Queen Elizabeth National Spinal Injuries Unit

Annual Report
2023/24

NHS Greater Glasgow and Clyde

Queen Elizabeth National Spinal Injuries Unit
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Executive Summary

Introduction

The Queen Elizabeth National Spinal Injuries Unit is sited on the campus of the Queen Elizabeth University Hospital and is 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 a 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 (SCI). In addition, to avoid patient harm the Unit will admit a small number of patients where it is not clear at the point of referral whether they are neurologically intact. Patients for whom SCI has been ruled out, are out of scope of the nationally funded pathway. Patients are primarily referred from Acute Trauma Services but referrals are also received from Accident and Emergency, 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 over one-third of cases. Patients with paralysis may remain in the Unit for several months after emergency treatment for 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 clinical trials centre for investigations in both acute and long-term spinal injury.

The national pathway to admission, designed 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. The effects of early or direct admission to a specialised spinal injury unit on outcomes after acute traumatic spinal cord injury | Spinal Cord (nature.com)

Key activity

During the reporting period, April 2023 to March 2024 the Unit admitted **129** new patients, treated **323** day cases and **2,543** out-patients, including **472** patients at outreach clinics across the country. Surgeons performed **57** spinal operations.

Further details can be found on the website at www.spinalunit.scot.nhs.uk

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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. Morbidity and mortality are significantly increased outside specialised units.

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 local Health and Social Care Partnerships and voluntary groups to ensure that the difficult transition from secondary care to 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, HALO, URODYNAMICS, SPASM, PUMP, GENERAL SPINAL REVIEW, NEAR ME (VIRTUAL)
BI WEEKLY	GLASGOW: ORTHOTIST, ACUPUNCTURE
BI MONTHLY	GLASGOW: SEXUALITY, RESPIRATORY, NEUROSURGERY
MONTHLY	NEUROPROSTHETICS, UROLOGY, FERTILITY, EDINBURGH (OUTREACH),
THREE MONTHLY	ABERDEEN, INVERNESS (OUTREACH)
SIX MONTHLY	DUMFRIES, BORDERS, ARBROATH (OUTREACH)
ANNUALLY	HUNTLY (OUTREACH)

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

2. Activity Levels

The Queen Elizabeth National Spinal Injuries Unit (QENSIU) admits acutely injured spinal patients as soon as their condition allows. There is no waiting list for admission. In 2023/24 10% of patients were admitted within one day of injury, 21% within two days, and 58% within one week. The time to admission from injury is difficult to decrease 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 time to most UK spinal centres is two to three months. Patients paralysed by ischemia 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 125 patients referred with a neurological injury were admitted as soon as clinically stable. Numbers of paralysed patients are stable having returned to pre COVID levels and the national figure remains at around 125 per year, a crude incidence rate of 2.3/100,000.

Figure 1
New Admissions: total and neurologically injured

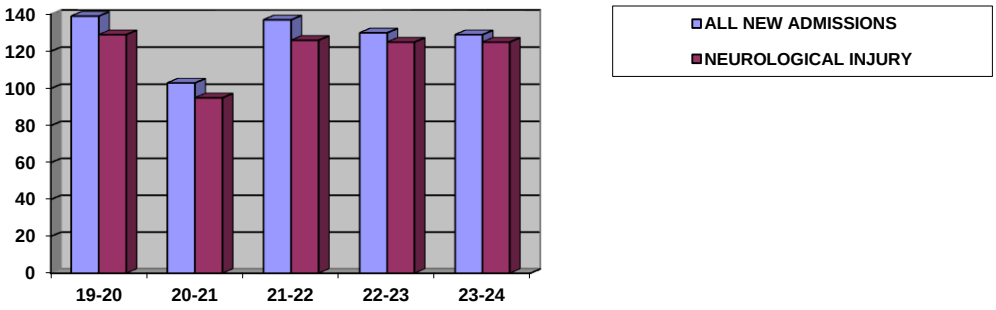


Table 2A
New Admissions: total and neurologically injured

	19/20	20/21	21/22	22/23	23/24	92-24
ALL NEW ADMISSIONS	139	103	137	130	**129**	**4,916**
Neurological	129	95	126	125	**125**	**2,921**
Non-neurological	10	8	11	5	**4**	**1,900**

Table 2B
Intact patients

In 2023/24 four patients were admitted to the Unit who after full assessment had not suffered a spinal cord injury.

Health Board	No of Patients	Ave LOS (days)	Total Bed Days
Grampian	1	20	20
Greater Glasgow & Clyde	1	18	18
Lanarkshire	1	9	9
Tayside	1	35	35
Total	**4**	**82**	**82**

Numbers of neurologically intact patients are at an all-time low. This is in keeping with national 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 nine patients with suspected spine pathology were referred but not admitted as they fell outside the scope of the service, 182 of these non-admitted referrals had acute spine trauma. They were managed in the referring hospital with appropriate advice and support from consultant medical staff. Twenty seven patients are referred from primary care electronically via TrakCare, largely inappropriate referrals requesting rehabilitation for patients with very minor trauma, degenerative disease of the spine or back pain.

Some patients were seen by consultant staff in ITU/HDU, the neurosurgical, orthopaedic and medical wards of the Queen Elizabeth University Hospital (QEUH) and other hospitals. The QEUH, a Major Trauma Centre (MTC), attracts increasing numbers of 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
GROUP I	**Cervical Injury 1 – 4**	**High Tetraplegia, AIS A,B,C**
GROUP II	**Cervical Injury 5 – 8**	**Low Tetraplegia, AIS A,B,C**
GROUP III	**Thoracic, Lumbar and Sacral Injury**	**Paraplegia, AIS A,B,C**
GROUP IV	**All levels of injury with Incomplete AIS D or no Paralysis**	

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 often 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 rehabilitation input during their admission.

Figure 2
New Admissions by Case-Mix Complexity: Five year figures

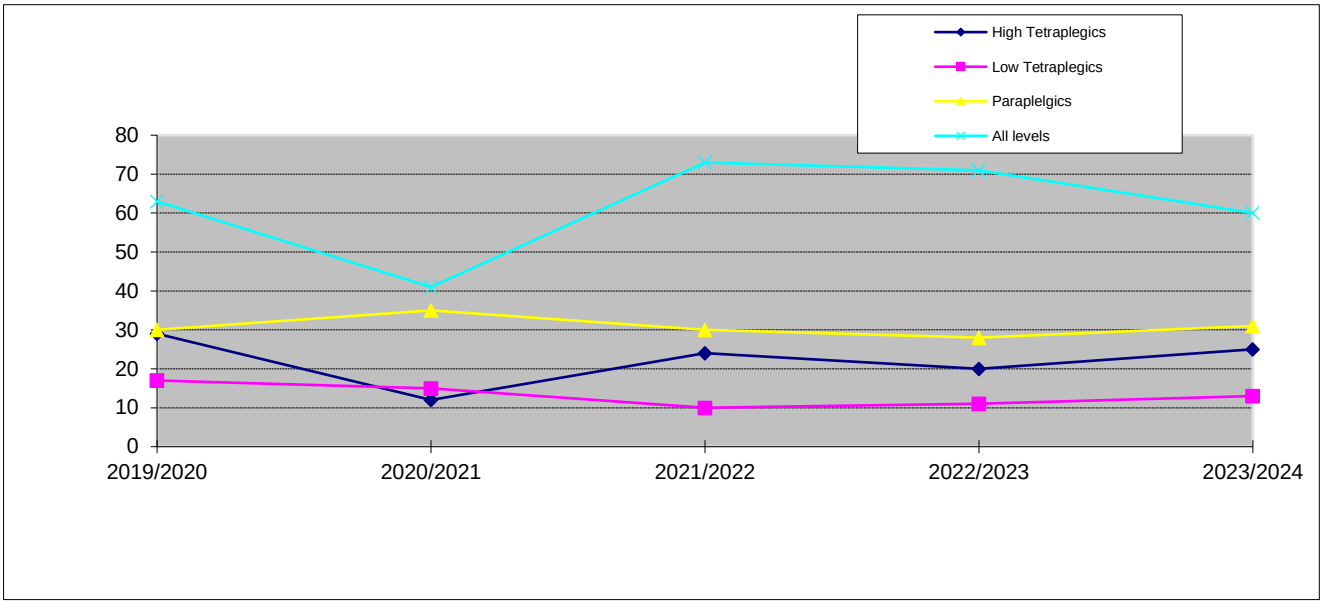


Table 3
New Admissions by case-mix complexity 2015/2023

GROUP	19/20	20/21	21/22	22/23	23/24	92/24
I	29	12	24	20	**25**	**505**
II	17	15	10	11	**13**	**753**
III	30	35	30	28	**31**	**1,082**
IV	63	41	73	71	**60**	**2,576**
Total	139	103	137	130	**129**	**4,916**

