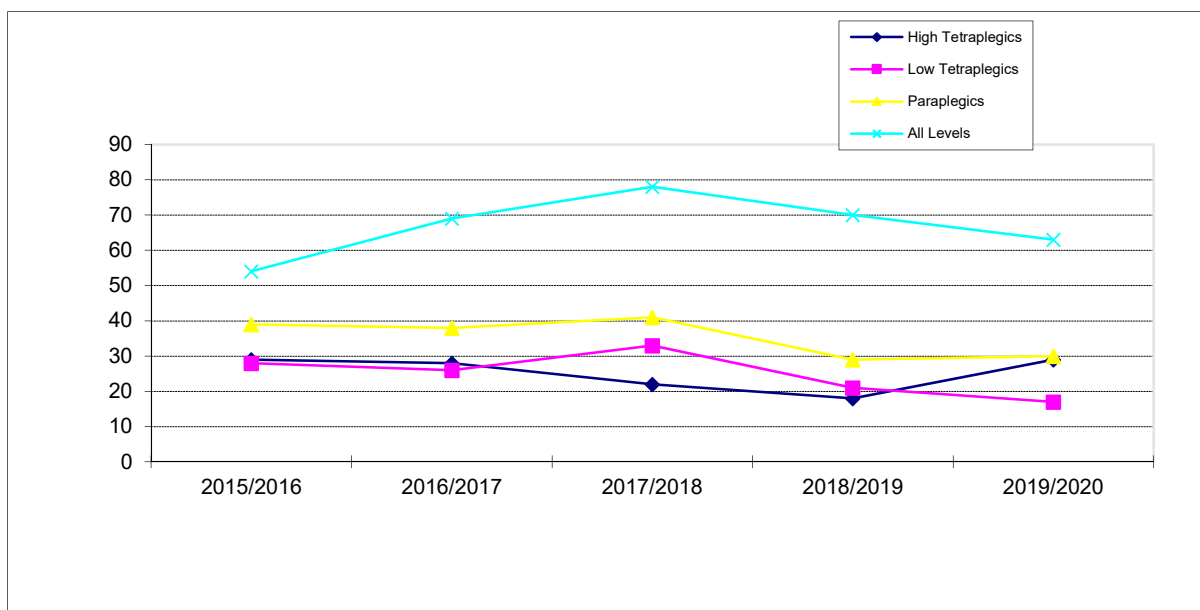
	Anatomy	Neurology
<b>GROUP I</b>	<b>Cervical Injury 1 - 4</b>	<b>High Tetraplegia</b>
<b>GROUP II</b>	<b>Cervical Injury 5 - 8</b>	<b>Low Tetraplegia</b>
<b>GROUP III</b>	<b>Thoracic, Lumbar and Sacral Injury</b>	<b>Paraplegia</b>
<b>GROUP IV</b>	<b>All levels of Injury with</b>	<b>Incomplete or no Paralysis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

**Group I** Patients with the most severe neurological injuries. They are the most dependent. 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** Patients with partial or no paralysis. Many have sustained major polytrauma with residual weakness and require significant input during their rehabilitation.

**Figure 2**  
New Admissions by Case-Mix Complexity: five year



**Table 3**  
**New Admissions by case-mix complexity 2015-2020**

GROUP	15/16	16/17	17/18	18/19	19/20	92/20
I	29	28	22	18	29	420
II	28	26	33	21	17	704
III	39	38	41	29	30	959
IV	54	69	78	70	63	2334
<b>Total</b>	150	161	174	138	139	4417

**Figure 3**  
**Historical trends in case-mix complexity**

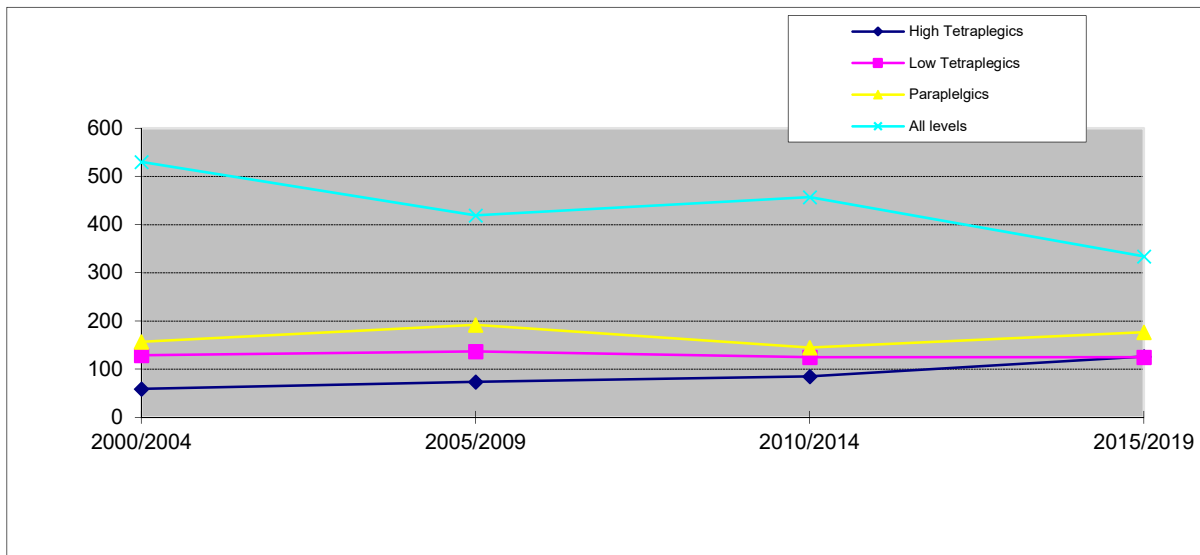
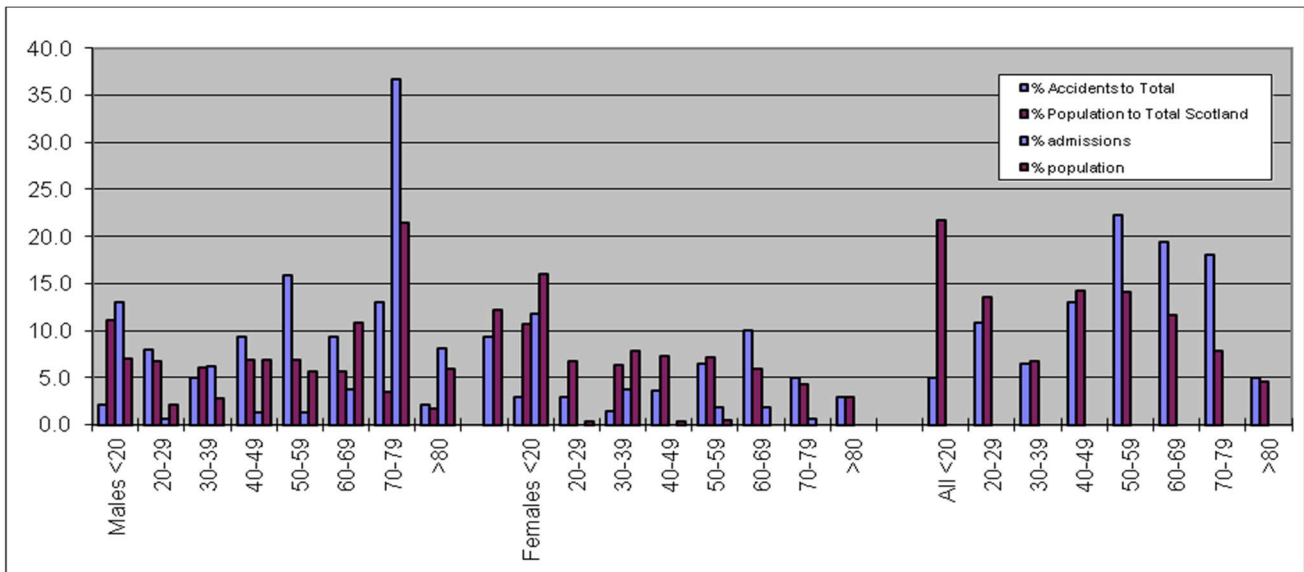


Figure 3 includes all admissions since 2000 and shows a steady rise in high tetraplegic patients and reduction in numbers of lesser injured patients (Group D and intact). The high tetraplegic patients are the most demanding of acute care and rehabilitation.