Figure 3
Historical trends in case-mix complexity

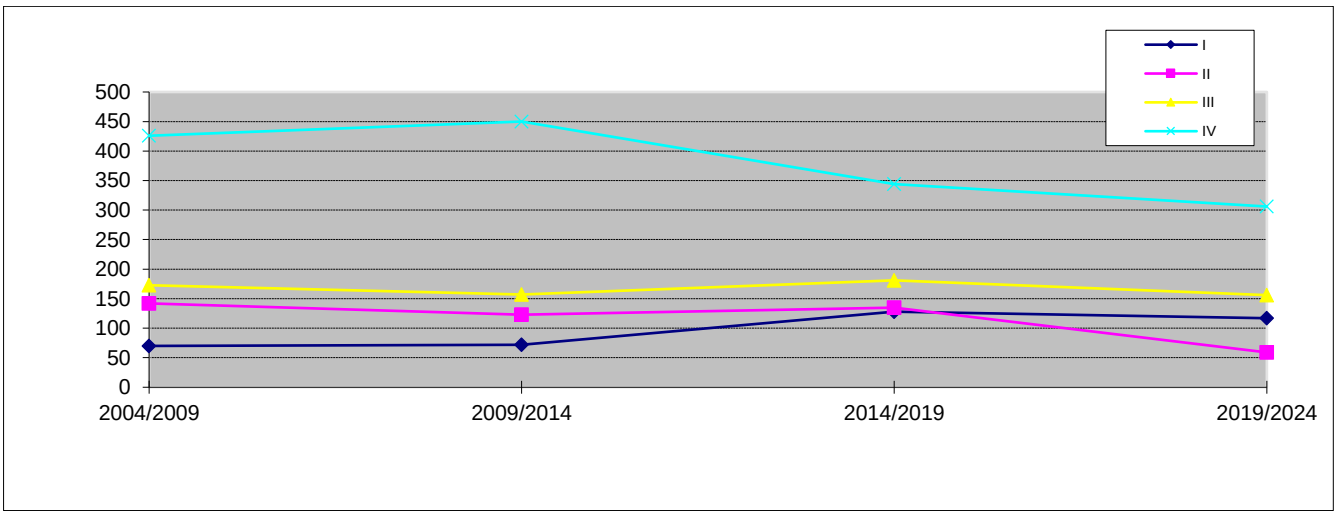
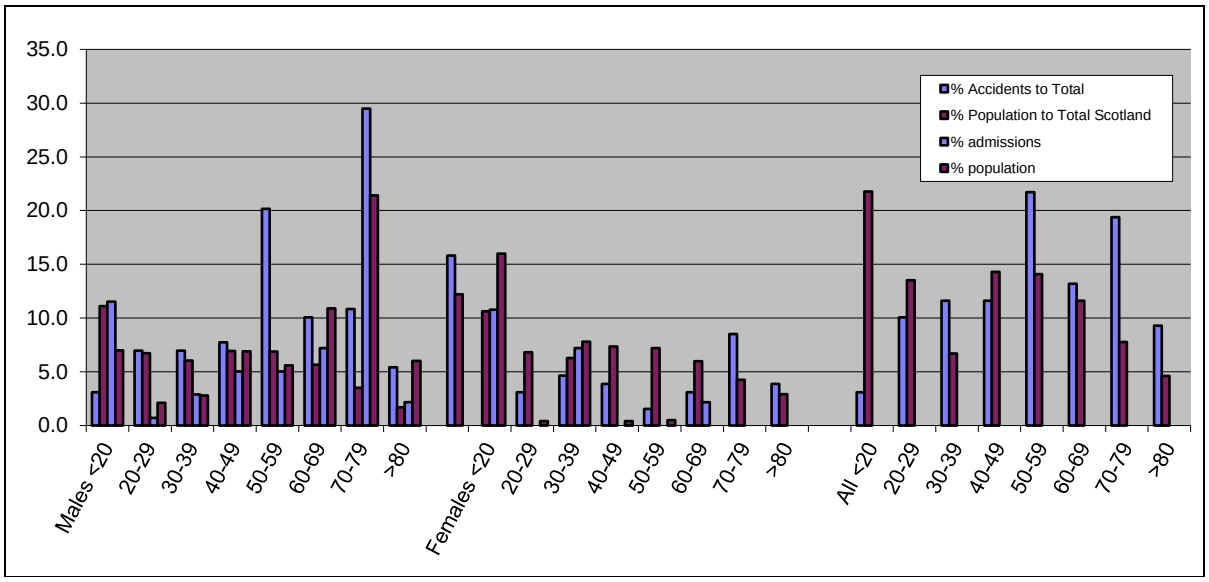


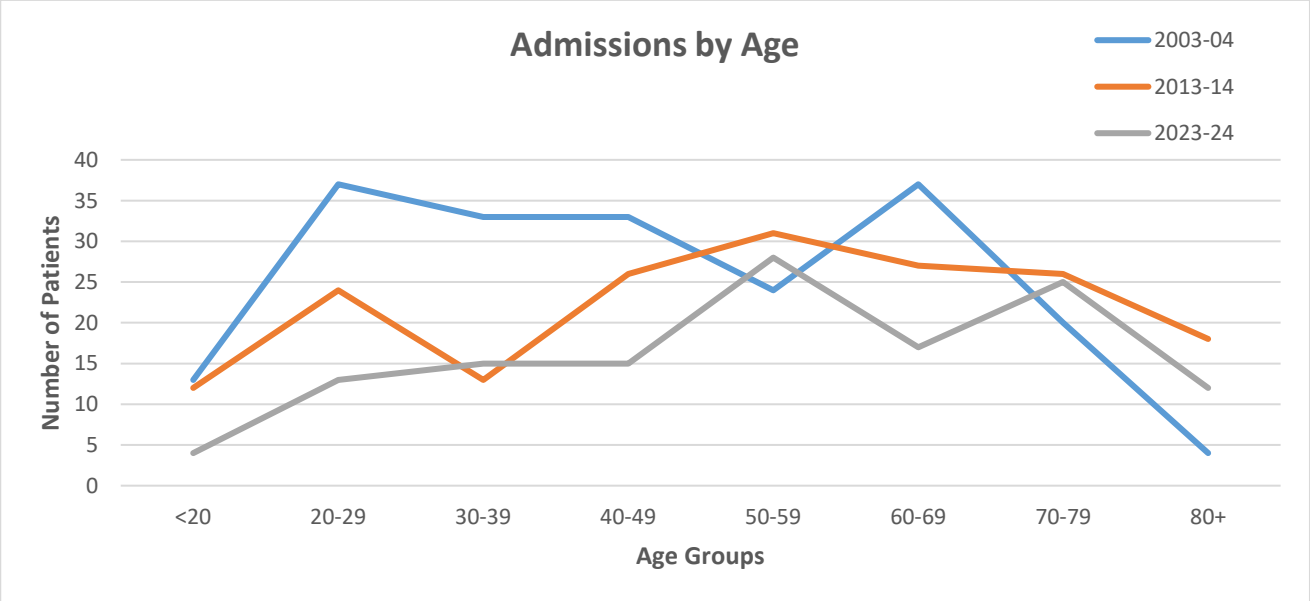
Figure 3 includes all admissions since 2004 and shows a steady rise in high tetraplegic patients (60% increase over 20 years) and reduction in numbers of lesser injured patients (Group D and intact). The high tetraplegic patients are the most demanding of acute care and have the highest dependency.

Figure 4A
New Admissions by Age Group



There is a sustained rise in older patients who are far frailer and find it much more challenging to actively participate in therapy. The number of injuries in those under twenty remains low.

Figure 4B
Admissions by Age



Referrals by Age

Overall the admission age profile is little changed over the last few years with the peak age cohort now well established as the 50-79 year old patients. This older group have greater co-morbidity affecting their capacity for rehabilitation. They make large demands on general medical care, far beyond the original medical capacity envisaged when the Unit was created. With reference to figure 4B the Unit admitted large numbers of patients with no neurological deficit in 2003/2004 and 2013/2014, included in the number of patients in this figure.

Details of Referral and Admission by Region

The service is commissioned to admit all patients with non-progressive cord injury, but there continues to be a large number of referrals of patients out with 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.

The total number of referrals remains stable at 338. The national referral/admission ratio (RAR) remains stable at 38% meaning that just over one third of referred patients are admitted. (The RAR in the early 2000's was around 70%).

Twenty seven patients are referred from primary care electronically via TrakCare, largely inappropriate referrals requesting rehabilitation for patients with very minor trauma, degenerative disease of the spine or back pain.

Table 4

Referring Board	Total Referrals	Admissions	Not Admitted	% Admitted	Complex Advice Given
Greater Glasgow & Clyde	148	42	106	28	17
Lanarkshire	41	12	29	29	4
Ayrshire & Arran	37	17	20	46	3
Dumfries & Galloway	6	4	2	67	0
Borders	5	2	3	40	0
Highland	21	9	12	43	0
Grampian	18	11	7	61	2
Forth Valley	9	4	5	44	0
Tayside	17	7	10	41	3
Fife	9	8	1	89	0
Lothian	19	10	9	53	3
Shetland	1	1	0	100	0
Western Isles	3	0	3	0	0
ECR	4	2	2	50	1
Overseas	0	0	0	0	0
Total	**338**	**129**	**209**	**38**	**33**

The number of patients not admitted but requiring complex advice has decreased to 33. In these cases the referring team will have contacted the 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 teams. 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.

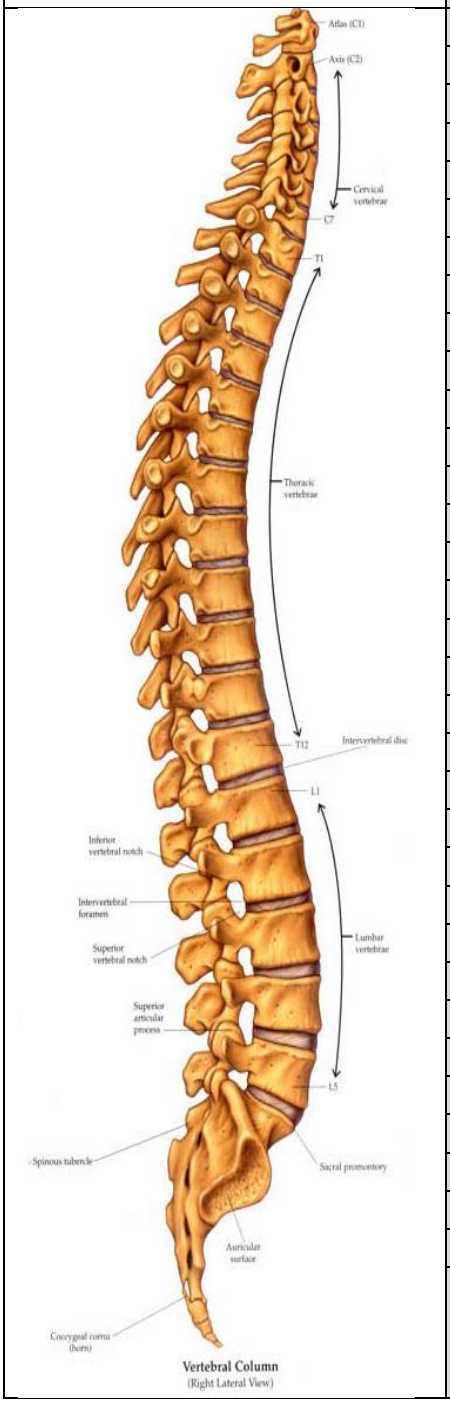
Table 5
Health Board Referrals and Referring Speciality: Non Admissions

Referring Board	Referring Specialty				Total
	Trauma & Ortho	Neuro	A&E	Other	
Greater Glasgow & Clyde	41	12	14	39	106
Lanarkshire	8	0	8	13	29
Ayrshire & Arran	11	0	7	2	20
Dumfries & Galloway	1	0	1	0	2
Borders	0	1	0	2	3
Highland	0	0	4	8	12
Grampian	1	3	1	2	7
Forth Valley	3	0	0	2	5
Tayside	1	4	1	4	10
Fife	1	0	0	0	1
Lothian	1	3	0	5	9
Shetland	0	0	0	0	0
Western Isles	0	0	0	3	3
ECR	0	0	0	2	2
Overseas	0	0	0	0	0
Total	68	23	36	82	209

There is a historic over-referral pattern from some Health Boards but this has changed significantly over recent years with the opening of all MTC's in Scotland. The pattern of referral is likely to change further over the coming year as these Centres become more established.

Numbers referred from GGC remain inappropriately high (only 28% of referrals admitted), however this includes a small number of semi elective referrals, referred from primary and secondary care often electronically via TrakCare, 32% of acute injury referrals from GGC were admitted. Referrals for non-traumatic and progressive conditions are redirected appropriately.

Table 6
Admissions by Anatomical Level and Severity

	Level	Complete	Incomplete	No Neurology	Total
	C 1	1	5	0	6
	2	0	13	0	13
	3	3	7	0	10
	4	8	17	0	25
	5	2	14	1	17
	6	0	4	0	4
	7	1	4	0	5
	8	0	0	0	0
	Sub-total	15	64	1	80
	T 1	1	0	0	1
	2	1	2	0	3
	3	2	2	0	4
	4	3	3	0	6
	5	0	2	0	2
	6	0	1	0	1
	7	1	1	0	2
	8	1	2	0	3
	9	1	1	0	2
	10	1	2	0	3
	11	2	1	0	3
	12	1	3	0	4
	Sub-total	14	20	0	34
	L 1	0	8	2	10
	2	0	1	0	1
	3	0	3	1	4
	4	0	0	0	0
	5	0	0	0	0
	Sub-total	0	12	3	15
	S1-5	0	0	0	0
	Sub-total	0	0	0	0
	TOTAL	29	96	4	129

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

Cervical injuries continue to predominate. 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. This year saw a further increase in high complete tetraplegics at 12. The number of acute ventilated bed days was high again this year at 587.

Table 7
Mechanism of Injury

	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024
Fall*	**68**	**55**	**78**	**78**	**65**
RTA	**30**	**20**	**22**	**24**	**21**
Motor vehicle	13	8	8	10	10
Motorcyclist	6	3	9	7	4
Bicyclist	9	7	5	7	7
Pedestrian	2	2	0	0	0
Medical	27	20	20	13	21
Industrial Injury	2	1	2	0	0
Assault	0	0	1	1	0
Penetrating Injuries	1	2	0	2	0
Sporting Injury	5	4	4	5	8
Domestic Injury	0	0	0	1	0
Self Harm	5	0	9	5	8
Other	1	1	1	1	6
Total	**139**	**103**	**137**	**130**	**129**

** includes diving injuries*

Falls remain the most common cause of injuries. Numbers of patients with medical causes, sporting related injury and spinal cord injury related to deliberate self-harm remain variable.

Table 8A
Out-patient Activity

	19/20	20/21	21/22	22/23	23/24
Return	1914	2210	2196	2170	**1900**
New	70	21	45	45	**62**

Out-patient activity remains stable. Out-patient activity of the Unit is focused on the post discharge management of spinal cord injuries and lifelong 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

	19/20	20/21	21/22	22/23	23/24
Return	1,914	2,230	2,196	2,170	**1,900**
DNA Return	348	207	272	464	**327**
New	70	21	45	45	**62**
DNA New	7	3	4	4	**16**

The DNA rate has stabilised to pre pandemic levels, all clinic appointments within the Unit and at Outreach are offered face to face apart from NHS Lothian Outreach Clinic which remains displaced. At patient requests a small proportion of appointments are by telephone or Near Me for patient convenience.

Table 9
Out-patient Activity by Centre

	19/20	20/21	21/22	22/23	23/24	CHANGE YEAR	TOTAL 1992-2024
New QENSIU	70	21	45	45	62	38%	**3,642**
Return QENSIU	1,551	1,809	1,828	1,768	1,550	(12%)	**50,452**
Edinburgh	139	145	151	158	125	(21%)	**4,964**
Inverness	67	74	60	69	73	6%	**1,566**
Aberdeen	76	100	73	81	68	(16%)	**1,635**
Dumfries & Galloway	21	24	17	22	19	(14%)	**483**
Borders	21	23	18	17	18	6%	**461**
Arbroath	26	35	34	34	34	No change	**545**
Huntly	13	20	15	21	13	(38%)	**235**
Total	**1,984**	**2,251**	**2,241**	**2,215**	**1,962**	**(11.4%)**	**63,983**

Table 10
Attendance and Location Outreach Clinics

Location	% Attendance 22/23	% Attendance 23/24	Number of Clinics	Number of Patients
Aberdeen	87%	**79%**	**5**	**68**
Inverness	100%	**96%**	**5**	**73**
Dumfries	85%	**83%**	**2**	**19**
Arbroath	87%	**89%**	**3**	**34**
Borders	94%	**100%**	**2**	**18**
Huntly	91%	**87%**	**1**	**13**
Edinburgh	95%	**89%**	**10**	**125**
Ave Rate	93%	**89%**	**28**	**350**

All Outreach clinics were re-established face to face in July 2021 apart for the Lothian Clinic which remains virtual. The Spinal Injuries Lothian Outreach Clinic was displaced due to clinic capacity pressures in Lothian. At this time no appropriate alternative location for this clinic has been identified. An increasing number of Lothian patients are travelling to Glasgow for face to face appointments.

Table 11
Out-patient Activity by Specialty at QENSIU

	19/20	20/21	21/22	22/23	23/24
Neurosurgery	219	215	216	238	273
Urology	0	0	0	0	22
Skin Care	26	0	2	1	0
Pain / Spasm	53	108	89	81	22
Neuroprosthetics	21	11	23	18	9
Orthotics	226	142	181	210	227
Sexual Dysfunction	7	4	8	9	6
Respiratory	17	23	21	19	13
Fertility	3	0	4	4	1
Spinal Injury Annual Review	979	1,306	1,284	1,188	1,017
Total	1551	1,809	1,828	1,768	1,590

A Urological Surgeon was appointed to the service in autumn 2023 for one session a week.
#

^ *All patients attending the fertility clinic had a procedure performed and are included in the day case activity table 12*

The Spinal Injury Annual Review clinics remain the core component of the outpatient activity and numbers remain stable. These are nurse led with only 35% 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 have reduced significantly largely due to an unusually low number of halo fixations this year. 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 the nature of consultations, which often take place out with the standard clinic environment.

Day Case activity remains limited by geographical constraints and there is a natural trend towards seeing patients closer to Glasgow. Patients who live out with the West of Scotland attend local halo, pain and spasticity clinics.

Table 12
Day Case Attendances by Reason

	19/20	20/21	21/22	22/23	23/24
Urology/Urodynamics	33	45	64	55	**56**
Halo Fixation	91	85	159	101	**24**
Skin	10	1	2	0	**0**
Orthopaedic/Neurosurgery	0	0	0	0	**0**
Acupuncture / Pain / Spasm	481	278	309	287	**237**
Sexual Dysfunction	5	4	1	4	**4**
Fertility	25	21	33	41	**2**
Other	0	0	0	0	**0**
Total	**645**	**434**	**543**	**488**	**323**

Table 13
Day Case Attendances by Health Board

Day Case Attendances by Health Board						
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**
Ayrshire and Arran	51	56	31	63	53	**20**
Borders	1	0	3	2	0	**1**
Dumfries and Galloway	1	10	1	4	14	**7**
Fife	13	9	8	9	17	**21**
Forth Valley	33	66	25	22	22	**10**
Grampian	6	2	5	2	7	**2**
Greater Glasgow and Clyde	432	298	214	283	229	**167**
Highland	11	19	25	39	22	**10**
Lanarkshire	173	131	81	78	88	**61**
Lothian	35	43	35	36	29	**17**
Shetland	0	0	0	0	0	**0**
Tayside	1	11	6	5	7	**7**
Orkney	0	0	0	0	0	**0**
Western Isles	0	0	0	0	0	**0**
ECR	0	0	0	0	0	**0**
Total	**757**	**645**	**434**	**543**	**488**	**323**

Table 14
Supporting Surgical Services
Multi-disciplinary rehabilitation is the keystone of the workload in this patient population. Surgical support is required from neurosurgery, urology, orthopaedics and plastic surgery. Approximately twenty per cent of the patients have additional limb injuries.