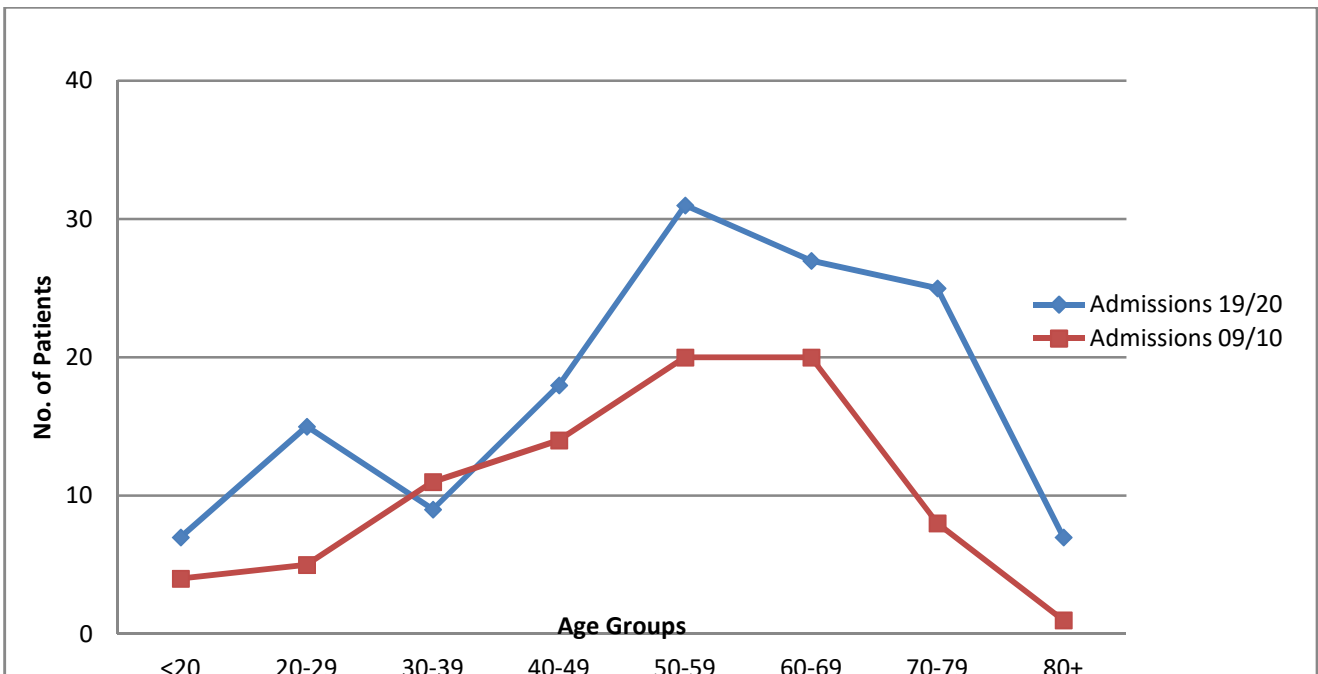


**Figure 4**  
**New Admissions by Age Group**



There is a sustained rise in middle-aged and older patients who are far frailer and find it much more difficult to cooperate with the therapy. The number of injuries in those under twenty remains low.

**Figure 5**  
**Admissions by Age**



**Figure 6**  
**All Referrals by Age**

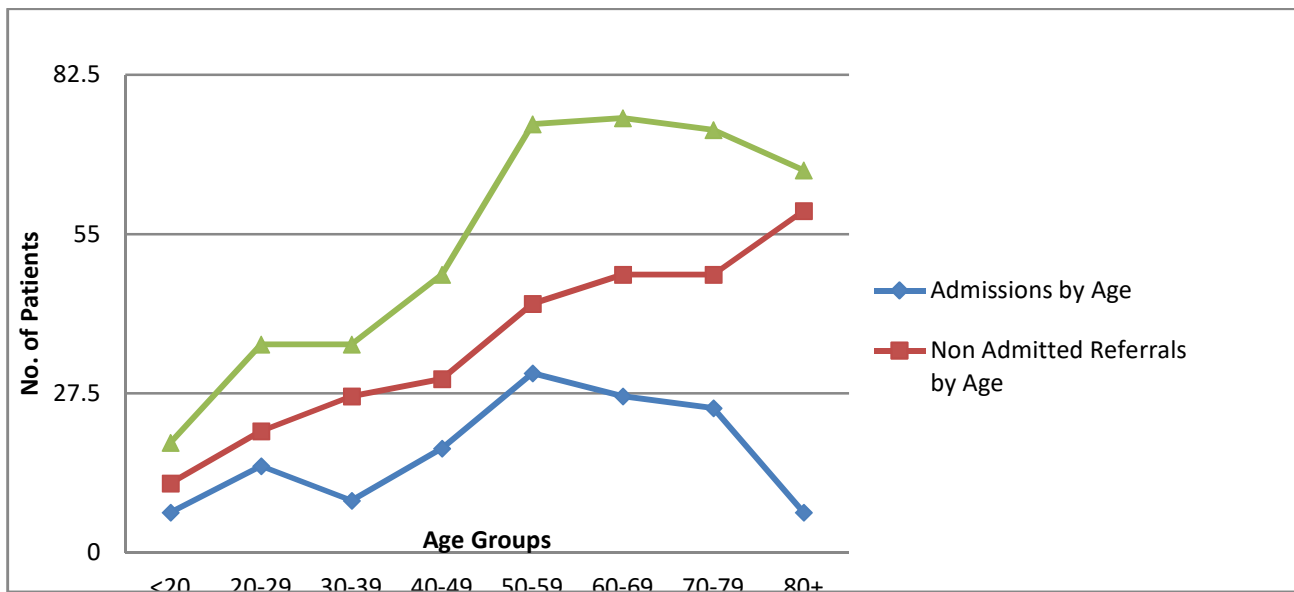


Figure 5 shows the age admission profile in more detail overlaid with the historic profile from 2009/2010. The increase in 50-80+ age groups continues. This older group have a large amount of co-morbidity which affects their capacity for rehabilitation. They make large demands on general medical care far beyond the original medical capacity envisaged when the Unit was created. (In 19-20 there was an increase in the number of younger (20-29) patients for the first time in many years. This may be within normal variation and the overall trend remains towards older patients.)

### Details of Referral and Admission by Region

The service is commissioned to take referrals for all patients with cord injury or complex fractures with risk of cord damage but there continue to be a large number of referrals for patients outwith this group who do not require admission. The referral itself is not a neutral process and inappropriate referrals can lead to delays in management locally.

After many years of growth the total number of referrals fell to 427. The national referral/admission ratio (RAR) has improved to 33% meaning that one-third of referred patients are admitted. (The RAR in the early 2000's was around 70%). There is a historic over-referral pattern from some Health Boards but this has improved particularly in the West of Scotland where admission rates are much closer to the national average. Overall numbers of referrals and admissions from WoS have fallen and this is probably due to the appropriate move to treat non-paralysed patients within local pathways. This is a welcome change and ensures that resource is more evenly distributed across the country as befits a National Service.

Numbers of referrals for elderly patients with cervical fractures without paralysis continue to fall appropriately due to changes in national and local management policies. These lie outwith the remit of the National Service and are managed locally.

**Table 4**  
**Health Board Referrals and Outcome**

Referring Board	Total Referrals	Admissions	Not Admitted	% Admitted	Complex Advice Given
Greater Glasgow & Clyde	149	41	108	28	40
Lanarkshire	68	22	46	32	10
Ayrshire & Arran	50	16	34	32	1
Dumfries	15	4	11	27	2
Borders	1	1	0	100	0
Highland	20	3	17	15	5
Grampian	18	10	8	56	5
Forth Valley	41	7	34	17	10
Tayside	16	10	6	63	3
Fife	10	7	3	70	1
Lothian	34	15	19	44	12
Western Isles	0	0	0	0	0
ECR	5	3	2	60	0
Overseas	0	0	0	0	0
<b>Total</b>	<b>427</b>	<b>139</b>	<b>288</b>	<b>33%</b>	<b>89</b>

The number of patients not admitted but requiring complex advice has decreased to 89. In these cases the referring team will have contacted the Spinal Unit several times for advice. In occasional cases of complex but neurologically intact patients it remains appropriate for consultants to assist the local team but it is not possible or sensible for the National Spinal Injuries Unit staff to micromanage referrals which ordinarily should be under the care of the local orthopaedic or medical team. There remains an expectation amongst some referrers that the Unit has a responsibility for all spinal problems and such inappropriate referrals can lead to delays in management.

**Table 5**  
**Health Board Referrals and Referring Speciality: Non Admissions**

Non Admitted referrals

Referring Board	Level of Injury		Referring Speciality				Total
	Cervical	Thor/Lum	Ortho	Neuro	A&E	Other	
Greater Glasgow & Clyde	53	55	45	6	15	42	108
Lanarkshire	22	24	18	0	16	12	46
Ayrshire & Arran	16	18	19	0	5	10	34
Dumfries	1	10	7	0	3	1	11
Borders	0	0	0	0	0	0	0
Highland	4	13	4	0	2	11	17
Grampian	5	3	2	4	0	2	8
Forth Valley	15	19	20	0	8	6	34
Tayside	4	2	0	3	3	0	6
Fife	1	2	1	0	1	1	3
Lothian	10	9	1	4	6	8	19
Western Isles	0	0	0	0	0	0	2
ECR	1	1	0	0	0	2	0
Overseas	0	0	0	0	0	0	0
<b>Total</b>	<b>132</b>	<b>156</b>	<b>117</b>	<b>17</b>	<b>59</b>	<b>95</b>	<b>288</b>

There has been a welcome decline in the number of inappropriate referrals from GGC which have halved in the last four years due to more appropriate management within local systems. Orthopaedics (41%) remains the principle user of the service. Accident and Emergency (20%) Neurosurgery (6%) provide smaller numbers and “Others” (33%) include Medicine, Neurology, Care of the Elderly etc. Referrals for non-traumatic and progressive conditions are redirected appropriately.

**Table 6**  
**Admissions by Anatomical Level and Severity**

	Level	Complete	Incomplete	No Neurology	Total
	<b>C 1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
	<b>2</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>6</b>
	<b>3</b>	<b>1</b>	<b>13</b>	<b>1</b>	<b>15</b>
	<b>4</b>	<b>8</b>	<b>21</b>	<b>1</b>	<b>30</b>
	<b>5</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>16</b>
	<b>6</b>	<b>1</b>	<b>9</b>	<b>1</b>	<b>11</b>
	<b>7</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>6</b>
	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
	Sub-total	<b>12</b>	<b>69</b>	<b>5</b>	<b>86</b>
	<b>T 1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
	<b>4</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>6</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>
	<b>7</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
	<b>8</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>
	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>10</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>6</b>
	<b>11</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>5</b>
	<b>12</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>5</b>
	Sub-total	<b>10</b>	<b>22</b>	<b>3</b>	<b>35</b>
	<b>L 1</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>10</b>
	<b>2</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>7</b>
	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Sub-total	<b>2</b>	<b>13</b>	<b>2</b>	<b>17</b>
<b>S1-5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	
Sub-total	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	
<b>TOTAL</b>	<b>24</b>	<b>105</b>	<b>10</b>	<b>139</b>	

(Multi-level injuries were counted from the highest level)

Cervical (neck) injuries continue to predominate. See Table Six. This is now an established pattern and a change from the early days of the Unit when the split was 50:50 cervical:thoracolumbar. The overall preponderance of tetraplegic patients continues to put increasing demands on nursing and therapy time.

**Table 7**  
**Mechanism of Injury**

	<b>2015/ 2016</b>	<b>2016/ 2017</b>	<b>2017/ 2018</b>	<b>2018/ 2019</b>	<b>2019/ 2020</b>
<b>Fall*</b>	<b>74</b>	<b>89</b>	<b>89</b>	<b>85</b>	<b>68</b>
<b>RTA</b>	<b>35</b>	<b>33</b>	<b>40</b>	<b>18</b>	<b>30</b>
Motor vehicle	18	17	21	4	13
Motorcyclist	8	9	7	8	6
Bicyclist	9	6	9	5	9
Pedestrian	0	1	3	1	2
<b>Medical</b>	<b>24</b>	<b>23</b>	<b>29</b>	<b>17</b>	<b>27</b>
<b>Industrial Injury</b>	<b>5</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>2</b>
<b>Assault</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>
<b>Penetrating Injuries</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Sporting Injury</b>	<b>7</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>
<b>Domestic Injury</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Self Harm</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>5</b>
<b>Other</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>1</b>
<b>Total</b>	<b>150</b>	<b>161</b>	<b>174</b>	<b>138</b>	<b>139</b>

\* includes diving injuries

Falls remain the most common cause of injuries. The welcome reduction in motor vehicle occupant injuries noted last year was not sustained and demonstrates inevitable normal variation. The incidence of other road injuries is unchanged. Medical causes have increased but again this is probably within normal variation. There were four deaths in the Unit. These cases were reviewed at Mortality Meetings. All patients were elderly with significant co-morbidity. Paralysis in this group may sometimes not be survivable but whenever clinically realistic the Unit will accept such patients for assessment and treatment.

**Table 8A**  
**Out-patient Activity**

	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
<b>Return</b>	2112	1943	1704	1743	<b>1914</b>
<b>New</b>	170	91	50	54	<b>70</b>

The out-patient activity of the Unit is focused on the post discharge management of acute injuries and lifelong, long term follow up. Dedicated clinics in Spinal Medicine and Neurosurgery supplement the nurse led Annual Review Clinics for those patients with a neurological deficit. Increasingly efficient clinical management limits annual increases in return patients.

**Table 8B**  
**Out-patient DNA Activity**

	15/16	16/17	17/18	18/19	19/20
<b>Return</b>	2112	1943	1704	1743	<b>1914</b>
<b>DNA Return</b>	613	540	383	369	<b>348 (18%)</b>
<b>New</b>	170	91	50	54	<b>70</b>
<b>DNA New</b>	43	24	14	11	<b>7 (10%)</b>

The DNA rate continues to improve due to staff telephoning and texting patients before appointments.

**Table 9**  
**Out-patient Activity by Centre**

	15/16	16/17	17/18	18/19	19/20	CHANGE YEAR	TOTAL 1992-2020
<b>New QENSIU</b>	170	91	50	54	<b>70</b>	30%	<b>3469</b>
<b>Return QENSIU</b>	1728	1565	1345	1362	<b>1551</b>	14%	<b>43497</b>
<b>Edinburgh</b>	155	148	142	153	<b>139</b>	(9%)	<b>4385</b>
<b>Inverness</b>	63	59	63	64	<b>67</b>	5%	<b>1290</b>
<b>Aberdeen</b>	71	77	60	71	<b>76</b>	7	<b>1313</b>
<b>Dumfries &amp; Galloway</b>	24	11	28	36	<b>21</b>	(42%)	<b>401</b>
<b>Borders</b>	29	42	22	13	<b>21</b>	62%	<b>385</b>
<b>Arbroath</b>	26	24	26	32	<b>26</b>	(19%)	<b>408</b>
<b>Huntly</b>	16	17	18	12	<b>13</b>	8%	<b>166</b>
<b>Total</b>	<b>2282</b>	<b>2034</b>	<b>1754</b>	<b>1797</b>	<b>1984</b>	<b>10%</b>	<b>55314</b>

There is expected year to year variation in out-patient attendances. The apparent large changes in the smaller outreach clinics is due to timing of bi-annual clinics which may not fall neatly within the reporting period.

**Table 10**  
**Attendance and Location Outreach Clinics**

Location	% Attendance 18-19	% Attendance 19-20	Number of Clinics	Number of Patients
<b>Aberdeen</b>	91%	<b>92%</b>	<b>5</b>	<b>76</b>
<b>Inverness</b>	91%	<b>96%</b>	<b>4</b>	<b>67</b>
<b>Dumfries</b>	97%	<b>100%</b>	<b>2</b>	<b>21</b>
<b>Arbroath</b>	97%	<b>84%</b>	<b>3</b>	<b>26</b>
<b>Borders</b>	94%	<b>88%</b>	<b>2</b>	<b>21</b>
<b>Huntly</b>	75%	<b>93%</b>	<b>1</b>	<b>13</b>
<b>Edinburgh</b>	93%	<b>89%</b>	<b>11</b>	<b>139</b>
<b>Ave Rate</b>	91%	<b>96%</b>	<b>28</b>	<b>363</b>

**Table 11**  
**Out-patient Activity by Specialty at QENSIU**

	15/16	16/17	17/18	18/19	19/20
Orthopaedics*	0	0	0	0	0
Thoracolumbar*	29	5	0	0	0
Neurosurgery	187	204	171	214	219
Urology+	399	235	63	0	0
Skin Care	44	32	36	23	26
Pain / Spasm	13	9	7	25	53
Neuroprosthetics	22	48	26	26	21
Orthotics	N/A	N/A	N/A	N/A	226#
Sexual Dysfunction	12	11	6	9	7
Respiratory	13	18	17	25	17
Fertility	3	4	5	0	3
Spinal Injury Annual Review	1006	999	985	1040	979
<b>Total</b>	<b>1728</b>	<b>1565</b>	<b>1316</b>	<b>1362</b>	<b>1551</b>

\*included for historical comparison after retiral of Orthopaedic Surgeon. The orthopaedic and thoracolumbar clinic workloads have been entirely transferred to the neurosurgical clinics.

+included for historical comparison after retiral of Urological Surgeon.

#Increase of outpatient activity is due to Orthotics clinics which were sourced externally in previous years however this is now an "in-house" service provided by GGC and recorded on Trak system.

The Spinal Injury Annual Review clinics remain the core component of the outpatient activity and numbers remain stable. These are nurse led with only 56% of patients requiring medical input. There is an open door policy for patients and inevitably some activity remains under-reported from drop-in/ad hoc review. Neuro-prosthetics includes assessment and surgery for upper limb problems principally in tetraplegic people.

### Day Case Activity

Day case numbers are stable and these services offer important care for minor surgical procedures, medical interventions and nursing care. The level of Day Case activity is self-limited due to the finite population of spinal injured patients. It is suspected that Sexual Dysfunction attendance is under-recorded due to difficult nature of consultations which take place outwith the standard clinic environment.

Day Case activity remains limited by geographical constraints and there is a natural trend towards seeing patients closer to Glasgow. Halo service attendance has reduced probably because more patients who are neurologically intact are being seen appropriately by local services.

**Table 12**  
**Day Case Attendances by Reason**

	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
<b>Urology/Urodynamics</b>	52	62	53	32	<b>33</b>
<b>Halo Fixation</b>	138	143	135	232	<b>91</b>
<b>Skin</b>	4	11	13	7	<b>10</b>
<b>Orthopaedic/Neurosurgery</b>	0	0	0	2	<b>0</b>
<b>Acupuncture / Pain / Spasm</b>	474	442	450	450	<b>481</b>
<b>Sexual Dysfunction</b>	4	3	6	10	<b>5</b>
<b>Fertility</b>	18	20	20	16	<b>25</b>
<b>Other</b>	4	4	4	8	<b>0</b>
<b>Total</b>	<b>694</b>	<b>685</b>	<b>681</b>	<b>757</b>	<b>645</b>

Attendances are stable.