Service	Acute Operations	Elective Operations
Neurosurgery	**51**	**6**
Urology	**0**	**11**
Other	**2**	**8**
	Clinics	**Patients**
Neurosurgery 4 x Month	**39**	**273**
Urology	**4**	**22**

The number of acute surgical procedures required is stable with an increase in elective urological procedures performed following the appointment of a urological surgeon to the service one session a week in autumn 2023. All referrals and new admissions are discussed at the weekly MDT meeting involving spinal, surgical and radiology consultants along with juniors. This ensures a consensus approach to management for the benefit of the patients and mutual support of consultant staff for difficult clinical decisions. Patient scans are reviewed at this weekly MDT, a MS Teams meeting led by a neuroradiologist. All spinal fixation surgery is performed by spinal neurosurgeons. 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 Consultants in Spinal Injuries 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
19/20	**Edenhall**	15	25	376
	RCU	4	94	377
20/21	**Edenhall**	12	22	258
	RCU	2	39	78
21/22	**Edenhall**	9	20	179
	RCU	1	7	7
22/23	**Edenhall**	23	32	742
	RCU	0	0	0
23/24	**Edenhall**	14	42	587
	RCU	1	366	366

Each patient is counted only once but may be responsible for multiple episodes of care or inter ward transfers if their condition varies. Edenhall, the HDU ward again provided care for a significant number of acutely ventilated patients. Acutely ventilated patients require 1:1 nursing, the Edenhall nursing team supported by medical and physiotherapy colleagues have therefore been under significant additional pressures caring for this group. Three of these 15 patients now require long term ventilation. The need for long-term ventilation fortunately remains rare and numbers are expected to vary widely year to year.

The introduction of the Respiratory Bundle for newly injured vulnerable tetraplegic patients has resulted in less patients requiring invasive ventilation. The respiratory bundle developed by the wider team involves aggressive respiratory prophylactic techniques such as the elective use of non-invasive ventilation, high flow nasal oxygen, nebulised bronchodilators, mucolytics and manual techniques to maintain respiratory hygiene.

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 spinal cord dysfunction 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

Table 16

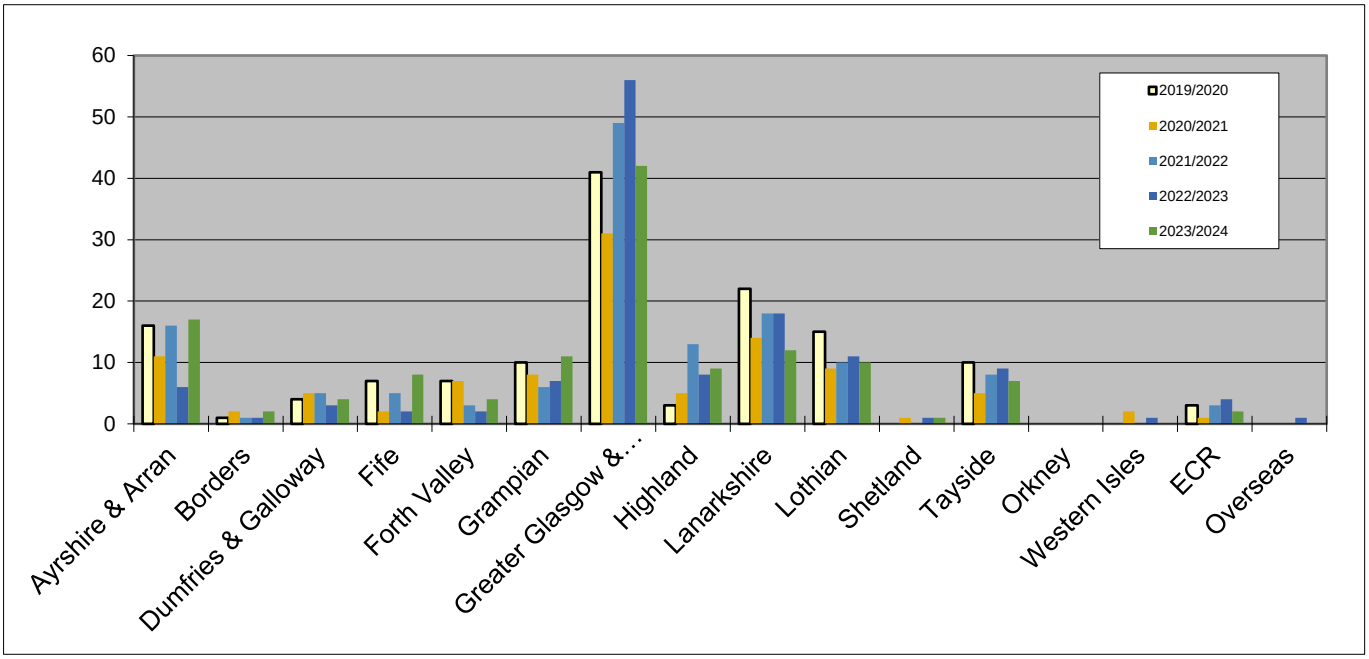
2023/24	A	B	C	D	E	Total	Total 2022/23
Ayrshire and Arran	5	0	1	11	0	17	6
Borders	0	0	0	2	0	2	1
Dumfries and Galloway	2	0	2	0	0	4	3
Fife	1	1	2	4	0	8	2
Forth Valley	0	2	0	2	0	4	2
Grampian	3	1	4	2	1	11	7
Greater Glasgow and Clyde	9	3	12	17	1	42	56
Highland	0	0	3	6	0	9	8
Lanarkshire	4	1	1	5	1	12	18
Lothian	2	0	1	7	0	10	11
Overseas	0	0	0	0	0	0	1
Shetland	1	0	0	0	0	1	1
Tayside	0	0	2	4	1	7	9
Orkney	0	0	0	0	0	0	0
Western Isles	0	0	0	0	0	0	1
ECR	2	0	0	0	0	2	4
TOTAL	29	8	28	60	4	129	130

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.

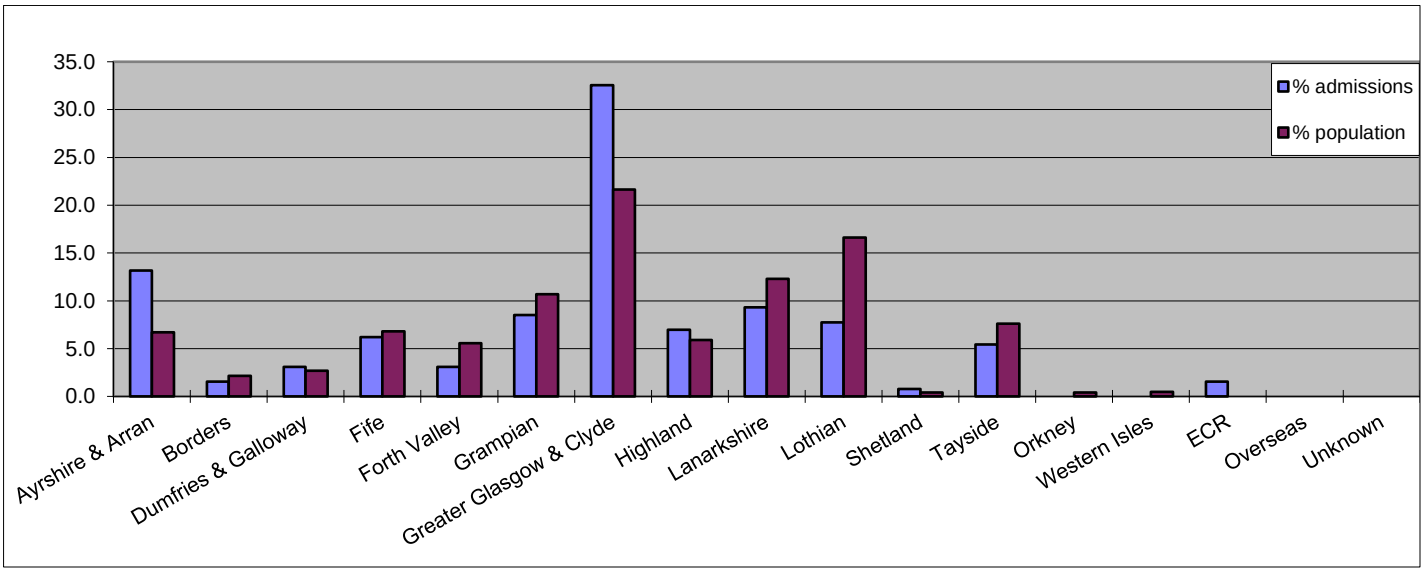
This resulted in the development of the Liaison Sister Service and Outreach Clinics in areas identified from the database as having a concentration of patients. All outreach clinics are medical consultant led with nursing staff attending although due to medical staffing shortage in 2023/24 medical staff presence at Outreach Clinics was limited. We are delighted to welcome volunteers from Spinal Injuries Scotland (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 two Discharge Co-ordinators. They all provide assistance to the Lead Nurse.

Figure 5
New Admissions by Health Board of Residence 2019-2024



Two non-Scottish patients were admitted (ECR & Overseas). A small number of such patients is to be expected. The Unit did not admit any private patients.