**Table 13**  
**Day Case Attendances by Health Board**

<b>Day Case Attendances by Health Board</b>					
	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
<b>Ayrshire &amp; Arran</b>	66	56	35	51	<b>56</b>
<b>Borders</b>	5	6	10	1	<b>0</b>
<b>Dumfries &amp; Galloway</b>	7	11	1	1	<b>10</b>
<b>Fife</b>	19	20	21	13	<b>9</b>
<b>Forth Valley</b>	48	35	40	33	<b>66</b>
<b>Grampian</b>	5	8	1	6	<b>2</b>
<b>Greater Glasgow &amp; Clyde</b>	358	335	359	432	<b>298</b>
<b>Highland</b>	28	22	15	11	<b>19</b>
<b>Lanarkshire</b>	102	125	136	173	<b>131</b>
<b>Lothian</b>	41	52	51	35	<b>43</b>
<b>Shetland</b>	0	0	0	0	<b>0</b>
<b>Tayside</b>	9	5	8	1	<b>11</b>
<b>Orkney</b>	5	5	1	0	<b>0</b>
<b>Western Isles</b>	1	0	1	0	<b>0</b>
<b>ECR</b>	0	5	1	0	<b>0</b>
<b>Unknown</b>	0	0	0	0	<b>0</b>
<b>Total</b>	<b>694</b>	<b>685</b>	<b>680</b>	<b>757</b>	<b>645</b>

Multi-disciplinary medical rehabilitation is the keystone of the workload in Spinal Cord Injury. Surgical support is required from orthopaedics, neurosurgery and plastic surgery. Approximately twenty per cent of the patients have additional limb injuries.



**Table 14**  
**Supporting Surgical Services**

Service	Clinics	Patients	Acute Spinal Operations	Elective Operations
<b>Thoracolumbar 2 x Month</b>	0	0	Thoracolumbar fixations 36	3
<b>Neurosurgery 4 x Month</b>	45	219	Cervical fixations 21	0
<b>Skin Care/Other/Pump</b>	26	26	0	7

Numbers of procedures are stable. All referrals and new admissions are discussed at the weekly team meeting with spinal and surgical consultants. This ensures a consensus approach to management for the benefit of the patients and mutual support of consultant staff for difficult clinical decisions. The team of neurosurgeons performed the spinal fixations. Thanks are due to the surgical team for maintaining the thoracolumbar fixation service in the QEUH.

**Table 15**  
**Ventilated Bed Days**

High-level spinal cord injury often requires temporary or permanent ventilator support. The Respiratory Care Team consists of a Consultant Respiratory Physician and a Respiratory Care Sister who work closely with the neuro-anaesthetic service providing in-patient care and a domiciliary ventilation service throughout Scotland.

		No. Patients	Ave. Ventilated Days	Total Ventilated Days
<b>15/16</b>	<b>Edenhall</b>	23	21	491
	<b>RCU</b>	2	39	78
<b>16/17</b>	<b>Edenhall</b>	16	14	287
	<b>RCU</b>	2	121	242
<b>17/18</b>	<b>Edenhall</b>	15	26	395
	<b>RCU</b>	2	21	41
<b>18/19</b>	<b>Edenhall</b>	10	21	213
	<b>RCU</b>	3	2	6
<b>19/20</b>	<b>Edenhall</b>	<b>15</b>	<b>25</b>	<b>376</b>
	<b>RCU</b>	<b>4</b>	<b>94</b>	<b>377</b>

Each patient is counted only once but may be responsible for multiple episodes of care or inter ward transfers if their condition varies. RCU continues to prove its worth in continuing to provide step-down ventilation within the rehabilitation ward and freeing up acute ventilator beds in Edenhall Ward. The need for long-term ventilation fortunately remains rare and numbers are expected to vary widely year to year.

### 3. Performance and Clinical Outcomes

#### 3.1 Equitable

##### Geographical Access for nationwide services

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

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

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

**Table 16**

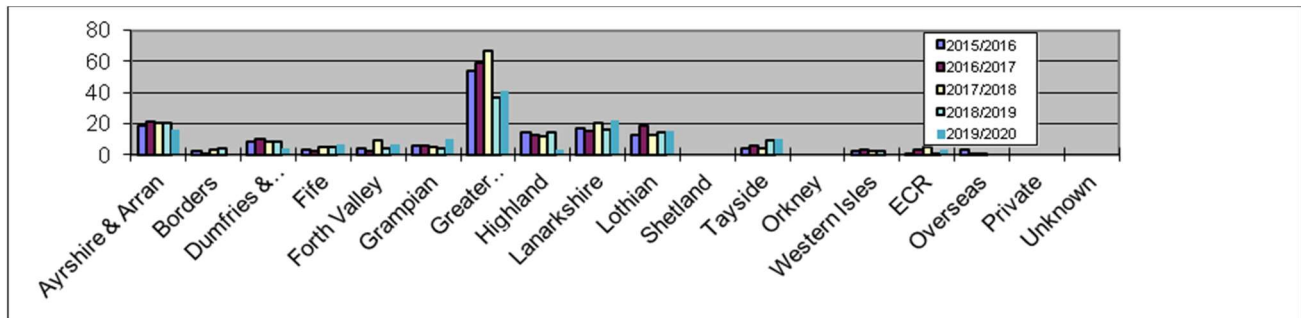
2019/20	A	B	C	D	E	Total
Ayrshire & Arran	1	2	2	11	0	16
Borders	0	0	0	1	0	1
Dumfries & Galloway	0	1	1	2	0	4
Fife	1	1	0	3	2	7
Forth Valley	1	0	2	4	0	7
Grampian	2	2	1	5	0	10
Greater Glasgow Clyde	10	2	11	16	2	41
Highland	1	0	2	0	0	3
Lanarkshire	4	3	3	10	2	22
Lothian	2	0	5	7	1	15
Overseas	0	0	0	0	0	0
Shetland	0	0	0	0	0	0
Tayside	4	1	2	3	0	10
Orkney	0	0	0	0	0	0
Western Isles	0	0	0	0	0	0
ECR	1	0	0	1	1	3
Unknown	0	0	0	0	0	0
<b>TOTAL</b>	<b>27</b>	<b>12</b>	<b>29</b>	<b>63</b>	<b>8</b>	<b>139</b>

The Unit continues to admit patients from all areas of Scotland. The distribution of admission of paralysed patients and the annual variation since the Unit opened justifies the clinical and economic benefits of a national service.

As a national service it is important to provide outpatient and domiciliary services throughout Scotland.

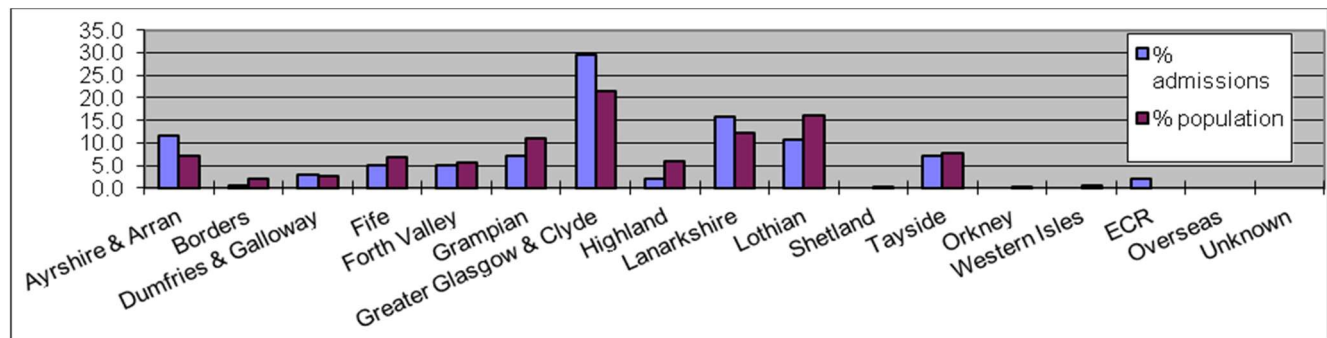
This resulted in the development of the Liaison Sister Service and outreach clinics in areas identified on our database as having a concentration of patients. All outreach clinics are Medical Consultant led with Nursing and Occupational Therapy staff attending as required. We are delighted to welcome volunteers from SIS who also see and advise patients and carers. There is a continued demand for nurse specialists to provide important inpatient and outpatient advice to local care teams as well as patients themselves. As well as two Liaison Sisters there is an Education Sister, Respiratory Sister, and Discharge Planner. They all provide assistance to the Senior Nurse.

**Figure 7**  
**New Admissions by Health Board of Residence 2015-2020**



There has been a further drop in admissions from GGC due to reduction in admissions of non-paralysed patients. Three non-Scottish patient was admitted. (ECR & Overseas) A small number of such patients is to be expected. The Unit did not admit any private patients.

**Figure 8**  
**Admissions by Health Board compared with Population Size**



The distribution of per-capita admissions within Health Boards is unchanged. Now that the numbers of neurologically intact patients have reduced it would appear that there is a genuine higher incidence of spinal cord injury in the West of Scotland Health Boards. Further research would be required to establish the reason.

**Table 17**  
**New Out-patient Activity by Health Board**

	15/16	16/17	17/18	18/19	19/20
Ayrshire & Arran	6	7	6	5	7
Borders	1	0	0	0	0
Dumfries & Galloway	2	3	3	0	3
Fife	1	0	0	0	1
Forth Valley	1	3	1	3	9
Grampian	2	1	0	0	0
Greater Glasgow & Clyde	123	59	24	36	30
Highland	5	3	6	3	8
Lanarkshire	25	12	8	6	12
Lothian	3	2	2	0	0
Shetland	0	0	0	0	0
Tayside	0	1	0	1	0
Orkney	0	0	0	0	0
Western Isles	1	0	0	0	0
ECR	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>170</b>	<b>91</b>	<b>50</b>	<b>54</b>	<b>70</b>

### 3.2 Efficient

**Table 18**  
**Length of Stay by Level of Spinal Cord Injury**  
*Discharged Patients 19-20*

Case Mix	No. of Patients	Mean L.O.S.	Range of L.O.S.
I	26	171	38-509
II	22	176	10-600
III	32	130	12-574
IV	61	38	5-206
<b>All</b>	<b>141</b>	<b>105</b>	<b>5-600</b>

Groups 1 & 2 are the oldest and most paralysed group with grossly disordered pathophysiology and are the most ill group in the early part of their stay with high demands on medical and nursing resource. The rehabilitation goals may be limited in this group.