Figure 6
Admissions by Health Board compared with Population Size



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

Table 17
New Out-patient Activity by Health Board

	19/20	20/21	21/22	22/23	23/24
Ayrshire and Arran	7	1	10	4	**5**
Borders	0	0	0	1	**3**
Dumfries and Galloway	3	0	0	0	**0**
Fife	1	0	0	1	**2**
Forth Valley	9	0	2	2	**1**
Grampian	0	0	0	1	**1**
Greater Glasgow and Clyde	30	10	22	23	**35**
Highland	8	1	0	3	**2**
Lanarkshire	12	7	9	9	**6**
Lothian	0	1	0	0	**6**
Shetland	0	0	0	0	**0**
Tayside	0	1	0	1	**1**
Orkney	0	0	0	0	**0**
Western Isles	0	0	1	0	**0**
ECR	0	0	1	0	**0**
Total	**70**	**21**	**45**	**45**	**62**

3.2 Efficient

Table 18
Length of Stay by Level of Spinal Cord Injury
Discharged Patients 2023/24

Case Mix	No. of Patients	Mean L.O.S.	Range of L.O.S.
I	**25**	**165**	**2 - 556**
II	**11**	**98**	**0 - 332**
III	**36**	**122**	**1 - 302**
IV	**64**	**69**	**5 - 268**
All	**136**	**103**	**0 - 556**

Case mix I, II and III are the most paralysed group with grossly disordered pathophysiology, case mix I 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
% of Utilised Bed Days by ASIA Scale
Discharged patients 2023/24

ASIA scale on admission	No. of patients	Mean length of stay (days)	Range	Utilised bed days %
A	36	152	1 - 556	38
B	8	147	0 – 246	8
C	24	109	19 - 216	18
D	64	72	5 - 268	32
E	4	21	9 - 35	1

Length of stay in the tables above is the actual length of stay per case mix and per ASIA Impairment Scale in total, it does not take into account that 30% of patients had a delayed discharge, occupying 1560 bed days, thereby extending the reported length of stay. An increased number of high complete tetraplegics this year resulted in 953 ventilated bed days in total.

Table 20
Bed Utilisation

National Spinal Injuries Unit **Edenhall HDU = 12 Beds**		**Philipshill = 32 Beds**
Funded Bed Complement	**Actual Occupied Bed Days**	**% Occupied**
44	**14,530**	**87%**

Occupancy figures for spinal cord injured patients are unchanged, due to bed pressures in NHS GG&C, the Unit accommodated 161 non-spinal injured patients who are not counted in the above figures, occupying a total of 950 bed days. The position will be reviewed at the next report.

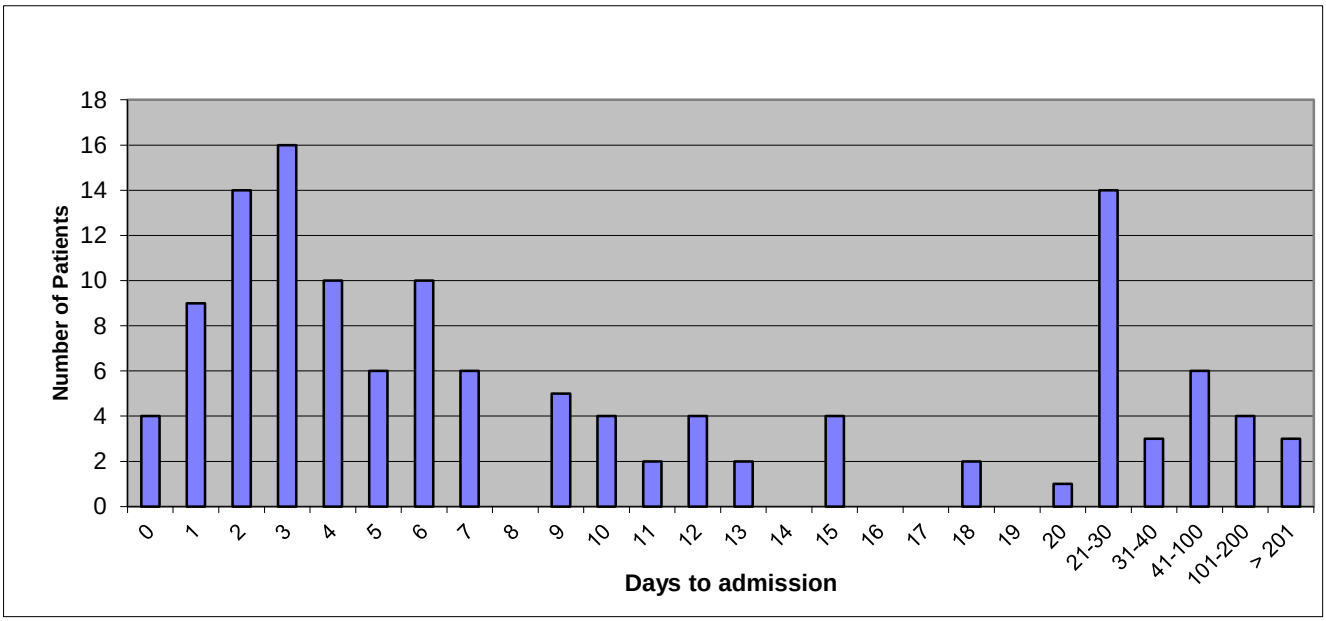
3.3 Timely

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 supports 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 thirty years. There were no delays in transfer due to lack of beds. Time to admission has increased in 2023/24, with ongoing delayed referral from recently opened MTCs, as evidenced by an ongoing audit, fewer patients are referred from the Emergency Departments directly but from ITUs or Major Trauma Wards once stabilised. This will be kept under review as the MTCs bed in.

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 is about two weeks

Figure 7
Time from injury to admission



The policy is of immediate admission for all patients once they are clinically stable. Early referral is encouraged. In 2023/24 21% of patients were admitted within 48 hours of injury and 33% were admitted within seventy two hours, 53% were admitted within one week, 38% of trauma patients were admitted within seventy two hours of trauma.
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 diagnosis and treatment of these patients is undertaken in neurological and medical units out with the trauma system.
They are referred and admitted much later than the trauma patients. All patients with non-traumatic conditions were assessed within 2 weeks of referral

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

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, Oral and Maxillofacial Surgery, Renal, etc.).

Table 21
Days to Admission by Range

	No. of Patients	Mean Time (Days)	Range of Time
2019-2020	**138**	**15**	**0 - 230**
2020-2021	**103**	**19**	**0 - 375**
2021-2022	**137**	**116**	**0 - 12615**
2022-2023	**130**	**21**	**0 - 643**
2023-2024	**129**	**29**	**0 - 1126**

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 2023/24 the median time to admission for all injuries was 6 days.

Table 22
Delayed Discharge

	No. of Patients Discharged	No. of Patients Delayed	Mean Delay (days)	Range of Delay (days)	No Delay
2019/2020	141	23	53	1 - 303	84%
2020/2021	102	9	65	7 - 322	91%
2021/2022	121	25	31	1 - 108	79%
2022/2023	119	31	47	1 - 218	74%
2023/2024	**136**	**41**	**38**	**2 - 318**	**70%**

How delays to patient discharge from the Unit are calculated and recorded, has changed in recent years, we now follow the same delayed discharge recording method as GGC. Despite discharge planning weeks or months ahead a number of patients continue to have delays in discharge, previously generally due to lack of suitable accommodation. If accommodation or necessary carers were unavailable patients were transferred back to the referring hospital once they had completed their rehabilitation. Since the establishment of all MTC's in Scotland, repatriation to the referring hospital e.g. MTC or local Trauma Unit has proved challenging. Across Scotland challenges recruiting carers has led to significant delay to discharge. Staff at the Unit continue to work with local health and social care partnerships and housing organisations to minimise delays in return home.

Table 23
Delayed Discharge by Health Board

Health Board	No of patients	Total days delayed
Ayrshire and Arran	6	71
Dumfries & Galloway	2	6
Forth Valley	0	0
Grampian	1	45
Greater Glasgow & Clyde	20	1,045
Highland	3	74
Lanarkshire	3	56
Lothian	5	238
Tayside	1	25
Total	**41**	**1,560**

One thousand, five hundred and sixty bed days were occupied by delayed discharge patients making increasing demands on nursing time in particular. Twenty patients from GGC were delayed accounting for a massive 1045 bed days. A short life working group is being established to reduce delayed discharges.

Additional measures agreed in the 2022 Service Level Agreement

Table 24
Method of Mobilising by Level of Injury on Discharge

Level	Walking	Mobilising by wheelchair	Total
C1 – C4	27	28	55
C5 – C8	15	7	22
T1 – T12	17	25	42
L1 and below	12	3	15
Total	71	63	134

Nineteen percent of patients had their first Goal Planning Meeting within 3 weeks of mobilising

Ninety three percent of patients had their Spinal Cord Independence Measure recorded on admission, at the start of rehabilitation and on discharge.

In 2023/24 15 patient in total required to be ventilated, 3 of those will require long term ventilation, resulting in 953 ventilated bed days in total. There were 4 recorded ventilator associated pneumonias

3.4 Effectiveness

Clinical Outcomes/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 are outlined in 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 thirty year old database remain unique worldwide.