**Table 19**  
**Bed Utilisation**

National Spinal Injuries Unit		
Edenhall HDU = 12 Beds		Philipshill = 36 Beds
Bed Complement	Actual Occupied Bed Days	% Occupied
48	13816	81%

Occupancy figures are stable and allow flexible and efficient use of beds.

### 3.3 Timely

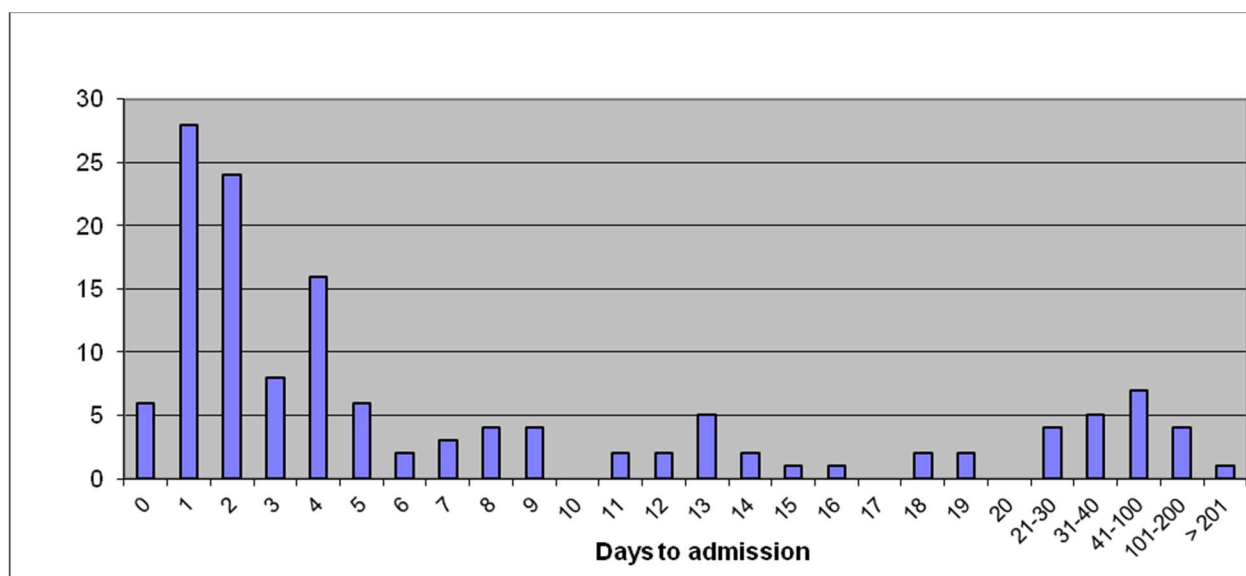
#### Waiting Times: Acute and Out-patient Clinics

The Unit admits on grounds of clinical priority and safety of transfer. Appropriate support facilities are available in the majority of hospitals in Scotland but international and regional data support early transfer if possible. Current national policy is to transfer patients to QENSIU as soon as clinically stable and this has proved a robust admission policy over twenty-eight years. There were no delays in transfer due to lack of beds. All patients were transferred as soon as they were fit and transport was available. The most highly dependent patients (Groups 1 & 2) made extra demands on resources but time to admission was unaffected.

There is an open door policy to the Nurse Led Clinics. Medical advice is always available. A small number of patients with established paralysis move to Scotland every year and the maximum waiting time for these new elective outpatient appointments remains at four weeks.

#### Time from injury to Admission

**Figure 9**  
Time from injury to admission



The policy is of immediate admission for all patients once they are clinically stable. Most patients are referred within twenty-four hours of injury. Early referral is encouraged. In 2019-20 24% of patients were admitted within twenty-four hours of injury and 41% were admitted within forty-eight hours. 66% were admitted within one week. 53% of trauma patients were admitted within forty-eight hours.

The patients with non-traumatic injuries tend to skew admission times to the right because the initial spinal damage is often not so obvious and their diagnosis and treatment of these patients is undertaken in neurological and medical units outwith the trauma system. They are referred and admitted much later than the trauma patients. Of the eighty-two patients admitted within four days of paralysis all but one had traumatic injuries.

As usual a “long tail” of patients were admitted weeks and months following injury. This time pattern is consistent with previous years. The emphasis remains on early admission to provide immediate support to the patient and family and to prevent complications.

Early referral and co-operation between the staff in the Unit and the referral hospital ensures immediate admission if clinically indicated. Consultant telephone advice is available 24/7 for those patients who are not immediately transferred. The referral proforma, transfer documentation and admission form continue to be successful in facilitating and auditing the process. They have been internationally recognised and copied and are publicly available on [www.spinalunit.scot.nhs.uk](http://www.spinalunit.scot.nhs.uk)

Approximately twenty per cent of patients have associated orthopaedic injuries. Co-operation between ITU, the referring hospital and other specialised units can be required (Plastic Surgery, Burns Unit, Maxillofacial, Renal etc).

**Table 20**  
**Days to Admission by Range**

	No. of Patients	Mean Time (Days)	Range of Time
2015-2016	150	35	0 – 2117
2016-2017	161	38	0 – 2278
2017-2018	174	231	0 – 10688
2018-2019	138	218	0 – 10274
<b>2019-2020</b>	<b>139</b>	<b>15</b>	<b>0 - 230</b>

Table 20 shows mean time to admission for all first-time admissions. This includes some patients who were initially managed outside QENSIU and admitted years, sometimes decades, after injury for elective treatment. These patients are coded as “new injuries” and grossly skew the mean time to admission but these numbers are included for consistency and transparency. In 19-20 the median time to admission for all injuries was 4 days.

**Table 21**  
**Delayed Discharge**

	No. of Patients Discharged	No. of Patients Delayed	Mean Delay (days)	Range of Delay (days)	No Delay
2015/2016	144	7	26	6 – 61	95%
2016/2017	160	9	27	7 – 76	94%
2017/2018	165	7	66	10 - 274	96%
2018/2019	139	10	62	16 - 171	93%
<b>2019/2020</b>	<b>141</b>	<b>23</b>	<b>53</b>	<b>1-303</b>	<b>84%</b>

Despite discharge planning weeks or months ahead a small number of patients continue to have delays in discharge usually due to lack of suitable accommodation. If accommodation is unavailable patients are transferred back to the referring hospital once they have completed their rehabilitation. Staff at the Unit continue to work with local health teams, social work and housing organisations to minimise delays in return home. This makes increasing demands on nursing, occupational therapy and nursing time. We hope that, where appropriate, the Major Trauma Centre system will facilitate the return of patients to their base hospital pending final discharge.

### **3.4 Effectiveness**

#### **Clinical Outcomes/complication rates / external benchmarking**

The Unit has provided outcome and activity figures since 1998 in this Annual Report and in specialised reviews. Clinicians and researchers have published many papers in the literature on a number of topics. Details of publications and complication rate are outlined in [www.gla.ac.uk/research/az/scisci](http://www.gla.ac.uk/research/az/scisci)

External benchmarking remains difficult. We are not aware of any other publicly funded spinal service which provides care from injury to lifelong follow-up to such a geographically distinct population. We believe that the acuity and level of care provided in Glasgow, and the detail in the twenty-nine year old database remain unique worldwide.

Some comparisons with English units can be made using data from their national commissioning database. The average time to admission for most English units is two months, in Scotland it is three days. Every study of acute spinal injury confirms that a spinal unit is the best place for newly-injured people and the Unit continues to perform very highly in this respect.

## Key Performance Indicators Summary

	16-17	17-18	18-19	19-20
New Admissions	161	174	138	139
New Outpatients	91	50	54	70
Key Performance Indicators				
<b>Referrals</b>				
All patients referred	598	594	526	427
Telephone advice	437	420	388	288
Complex advice with support/visit	153	85	106	89
<b>New patient activity</b>				
All patients admitted with neurological injury	122	128	107	129
All patients admitted with non-neurological injury	39	46	31	10
<b>Surgical stabilisations:</b>				
- Thoracolumbar fixations	32	24	31	36
- Elective removal of metalwork	9	9	4	3
- Cervical fixations	23	23	9	21
- Halo immobilizations	28	23	27	18
<b>Spinal injury specific surgery:</b>				
-Other	8	5	4	4
<b>Implant spasm and pain control:</b>				
- New pumps implanted	0	0	0	2
Removal of pump				1
- Revision pumps	1	0	0	0
- Operational pumps	12	11	11	7
- Pump Refill QENSIU	8	7	7	7
- Pump Refill Local	4	14	4	N/A
<b>Step down unit:</b>				
- Episodes of care	51	35	27	38
- Number of families/people	51	103	99	108
- Number of days (nights)	135	160	62	139
<b>- Relatives Room</b>				
- Episodes of care	44	49	42	35
- Number of families / people	44	61	57	49
- Number of days (nights)	315	286	128	332
<b>New inpatient occupied bed days</b>				
Total Available (new & return)	16764	17012	17223	17097
Actual	14834	13157	13861	13816
Bed Occupancy %	87%	77%	80%	81%
<b>Mean length of stay</b>				
I	145	125	164	171
II	113	114	140	176
III	102	113	132	130
IV	24	23	23	38
All	82	73	78	105