Some comparisons with English centres can be made using data from their national commissioning database. The average time from trauma to admission for most English centres is two months, in Scotland it is much shorter. Every study of acute spinal injury confirms that a specialist 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

	19-20	20-21	21/22	22/23	**23/24**
New Admissions	139	110	137	130	**129**
New Outpatients	70	21	45	45	**62**
Key Performance Indicators					
Referrals					
All patients referred	427	303	421	342	**338**
Telephone advice	288	200	366	212	**209**
Complex advice with support/visit	89	31	100	60	**33**
New patient activity					
All patients admitted with neurological injury	129	95	126	125	**125**
All patients admitted with non-neurological injury	10	8	11	5	**4**
Surgical stabilisations:					
- Thoracolumbar fixations	36	14	26	22	**20**
- Elective removal of metalwork	3	0	1	4	**6**
- Cervical fixations	21	18	21	28	**31**
- Halo immobilizations	18	11	22	18	**2**
Spinal injury specific surgery:					
-Other	4	12	6	28	**19**
Implant spasm and pain control:					
- New pumps implanted	2	0	1	0	**1**
Removal of pump	1	0	1	0	**0**
- Revision pumps	0	0	0	0	**0**
- Operational pumps	7	6	6	5	**5**
- Pump Refill QENSIU	7	6	6	5	**5**
- Pump Refill Local	N/A	N/A	N/A	N/A	**N/A**

Step down unit:					
- Episodes of care	38	0	6	24	**30**
- Number of families/people	108	0	11	35	**62**
- Number of days (nights)	139	0	93	182	**81**
- Relatives Room					
- Episodes of care	35	0	1	3	**29**
- Number of families / people	49	0	1	10	**40**
- Number of days (nights)	332	0	16	192	**75**
New inpatient occupied bed days					
Total Available (new & return)	17,097	15,534	15,497	15,853	**16,791**
Actual	13,816	10,299	11,776	13,569	**14,530**
Bed Occupancy %	81%	66%	76%	86%	**87%**
Mean length of stay					
I	171	163	166	186	**165**
II	176	94	99	143	**98**
III	130	109	110	135	**122**
IV	38	38	40	66	**69**
All	105	87	79	106	**103**
Range of length of stay	5 - 600	1-432	1-325	3-392	**0-556**
Delays in discharge (actual v's intended)					
Number of patients discharged	141	102	121	119	**136**
Number of patients with delayed discharged	23	9	25	31	**41**
Length of delay (mean/mode)	53	65	31	47	**38**
% with no delay	84%	91%	79%	74%	**70%**
Patient Recorded Outcome Measures					
% of utilised bed days by ASIA scale	N/A	N/A	N/A	See table 19	**See table 19**
Delayed discharge by Health Board	N/A	N/A	N/A	See table 23	**See table 23**
Method of mobilising by level on discharge	N/A	N/A	N/A	See table 24	**See table 24**
Number of patients with ventilator acquired pneumonia (VAPs)	N/A	N/A	N/A	N/A	**4**
% of patients who had their first Goal Planning Meeting within 3 weeks of mobilising	N/A	N/A	N/A	24%	**19%**
% of patients who had Spinal Cord Independence Measure recorded	N/A	N/A	N/A	92%	**93%**
Day case					
by NHS Board of Residence	See table 13	See table 13	See table 13	See table 13	**See table 13**
by reason for admission	See Table 12	See Table 12	See Table 12	See Table 12	**See Table 12**
Outpatient activity					
New Patient no's QENSIU	See Table 8A	See Table 8A	See Table 8A	See Table 8A	**See Table 8A**
Return Patient no's QENSIU	See Table 7B	See Table 8A	See Table 8A	See Table 8A	**See Table 8A**
New Patient QENSIU (DNAs/ % attendance)	7%	14%	9%	9%	**26%**
Return Patient QENSIU (DNAs/ % attendance)	18%	9%	12%	21%	**17%**
New Outreach Clinics by Centre	See Table 9	See Table 9	See Table 9	See Table 9	**See Table 9**
Return Outreach Clinics by Centre	See Table 9	See Table 9	See Table 9	See Table 9	**See Table 9**
Number of patients discharged from the service	Life Long Care	Life Long Care	Life Long Care	Life Long Care	**Life Long Care**

Allied Health Professionals activity	N/A	N/A	N/A	N/A	**N/A**
New Patient (DNAs/ % attendance)	See Table 8B	See Table 8B	See Table 8B	See Table 8B	**See Table 8B**
Return Patient (DNAs/ % attendance)	See Table 8B	See Table 8B	See Table 8B	See Table 8B	**See Table 8B**

3.5 Safe

Re-admissions

Most neurologically injured patients discharged from the Unit never require readmission. Once re-established in the community, they attend annually at the Outpatient Department 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 20 readmissions to the Unit during the year, a shortfall on the contract estimate of 50 readmissions, most often due to skin problems, elective surgery or top up rehabilitation to optimise independence.

During the year, of the 136 patients discharged following primary rehabilitation 1 patient was admitted to their local hospital acutely within 30 days of discharge from this Unit with a complication of spinal cord injury, a urinary tract infection.

CCAAT Audits/ Care Assurance Visits in the last 12 months

Care assurance Audits are carried out both at an organisation level and locally. They are unannounced visits. These results highlight improvement where required and celebrate success. Both Edenhall, the HDU admissions ward and Philipshill the rehabilitation ward received gold awards this year

Table 25

Ward	Date of Visit	Corporate, Sector Or, Peer Visit	Nursing Compliance	Overall Compliance
Edenhall	13/11/2023	Peer visit	**Gold**	**Gold**
Philipshill	09/10/2023	Peer visit	**Gold**	**Gold**

3.6 Person Centred

Person Centred Visiting

Care given to patients is in line with the core principles of Person Centred Visiting. Visiting remains full flexible with no set times, ensuring respect of people's individual needs in particular the safety, privacy and dignity of all patients. Visiting is guided by patients in partnership with the people who matter to them. We welcome and encourage the involvement of people who matter to the patient.

Newly injured patients' families are accommodated short term in the two en suite family rooms located in the Unit not far from Edenhall.

The Family Unit in the Step-Down Unit offers a safe space where families and patients can learn to live together again after the trauma of a spinal injury supported by staff nearby.

At patient request, families and loved ones are supported to be involved in care delivery in preparation for safe discharge into the community.

Family Unit / Step-Down Unit

In 2020, 2021 and early 2022 due to COVID the Step-Down Unit had not been used fully for its original purpose, however the use has now returned to pre-pandemic levels. In 2023/24 the Family Unit was used for 30 episodes by 62 people for a total of 81 days. The relatives' rooms were occupied for 75 days.

Patient Recorded Outcomes 2023/24

Across the year, the QENSIU carries out interviews with patients at the point of discharge to gain an understanding of their experience and their appraisal of their stay in rehabilitation. These patient reported outcome measures are then used by the Team to acknowledge successes and highlight areas in need of ongoing improvement. Consisting of 40 minute semi-structured interviews, the current evaluation was formed from a sample of 18 patients during 2023/24.

Feedback from patients would suggest that staff communication remains clear, patients felt informed, and there was consistency of information across rehabilitation. Patients felt respected and were treated with dignity and respect and were able to make the most of the available therapy sessions. Nurses, hand therapists, and physiotherapists were noted to be of high calibre. The patients also praised the role of the Units' auxiliary staff. This is captured in the direct quotes below:

- *"From top to bottom, the staff have been diamonds."*
- *"The physiotherapists are brilliant, absolute superb"*
- *"Dr … is the best…"*
- *"Nurses have been absolutely brilliant. Couldn't ask for any nicer nurses."*
- *"The garden definitely helped…it was great to be outdoors watching birds and nature. Having outside space was great for me".*

While patients noted positives about clinical psychology provision and medical care in the Unit, some patient's thought more frequent access to psychological care would have been to their benefit and some patients would prefer greater access to their medical consultant. Patients were keen to be more informed of their test results or medication changes. Many patient's reported that they would have wanted more physiotherapy sessions and when discussing goal setting, some thought the process could be more collaborative. For example:

- *"I just see the psychologist once every three weeks. I would like to have seen them more often. The Unit could have a group to hear other folk. It can help. People can hear each other."*
- *"I was not made aware of test results, cancellations etc."*
- *"… I feel that all they are trying to do is to tick their own boxes of what they are trying to achieve. Not my boxes."*

While the vast majority of feedback was positive, relative to previous years, more patients cited staffing levels to have impacted upon their participation in rehabilitation – this largely applied to nursing and physiotherapy staffing. Many patients also noted the additional stresses placed upon them by the fact they had no appropriate accommodation to be discharged to at the end of their rehabilitation.

- *"Physio was fab but they need more staff. I personally feel this is due to lack of time, possibly funding. I only get 30 minutes."*
- *"My rehabilitation was affected by staffing – the nurses are struggling to get everybody washed and up."*

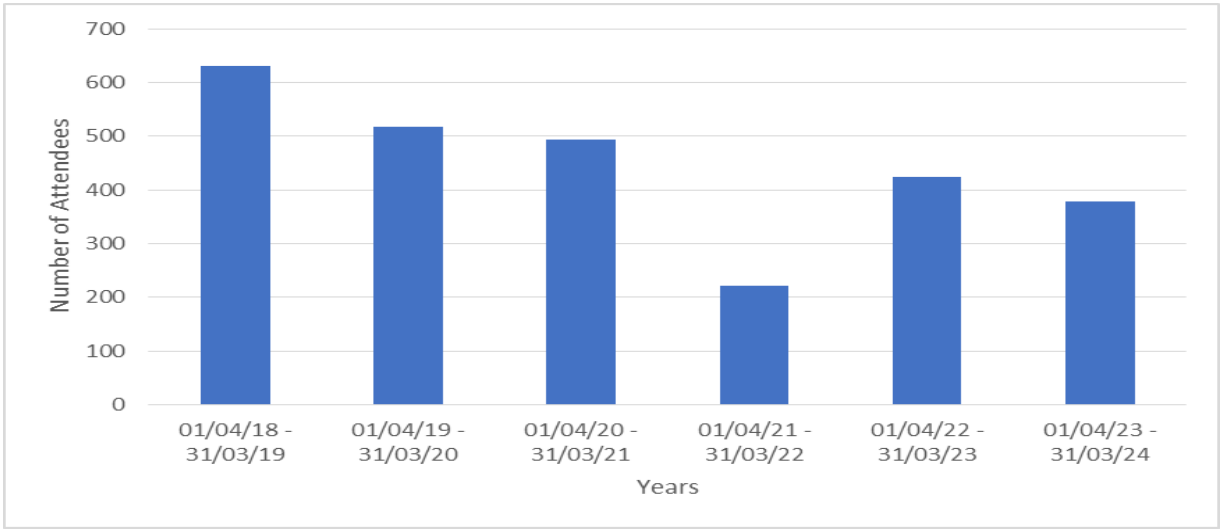
The Unit remains committed to addressing those areas of performance which are amenable to improvement and plans are in place to address the themes which emerged from patient feedback. While some of the feedback highlights areas requiring ongoing development, the general themes suggest that the Unit is perceived positively among patients and the quality of care and rehabilitation is high.

Patient Education/Workshop Spinal Education

Education is fundamental, patients are required to learn new skills, to manage their care independently or direct others to do this for them.

The multi-disciplinary approach to education allows this to be a continual ongoing process. To compliment daily informal education we have a rolling 16 week programme supported by the MDT and peer support staff from a number of spinal charities, patient attendance was 378 last year. This is down on previous years and is not near pre pandemic levels.

Figure 8



Friends and family are encouraged to attend these sessions resulting in a positive impact on the patient learning experience allowing them to consolidate knowledge and discuss what they have learned.

Every opportunity is an opportunity to learn and develop a new skill a patient may need following discharge. “Teach Back” is used to assess understanding.
The charity Aspire support “Mind the Gap”, a questionnaire completed by patients assessing knowledge of SCI prior to discharge, collated by an impartial non clinical member of Aspire, any gaps in knowledge are addressed prior to discharge.

Friends and Families benefit from a dedicated day where they have the opportunity to learn about SCI and the opportunity to gain support from the team and peer support staff. These sessions are also offered virtually.

Education and training is offered across Scotland, this can be conducted face to face or remotely, this is particularly useful prior to discharge, ensuring transition from hospital to community runs smoothly.
Teaching sessions are delivered to nursing, medical and therapy university students, bowel management is now part of the nursing curriculum, and the Education Nurse from the Unit supports the practical and theoretical component of this training.

4. Quality and Service Improvement

Digital Clinical Notes (DCN)

The Unit is an early adopter of many new corporate initiatives. One such initiative has been the introduction of Digital Clinical Notes (DCN). The DCN programme has been established to implement the active clinical notes functionality on TrakCare, it is in its first transition within the Unit, with the aim to replace some of the current patient paper notes. The following have been moved onto this digital platform, admission documentation, PUDRA, Falls, Bed Rail Assessment, infection control, moving and handling, Must, 4AT and the Discharge Checklist.
From a workforce perspective, DCN will transform dependence on paper records, supporting clearer and easier recording and speed up access. Staff experience has been shared at corporate level.

Recruitment/Training

NHS Scotland has challenges with recruitment and retention of registered nurses in particular, the Unit is feeling the impact of this. We are working with Corporate Practice Development and recruitment teams to attract new members of staff. There is a robust training programme for all new members of staff provided by the Education Nurse and Educational Supervisors from all disciplines.

This year we welcomed international nurses to our team from Nigeria. They are currently working towards completing their Test of Competence prior to practicing as registered nurses.

The Big Conversation

The Big Conversation is a new opportunity to reflect on professional contributions and challenges faced by nurses and midwives, giving staff the opportunity to talk about what matters to them and what can be done to attract and retain staff in the NHS. The aim is to grow the nursing and midwifery community and develop a bright future for teams across the professions. Senior nurses in the Unit feedback to the Big Conversation.

Right Decision Toolkit

In collaboration with Health Care Improvement Scotland the Unit has created a Spinal App to strengthen information and resources to support patients, families and caregivers
The public facing side of the app has almost come to completion. Representatives of the Unit presented The Spinal App at the Regional Services Best Practice Event and at the Regional Services Clinical Governance Symposium

Continuous Intervention

The Unit in collaboration with the Institute of Neurological Science (INS) and the Corporate Practice Development Team have been part of the pilot of Continuous Intervention (CI). We have incorporated a staff debrief into CI, the senior nurses take time to check in on staff wellbeing following a difficult or challenging event. Feedback from staff has included "I feel valued" "shows they care". This approach will be audited in the coming months. Staff wellbeing continues to be high on the agenda within the Unit

Review of current practice

The Unit has been part of the development of an audit tool to ascertain how storage and administration of medication happens at ward level, called the Safe Medicine Administration Audit Tool. The feedback from this has proven beneficial with many associated learning opportunities, the tool has now being shared with other sectors within NHS GG&C.

5. Governance and Regulation: Critical Incidence Reporting

5.1 Clinical Governance

Senior medical and nursing staff meet quarterly with colleagues in the Directorate Clinical Governance programme, specifically as part of the INS Medical Specialties/Spinal Injuries Clinical Governance Meeting. Standing items include Significant Adverse Event Reviews (SAER), Mortality Review, Risk Register and putting audit into practice. The Unit continues to adopt National Management Guidelines, as appropriate. In person teaching on Friday afternoons is now re-established, a great forum for discussion around evidence based practice.

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 dangerous event to patients, which could have been prevented by a change in practice. The Unit utilises the DATIX Incident Reporting system and these incidents are reviewed within defined timeframes. The Unit is included in the Regional Services Directorate for reporting purposes.

Recorded Adverse Events

Table 26

Category	Number
Pressure ulcer care	10
Medication incident	7
Contact with object	5
Medical device & equipment	7
Communication	1
Slips, trips & falls	56
Security	6
Moving & handling	6
Violence & aggression	23
Challenging behaviour	6
Fire alarm actuation	4
Needle-stick injury	0
Infection control issue	3
2222	15
Self- harm	2
Staffing levels	9
Radiology incident	0
Treatment issue	1
Patient abscondment	3
IT Governance	3
Total	**167**

Table 27

Overall	
1 - Negligible	82
2 - Minor	68
3 - Moderate	15
4 - Major	1
5 - Extreme	1
Total	**167**

The number of falls within the rehabilitation ward in particular has reduced significantly in the last year at 56, down from 83 in 2022/23. There was 1 fall with harm recorded. Representatives from the Unit attend the Falls Improvement Group of NHS GG&C, information is filtered through link nurses, improvement and best practices are shared with

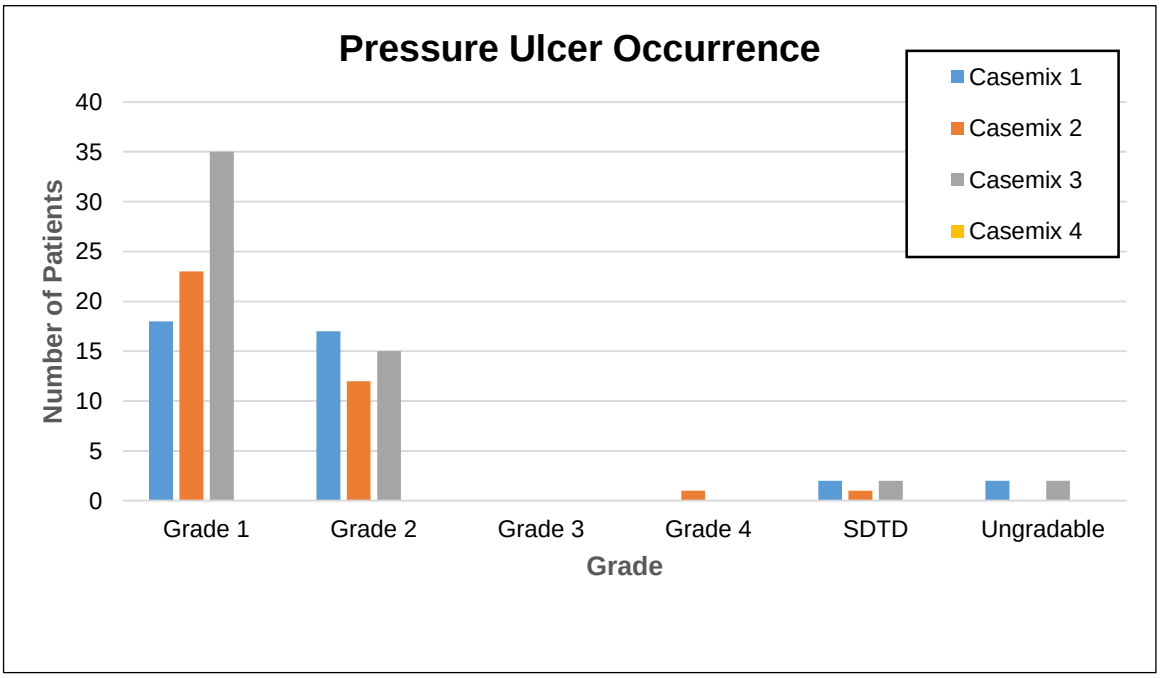
the team.

Table 28
Focus on Slips, Trips and Falls

Type of Fall	Number of patients
Controlled	4
Fall from bed	5
Fall from chair	33
Fall from height	1
Fall from level	5
Slip	1
Trip	4
Unknown	3

Pressure Ulcers
Pressure ulcers (PU), caused by prolonged pressure that injuries the skin and underlying tissue are a common cause of harm in hospitals. They can have a significant and negative impact on the lives of people who experience them, their families, and carers.

Figure 9
Red Flags per Case Mix



The Red Flag process allows early detection of PU development with early implementation of steps to prevent further deterioration and promote healing. Patient's education and participation in good pressure care aims to reduce PU development lifelong.
We locally record all PU (both avoidable and unavoidable) of Grade one and moisture related damage. All avoidable hospital acquired PU of grade two or above are reported on Datix. We have had one grade four PU.

In addition to the investigation of all grades of pressure ulcers through the Unit Red Flag system, GGC Hospital Policy, SAER and Duty of Candour requirements are followed in the event of a grade three and four PU.
There was one Grade four PU to a heel over the last year which resulted in a Significant Adverse Event Report (SAER) being commissioned. The recommendations have been actioned and improvement implemented. There is ongoing collaboration with Tissue Viability and a Short Life Working Group concluding, resulting in a review and update of the Unit Skin Protocol, this is in final draft form. The final Protocol will then go to Clinical Governance for approval.