Range of length of stay	1 - 339	1 - 434	1 - 377	<b>5-600</b>
<b>Delays in discharge (actual v's intended)</b>				
Number of patients discharged	160	165	139	<b>141</b>
Number of patients with delayed discharged	9	7	10	<b>23</b>
Length of delay (mean/mode)	27	66	62	<b>53</b>
% with no delay	94%	96%	93%	<b>84%</b>
<b>Day case</b>				
by NHS Board of Residence	See Fig 9	See Fig 9	See table 13	See table 13
by reason for admission	See Table 12	See Table 12	See Table 12	See Table 12
<b>Outpatient activity</b>				
New Patient no's QENSIU	See Table 7B	See Table 7B	See Table 8A	See Table 8A
Return Patient no's QENSIU	See Table 7B	See Table 7B	See Table 8A	See Table 8A
New Patient QENSIU (DNAs/ % attendance)	26%	28%	20%	<b>7%</b>
Return Patient QENSIU (DNAs/ % attendance)	28%	22%	21%	<b>18%</b>
New Outreach Clinics by Centre	See Table 9	See Table 9	See Table 9	See Table 9
Return Outreach Clinics by Centre	See Table 10	See Table 10	See Table 9	See Table 9
Attendance at New Outreach Clinics by Centre (DNAs/ % attendance)				
Attendance at Return Outreach Clinics by Centre (DNAs/ % attendance)				
Outpatients discharged in period				
Number of patients discharged from the service	Life Long Care	Life Long Care	Life Long Care	Life Long Care
Actual / Anticipated number of patients in service				
Allied Health Professionals activity	See Appendices	See Appendices	See Appendices	See Appendices
New Patient (DNAs/ % attendance)	See Table 7C	See Table 7C	See Table 8B	See Table 8B
Return Patient (DNAs/ % attendance)	See Table 7C	See Table 7C	See Table 8B	See Table 8B

### 3.5 Safe

#### Re-admissions to the Unit

Most neurologically injured patients discharged from the Unit never require re-admission. They attend annually as out-patients for lifelong follow up. In some cases readmission must be regarded as a failure, most often due to skin problems and self-neglect. There were 32 readmissions to the Unit during the year, a significant shortfall on the contract estimate of two hundred readmissions, most often due to skin problems, elective surgery or top up rehabilitation to optimise independence.

#### Safety Risk Register

The Unit complies with all corporate, regional and local requirements and supports risk awareness and risk management.

## **Scottish Patient Safety Programme (SPSP)**

### **Deteriorating Patient**

The combination of all bundles have resulted in:-

- Early detection and prompt treatment of Infection
- Reduction in rate of re-admission to HDU
- Prompt return to therapy/rehabilitation thus reduction in bed occupancy days
- Early bladder management
- HDU no longer routinely catheterise Intact Injuries
- Cost savings related to reduced catheter prevalence
- Reduction of stress and anxiety for patient and loved ones associated with deterioration.
- Quicker escalation of rehabilitation

All Improvement initiatives are continually improving the outcomes for Spinal Patients to Assure they receive Safe, Effective, Person Centred Evidence Based.

We continually review outcomes and share these with the Interdisciplinary Team at Audit and Governance meetings.

### **Red Flag Update**

We continue to carry out our red flag alert system of any pressure sores inherited or acquired in the unit. This system has allows us to identify pressure sores at an early stage and to make appropriate changes in patient care to prevent further deterioration. This year red flag has allowed us to identify 10 Early Warning Sign pressure sores and 26 Grade 1 pressure sores which has prevented further deterioration of wounds and subsequent delays in patient rehabilitation.

## **3.6 Person Centred**

### **Person-Centred Visiting**

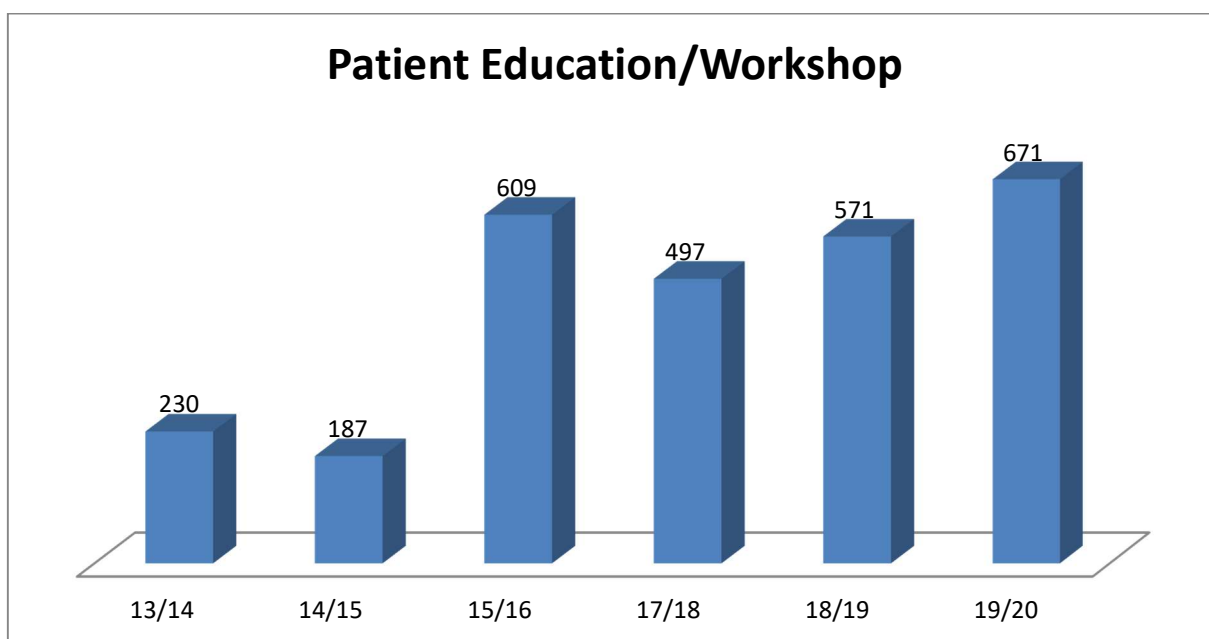
Person Centred visiting was introduced to National Spinal Unit in Oct 2019, Philipshill was the pilot ward and Edenhall quickly adopted this national initiative. Person Centred Visiting has gave extra flexibility and has enabled more person-centred approaches focused on partnership and the needs of the individual and their family, this may include teaching, support for carers and prepares families to adapt from hospital setting to home. Sustaining a spinal injury can completely change the life of the patient and there family person centred visiting takes away the pressure of times and gives visitors the flexibility this in return reduces stress and anxiety and gives patients the connection to people that matter most to them.

### **Patient Education/Workshop Spinal Education**

Education is a fundamental aspect of the rehabilitation journey for spinal patients and their families/loved ones. Patients are adapting to a new normal, learning how their body now functions. They require the knowledge and understanding to effectively manage their own lifelong care, with the ability to troubleshoot their way through problems and potentially direct others who may need to support them.

In early 2015 the decision was made to revamp the education programme. The traditional style had become tired and attendance was low. Staff felt that patients were not being challenged with enough problem solving skills and the feeling was we could prepare patients better for life after discharge. The concept often held by patients that therapy could only happen whilst in the gym has been challenged; we have put a greater emphasis on therapy being built into every aspect of the day 24/7.

The education programme ran on a 12 week rolling schedule every Wednesday. Following interdepartmental discussion via a SLWG we started the process of making the sessions more interactive to encourage patient participation and engagement. The support of lived experiences from those living with a spinal injury was vital to the success. We were lucky to already have the support of Spinal Injuries Scotland and later with BackUp on board we were able to offer peer support to every workshop. The workshops complimented the formal Wednesday session and were an open forum for questions concerns and anxieties. Aspire were able to support us practically by funding a support worker to help with the housekeeping associated with the sessions, refreshments were now on offer, registers taken, attendance encouraged and feedback collated and improvements made. We are now in the position to offer a 16 week rolling programme every Wednesday and Thursday offering 32 sessions. Feedback is hugely positive, staff feel fulfilled and overall it has had a positive impact on patient outcomes.



We continue to share our improvement work locally and had the privilege to share nationally at Guttman 2018. Spinal Units are keen to adopt our programme.

We also assess patient's knowledge prior to discharge using "Mind the Gap" questionnaire this is gathered impartially by Carol from Aspire and it gives staff the opportunity to fill any gaps in knowledge prior to discharge.

In addition to these sessions we now have a Relatives evening on the first Wednesday of every month this is a safe place for them to discuss their fears and anxieties following injury, during rehabilitation and pre discharge. Each session has a theme and is supported by a member of the MDT team and peer support. These are very much in their infancy and attendance has been small but the feedback and benefit to those who do attend has been incredibly positive.

## **Family Unit / Step-Down Unit**

Usage of this essential resource is stable. The step-down facilities continue to support acute admissions, long stay and pre-discharge patients. 38 patients and their families have used the family suite on 38 occasions for a total of 139 days and nights. 35 families of acute admissions on 35 occasions have taken the opportunity to use the relatives' rooms in the first few days of admission totalling 332 days and nights. Families have appreciated being so close during the early stages of injury.

## **4. Quality and Service Improvement**

### **Medicine Management**

To improve safety and efficiency of medicine administration Philipshill implemented a improvement initiative to reduce the risk of drug omission or errors, this came from a de-brief of a significant incident that occurred, implementation of small test of change helped the team stay focussed and prevented interruption.

Nurse in charge now designates a medicine co-ordinator who wears a assigned badge, they are responsible to ensure that any prescriptions or alterations are amended on kardex, the co-ordinator meets with medical staff at 15.00hrs every day it is the responsibility of the co-ordinator to liase with all 3 teams regarding any prescriptions required, amends to be made, drugs to be ordered for pass/discharge. Pharmacy have also been consulted in this process to facilitate and address any issues.

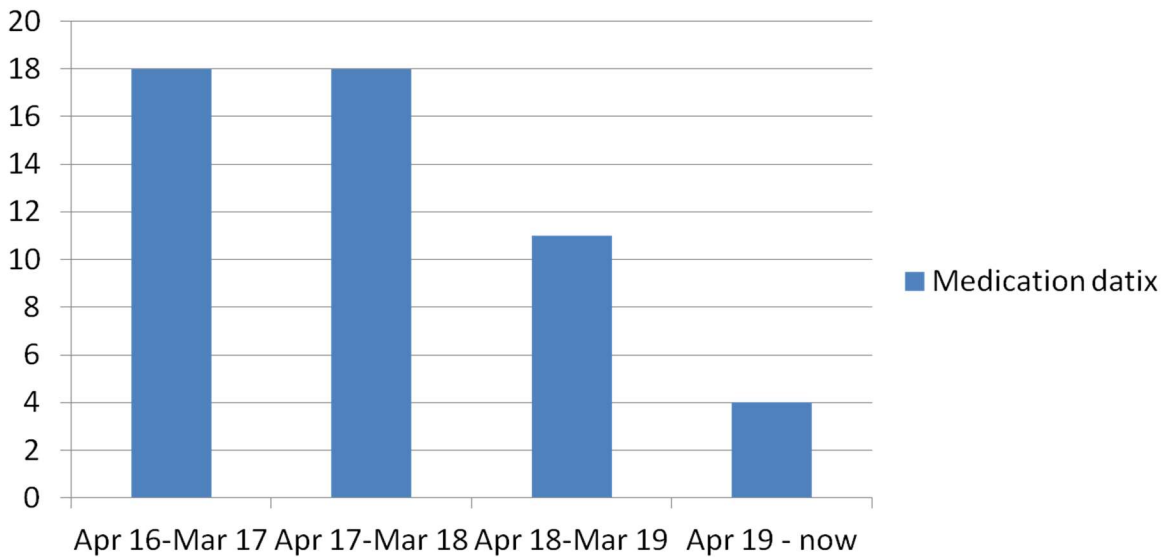
Protected time for nurses following drug round to review all Kardexes and ensure nothing has been omitted prior to completing the drug round. Thus preventing avoidable omissions.

Daily review of drug storage and collaboration with pharmacy technician and pharmacist has reduced risk of overstocked items and helped with efficiency savings to ward.

Implementation of self-medication has prepared patients for home and reduced pass medications.

All these test of change has reduced risk of error, all are now normal practice in the ward, best practice has been shared across site and now actively been used in other wards across GGC.

## Medication datix



### Huddle/Communication

Effective communication amongst health care professionals is challenging. The unit introduced a morning huddle where someone from all disciplines within unit meets. A morning huddle is probably the single most effective meeting that you can have with your team. The aim is to check in with team to anticipate care needs for that day. The huddle will give the team the opportunity to identify real time issues around quality and safety. This allows you to plan for changes in daily workflow, manage situation before crisis arise and make adjustments that will improve service delivery for patients and staff.

From this best practice and the capacity of patients throughout a 12 hour shift there can be many changes therefore Philipshill introduced an afternoon huddle, this gives the team opportunity to pause and reflect on any safety issues that may have occurred throughout their shift gives staff the opportunity to heighten improvement and celebrate success of the day, staff report it is very worthwhile tool to ensure communication is passed over efficiently and effectively on a daily basis.

### Value Management 2020

Philipshill have been chosen to be part of the national "Value Management Collaborative" the aim is to test and spread quality improvement methods combining cost and quality data at a team level to deliver improved patient outcomes, experience and value.

This is underpinned by three components:

- creating the conditions for quality improvement through organisational culture, leadership and infrastructure interventions
- team, ward level quality, value improvement interventions and coaching
- quality improvement, coaching capacity and capability building

The practice of Value Management includes the use of a standard visual management board to review performance (including financial performance) every week, weekly meetings with a coach to structure analyses, and *continuous* improvement work, focusing on safety, cost, quality and capacity.

Each multidisciplinary team includes Team Lead, Lead Nurse, Management accountant, Clinical Service Manager and General Manager.

The team will utilise

- weekly collection of quality and finance data
- a visual management board that includes the display of data over time, linked analyses, and related improvement work
- multi-disciplinary weekly huddles in which point-of-care team members, team leads, finance staff, and leadership meet to discuss shared learning from the data and continuous improvement work

Value Management Approach



A Value Management Approach brings quality and cost data to the point-of-care to drive sustained improvement



## 5. Governance and Regulation: Critical Incident Reporting

### 5.1 Clinical Governance

Senior medical and nursing staff meet quarterly with colleagues in the Directorate Clinical Governance programme. Standing items include Clinical Incident Review, Mortality Review, Risk Register and putting audit into practice. The Unit continues to adopt National Management Guidelines as appropriate.

### 5.2 Risks and Issues & 5.3 Adverse Events

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

**Table 22**

<b>Category</b>	<b>Number</b>
Pressure ulcer care	13
Medication incident	0
Contact with object	9
Medical device & equipment	5
Communication	0
Slips, trips & falls	62
Other	39
Security	1
Moving & handling	16
Violence & aggression	20
Challenging behaviour	6
Fire alarm actuation	1
Needlestick injury	3
Infection control issue	2
2222	4
Self harm	0
Staffing levels	0
Radiology incident	1
Treatment issue	0
Patient abscondment	6
IT security	0
Patient observation	0
<b>Total</b>	<b>188</b>

**Table 23**

<b>Slips, Trips and Falls</b>	
Fall from bed	3
Fall from chair	6
Fall from level	2
Slip/trip on level	0
Suspected fall	3
Unwitnessed	42
Controlled	6

All category 4/5 clinical incidents are investigated according to NHSGGC policy. During the year there were three category 4 incidents.

1. Fall with harm – patient sustained fracture of left ankle
2. Patient moving and handling – patient knee swelling following dressing practice requiring X-ray

**Table 24**

<b>Overall</b>	
1 - Negligible	155
2 - Minor	34
3 - Moderate	7
4 - Major	2
5 - Extreme	0
<b>Total</b>	<b>198</b>

**Table 25  
Pressure Area Care**

Hospital Acquired QENSIU = 13			
Grade 2 = 6	Grade 3 = 1	Grade 4 = 0	Ungradeable = 6

All pressure sores must be considered to be a failure of care to some extent. The best way of preventing sores outwith the Unit is to continue to admit new patients as soon as clinically safe to do so. The “red flag” system of Unit nursing and medical staff review every sore developing on the ward and make recommendations on any necessary changes in care.

The Unit continues to monitor levels of Hospital Acquired Infection in line with NHSGGC policy. The rise in isolation patients is due to the national policy of initially isolating patients transferred from non-Scottish hospitals. It is anticipated that this number will stabilise or even rise. It is not a marker of increased infections.

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. The relatively low rates of the Unit especially as regards bowel and bladder care.

*Datix only has one inherited PU that was rejected. GGC no longer recorded inherited pressure ulcers on Datix.*

**Table 26A  
Hospital Acquired Infection**

	<b>2015/ 2016</b>	<b>2016/ 2017</b>	<b>2017/ 2018</b>	<b>2018/ 2019</b>	<b>2019/ 2020</b>
<b>Total patients req. Isolation</b>	4	1	5	15	3
<b>Salmonella</b>	0	0	0	0	0
<b>Clostridium Difficile</b>	0	2	1	0	1
<b>MRSA</b>	4	0	2	6	2
<b>Streptococcus pyogenes</b>	0	0	1	0	0
<b>Scabies/ TB /Varicella Zoster</b>	0	0	1	0	0
<b>MDR Acinetobacter</b>	0	0	0	0	0
<b>Patients treated in isolation</b>	3	1	4	10	3
<b>Patients not treated in isolation</b>	1	0	1	5	0
<b>Patients not suitable for isolation</b>	1	0	0	3	0
<b>No single room available</b>	0	0	1	2	0



The Unit continues to monitor levels of Hospital Acquired Infection in line with NHSGGC policy. The rise in isolation patients is due to the national policy of initially isolating patients transferred from non-Scottish hospitals. It is anticipated that this number will stabilise or even rise. It is not a marker of increased infections.

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. The relatively low rates of infection continue to be a tribute to the standard of nursing care and policies within the Unit especially as regards bowel and bladder care.

**Table 26B**

2019-2020	MRSA	C.Diff	MDR Acinetobacter
Edenhall	0	0	0
Philipshill	1	2	0

## 5.4 Complaints / Compliments

### 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 team recorded no formal complaints. Consultants and senior nursing staff continue to provide advice to the CLO regarding complaints involving management of patients outwith the Unit.

### Compliments

Significant contributions are received from grateful patients, families and community groups to assist in purchasing items for patient treatment and comfort.

## 5.5 Equality

A new equality, diversity and human rights e-learning module is now live on Learnpro. All staff are required to complete as part of their statutory and mandatory training. All wards now have a corporate Welcome to the ward poster at the entrance to the ward. This poster details the variety of methods which patients and their families can leave feedback. NHSGGC carry out regular Equality Impact Assessment Tools (EQIA) for clinical areas. The Spinal Unit EQIA was conducted in 2014. A new telephone interpreting service is available to all services users.

## 6. Financial Reporting and workforce 2019-20

Dedicated Staff Costs	AfC Banding		Contract Value	Contract Value YTD	Actual YTD	Variance YTD	Year End Forecast	Year End Forecast Variance
		WTE	£	£	£	£	£	£
Consultant		5.71	932,058	932,058	838,995	93,063	838,995	93,063
Specialty Doctor		1.00	87,702	87,702	101,398	-13,696	101,398	-13,696
Senior Medical		6.71	1,019,760	1,019,760	940,394	79,366	940,394	79,366
Junior Medical		2.48	157,190	157,190	157,190	0	157,190	0
		9.19	1,176,950	1,176,950	1,097,584	79,366	1,097,584	79,366
Administrative	4	6.50	181,048	181,048	181,048	0	181,048	0
Administrative	3	0.14	3,687	3,687	3,687	0	3,687	0
Administrative	2	2.49	64,642	64,642	64,642	0	64,642	0
		9.13	249,377	249,377	249,377	0	249,377	0
Senior Manager	8a	0.50	40,303	40,303	34,348	5,956	34,348	5,956
Nursing	7	7.80	391,359	391,359	388,260	3,099	388,260	3,099
Nursing	6	9.36	488,306	488,306	495,210	-6,903	495,210	-6,903
Nursing	5	54.30	2,114,837	2,114,837	2,226,886	-112,049	2,226,886	-112,049
Nursing	2	23.88	625,708	625,708	744,835	-119,127	744,835	-119,127
Housekeepers	2	2.00	64,308	64,308	48,449	15,859	48,449	15,859
Phlebotomist	2	0.53	12,625	12,625	8,165	4,460	8,165	4,460
		98.37	3,737,447	3,737,447	3,946,154	-208,707	3,946,154	-208,707
Psychologist	8B	1.00	73,185	73,185	82,467	-9,281	82,467	-9,281
Orthotist	7	0.20	10,636	10,636	10,636	0	10,636	0
AHP	7	12.26	607,598	607,598	647,343	-39,745	647,343	-39,745
		13.46	691,419	691,419	740,446	-49,026	740,446	-49,026
<b>Total Staff</b>		<b>130.15</b>	<b>£ 5,855,193</b>	<b>£ 5,855,193</b>	<b>£ 6,033,560</b>	<b>- £ 178,367</b>	<b>£ 6,033,560</b>	<b>- £ 178,367</b>
<b>Supplies Costs</b>								
Drugs			172,884	172,884	144,004	28,880	144,004	28,880
Surgical Sundries			510,700	510,700	453,229	57,471	453,229	57,471
CSSD/Diagnostic Supplies			4,748	4,748	4,764	-16	4,764	-16
Other Therapeutic Supplies			117,911	117,911	54,271	63,640	54,271	63,640*
Equipment/Other admin supplies			58,807	58,807	61,683	-2,876	61,683	-2,876*
Hotel Services			43,062	43,062	48,641	-5,579	48,641	-5,579
<b>Direct Supplies</b>			<b>£ 908,112</b>	<b>£ 908,112</b>	<b>£ 766,592</b>	<b>£ 141,520</b>	<b>£ 766,592</b>	<b>£ 141,520</b>
<b>Charges from other Health Boards</b>								
Lothian Spinal Clinic			5,792	5,792	0	5,792	0	5,792
<b>Charges from other Health Boards</b>			<b>£ 5,792</b>	<b>£ 5,792</b>	<b>£ 0</b>	<b>£ 5,792</b>	<b>£ 0</b>	<b>£ 5,792</b>
<b>Allocated Costs</b>								
Medical Records			118,235	118,235	118,235	0	118,235	0
Building Costs			216,738	216,738	216,738	0	216,738	0
Domestic Services			78,079	78,079	78,079	0	78,079	0
Catering			212,695	212,695	212,695	0	212,695	0
Laundry			76,790	76,790	76,790	0	76,790	0
Neuroradiology			89,452	89,452	89,452	0	89,452	0
Laboratories			90,529	90,529	90,529	0	90,529	0
Anaesthetics			42,705	42,705	42,705	0	42,705	0
Portering			83,161	83,161	83,161	0	83,161	0
Phones			54,794	54,794	54,794	0	54,794	0
Scottish Ambulance Service			10,262	10,262	10,262	0	10,262	0
General Services			31,341	31,341	31,341	0	31,341	0
<b>Allocated Costs</b>			<b>£ 1,104,780</b>	<b>£ 1,104,780</b>	<b>£ 1,104,780</b>	<b>£ 0</b>	<b>£ 1,104,780</b>	<b>£ 0</b>
<b>Total Supplies</b>			<b>£ 2,018,684</b>	<b>£ 2,018,684</b>	<b>£ 1,871,372</b>	<b>£ 147,311</b>	<b>£ 1,871,372</b>	<b>£ 147,311</b>
<b>Overhead Costs</b>								
<b>Fixed costs</b>								
Rates			61,830	61,830	61,830	0	61,830	0
Capital Charge			435,774	435,774	435,774	0	435,774	0
Overheads			157,663	157,663	157,663	0	157,663	0
<b>Total Overheads</b>			<b>£ 655,267</b>	<b>£ 655,267</b>	<b>£ 655,267</b>	<b>£ 0</b>	<b>£ 655,267</b>	<b>£ 0</b>
<b>Total Expenditure</b>		<b>130.15</b>	<b>£ 8,529,144</b>	<b>£ 8,529,144</b>	<b>£ 8,560,199</b>	<b>- £ 31,056</b>	<b>£ 8,560,199</b>	<b>- £ 31,056</b>
Postgraduate Dean Funding			-134,119	-134,119	-134,119	0	-134,119	0
Total Expenditure net of Postgraduate Dean Funding			<b>£ 8,395,025</b>	<b>£ 8,395,025</b>	<b>£ 8,426,080</b>	<b>- £ 31,056</b>	<b>£ 8,426,080</b>	<b>- £ 31,056</b>
Income from non-Scottish resident patients					0	0	0	0
<b>Total Net Expenditure</b>		<b>130.15</b>	<b>£ 8,395,025</b>	<b>£ 8,395,025</b>	<b>£ 8,426,080</b>	<b>- £ 31,056</b>	<b>£ 8,426,080</b>	<b>- £ 31,056</b>

\*includes £7,200 for OT cushions \*includes £4,950 for two Airvo machines

## 7. Audit & Clinical Research / publications

### Clinical Audit Program

Audit meetings are held monthly in the National Spinal Injuries Unit. In the last year there were nine primary audits performed with at least monthly re-audits. Audits were performed by medical staff, nursing staff, physiotherapists and occupational therapists reflecting the team's desire to monitor and improve the overall service provided to patient. Examples of audits performed include:-

- Physiotherapy management of shoulder pain in the acute SCI setting across the UK
- Medicines management
- Bladder and bowel audit
- Hand therapy audit

Staff participate in National and Regional audits and have presented quality improvement resulting from audit at the corporate level.

### Research



Doctors at the Unit work with scientists in the purpose-built Research Mezzanine. This suite of offices, conference space and small laboratories is based in the Unit and allows unique integration of researchers within an acute spinal injuries unit.

The current list of publications can be found on <https://www.gla.ac.uk/research/az/scisci>

Current projects include contribution to a European-wide data collection study, EMSCI, functional electrical stimulation to enhance respiratory function acutely, progressive resistance training in acute SCI, ultrasound imaging to characterise muscle function, functional electrical stimulation cycling in acute SCI, an early detection and intervention strategy to delay the onset of osteoporosis and reduce fracture incidence after SCI and brain computer interface is being used in a number of studies as a predictor of pain, a treatment of pain along with its ability and to enhance upper limb function.

Upcoming studies awaiting approval include transcutaneous spinal cord stimulation in chronic complete tetraplegics II.

All studies take place within QENSIU in laboratory space within the mezzanine, equipment is shared across the Unit and partner University sites.

### Papers and Authorship

*See Appendix for Research Profile*

## 8. Looking Ahead

We continue to see an increase in the number of new patients who are elderly with tetraplegia. These patients are very different from the younger group with paraplegia and make heavy demands on all departments. They are sicker with major co-morbidities, they are very consuming of nursing care and have complex rehabilitation needs which make high demands of the therapists. The Unit's staffing profile was drawn up in the early 1990's in anticipation of treating predominantly younger patients with paraplegia and it would now be appropriate to undertake a detailed review of staffing requirements.

In November 2019 the Unit held a very successful meeting for the RISCO (Respiratory Interest in Spinal Cord Injury) group and welcomed seventy doctors, nurses and therapists from other units to share best practice. The Unit had advanced plans to host the Guttman Meeting in June 2020. This is the premier annual UK scientific meeting for spinal cord injury but was cancelled due to Covid and we are provisionally rebooking for June 2021.

The Horatio's Garden team have drawn up plans for a garden room. This will be an extensive glazed area in which patients can enjoy the garden from indoors. Planning is at an advanced stage and we hope to start work in the next few months.

The Unit first received patients in 1992 and the original concept, admission and treatment pathways remain robust since conception. Despite an increase in numbers of paralysed patients, their age and severity of paralysis the Unit continues to look after the majority of newly paralysed patients from the first week of injury through to lifelong care. Time from injury to admission remains low and we believe this model of prompt admission and treatment provides the best possible long-term outcomes for patients.

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