Hospital Acquired Infection

Infection Control Precautions

Standard Infection Control Precautions (SICPs) are the basic infection prevention and control measures necessary to reduce the risk of transmission of infectious agent from both recognised and unrecognised sources of infection. To be effective in protecting against infection risks, SICPs must be used continuously by all staff.

Table 29
Recent SICPS Audit Scores QENSIU 2024

	Total Achieved	Total Section Score	Overall Compliance
Compliance	54	60	90% Green

Table 30
Hospital Acquired Infection

	18/19	19/20	20/21	21/22	22/23	23/24
COVID	**0**	**0**	**unknown**	**6**	**6**	**9**
Salmonella	**0**	**0**	**0**	**0**	**0**	**0**
Clostridium Difficile	**0**	**1**	**0**	**0**	**0**	**1**
Streptococcus pyogenes	**0**	**0**	**0**	**0**	**0**	**1**
Scabies/TB/varicella Zoster	**0**	**0**	**0**	**0**	**1**	**0**
MDR Acinetobacter	**0**	**0**	**1**	**0**	**0**	**3**

With the support of the GGC Infection Control Team, all patients with hospital acquired infection (HAI) are isolated or cohorted appropriately within the Unit to limit the spread of infection keeping other patients and staff safe. Edenhall Ward receives patients in the early stages 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.

Morbidity and Mortality

All deaths are presented at regular morbidity and mortality meetings (M&M). There were five deaths in the Unit in 2023/24, all were expected.

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 five formal complaints, three of which were not upheld, one resolved and the other one time barred. Consultants and senior nursing staff continue to provide advice to the Clinical Service Manager regarding complaints involving management of patients out with the Unit.

The Unit also receives feedback via Care Opinion, a QR code to access Care Opinion is available throughout the Unit.

Compliments

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

Scotland hosted the 2023 Annual Scientific Meeting of the International Spinal Cord Society, the premier international meeting for the specialty. The Unit hosted a visit from international delegates along with breakout sessions focusing on the particular strengths of the Unit as seen internationally, hyperacute admission, lifelong care including outreach, a highly successful embedded research facility and programme along with excellent working relationships with the third sector. In parallel the Unit hosted a visit from Ukrainian delegates all working in the field of spinal cord injury. Both events were highly successful. It was a real privilege to host the events, spinal injuries experts from around the world praised the work being done in the Unit during these visits.

5.5 Equality

An equality, diversity and human rights e-learning module is live on LearnPro. All staff are required to complete the module as part of their statutory and mandatory training. Robust systems have been put in place to monitor compliance with all LearnPro modules for all staff.

NHS GG&C is holding its second Equality, Diversity and Inclusion Learning Event for across the organisation, members of the
Team are invited to attend. An interpreting service is available to all services users. The Unit used the face to face interpreting service to aid inpatient communication 37 times during 2023/24, for Farsi, Cantonese and Mandarin speaking patients. The telephone interpreting service was also widely used by the service.

6. Financial Reporting and workforce 2023/24

NHS Greater Glasgow & Clyde
Acute Services Division
Regional Services Directorate
Spinal Injuries Unit

Financial Report for the 12 months to 31st March 2024

	AfC Banding	WTE	Contract Value	Contract Value YTD	Actual YTD	Variance YTD	Year End Forecast	Year End Forecast Variance	% variance	Comments
			£	£	£	£	£	£		
Dedicated Staff Costs										
Consultant		5.71	1,028,373	1,028,373	1,060,615	-32,243	1,148,187	-119,814	- 12%	
Specialty Doctor		1.00	99,151	99,151	7,431	91,721	7,877	91,275	+ 92%	
Senior Medical		*6.71*	*1,127,524*	*1,127,524*	*1,068,046*	*59,478*	*1,156,063*	*-28,539*		
Junior Medical		2.48	177,712	177,712	189,974	-12,262	189,974	-12,262	- 7%	Difference between pay award and funding uplift since 2(
		9.19	*1,305,236*	*1,305,236*	*1,258,020*	*47,216*	*1,346,037*	*-40,801*		
Administrative	4	6.50	254,904	254,904	254,904	0	254,904	0	+ 0%	
Administrative	3	0.14	5,013	5,013	5,013	0	5,013	0	+ 0%	
Administrative	2	2.49	82,048	82,048	82,048	0	82,048	0	+ 0%	
		9.13	*341,965*	*341,965*	*341,965*	*0*	*341,965*	*0*	*+ 0%*	*Expenditure v. average funded value*
Senior Manager	8a	0.50	40,825	40,825	40,825	0	40,825	0	+ 0%	
Nursing	7	7.80	640,835	640,835	509,069	131,766	509,069	131,766	+ 21%	Ward costs based on ledger
Nursing	6	9.36	569,537	569,537	694,675	-125,138	694,675	-125,138	- 22%	Ward costs based on ledger
Nursing	5	54.30	2,628,798	2,628,798	2,341,666	287,132	2,341,666	287,132	+ 11%	Ward costs based on ledger
Nursing	2	23.88	786,870	786,870	1,407,588	-620,719	1,407,588	-620,719	- 79%	Ward costs based on ledger
Housekeepers	2	2.00	65,902	65,902	14,639	51,263	14,639	51,263	+ 78%	Ward costs based on ledger
Urology CNS	7	0.20	12,683	12,683	12,683	0	12,683	0	+ 0%	
Phlebotomist	2	0.53	16,475	16,475	0	16,475	0	16,475	+ 100%	Ward costs based on ledger
		98.57	*4,761,925*	*4,761,925*	*5,021,145*	*-259,221*	*5,021,145*	*-259,221*	*- 5%*	*Expenditure v. average funded value*
Psychologist	8B	1.00	89,413	89,413	87,755	1,658	87,755	1,658	+ 2%	Incremental drift
Clinical Physics	7	0.20	12,683	12,683	12,683	0	12,683	0	+ 0%	
Orthotist	7	0.20	12,498	12,498	12,498	0	12,498	0	+ 0%	
AHP	7	12.26	765,387	765,387	887,607	-122,220	887,607	-122,220	- 16%	Difference is funded v. actual pay award values over mar
		13.66	*879,981*	*879,981*	*1,000,543*	*-120,562*	*1,000,543*	*-120,562*	*- 14%*	*Expenditure v. average funded value*
Total Staff		**130.55**	**£ 7,289,106**	**£ 7,289,106**	**£ 7,621,673**	**- £ 332,566**	**£ 7,709,690**	**- £ 420,584**		
Supplies Costs										
Drugs			183,484	183,484	185,397	-1,913	185,397	-1,913	- 1%	Ward costs based on ledger
Surgical Sundries			542,012	542,012	308,083	233,929	308,083	233,929	+ 43%	Ward costs based on ledger
CSSD/Diagnostic Supplies			5,039	5,039	5,452	-414	5,452	-414	- 8%	Ward costs based on ledger
Other Therapeutic Supplies			125,140	125,140	76,077	49,063	76,077	49,063	+ 39%	Ward costs based on ledger
Equipment/Other admin supplies			62,413	62,413	52,988	9,425	52,988	9,425	+ 15%	Ward costs based on ledger
Hotel Services			45,703	45,703	50,882	-5,179	50,882	-5,179	- 11%	Ward costs based on ledger
Direct Supplies			**£ 963,790**	**£ 963,790**	**£ 678,879**	**£ 284,911**	**£ 678,879**	**£ 284,911**		
Charges from other Health Boards										
Lothian Spinal Clinic			6,740	6,740	0	6,740	0	6,740	+ 100%	
Charges from other Health Boards			**£ 6,740**	**£ 6,740**	**£ 0**	**£ 6,740**	**£ 0**	**£ 6,740**		
Allocated Costs										
Medical Records			133,074	133,074	133,074	0	133,074	0	+ 0%	
Building Costs			230,026	230,026	230,026	0	230,026	0	+ 0%	
Domestic Services			92,629	92,629	92,629	0	92,629	0	+ 0%	
Catering			247,525	247,525	247,525	0	247,525	0	+ 0%	
Laundry			92,835	92,835	92,835	0	92,835	0	+ 0%	
Neuroradiology			108,143	108,143	108,143	0	108,143	0	+ 0%	
Laboratories			109,297	109,297	109,297	0	109,297	0	+ 0%	
Anaesthetics			49,698	49,698	49,698	0	49,698	0	+ 0%	
Portering			100,537	100,537	100,537	0	100,537	0	+ 0%	
Phones			60,479	60,479	60,479	0	60,479	0	+ 0%	
Scottish Ambulance Service			11,943	11,943	11,943	0	11,943	0	+ 0%	
General Services			35,275	35,275	35,275	0	35,275	0	+ 0%	
Allocated Costs			**£ 1,271,461**	**£ 1,271,461**	**£ 1,271,461**	**£ 0**	**£ 1,271,461**	**£ 0**	**+ 0%**	**Expenditure v. average funded value**
Total Supplies			**£ 2,241,991**	**£ 2,241,991**	**£ 1,950,340**	**£ 291,651**	**£ 1,950,340**	**£ 291,651**		
Overhead Costs										
Fixed costs										
Rates			65,621	65,621	65,621	0	65,621	0	+ 0%	
Capital Charge			435,774	435,774	435,774	0	435,774	0	+ 0%	
Overheads			167,329	167,329	167,329	0	167,329	0	+ 0%	
Total Overheads			**£ 668,725**	**£ 668,725**	**£ 668,725**	**£ 0**	**£ 668,725**	**£ 0**		
Total Expenditure		**130.55**	**£ 10,199,822**	**£ 10,199,822**	**£ 10,240,738**	**- £ 40,916**	**£ 10,328,755**	**- £ 128,933**		
Postgraduate Dean Funding			-151,631	-151,631	-151,631	0	-151,631	0	+ 0%	
Total Expenditure net of Postgraduate Dean Funding			**£ 10,048,191**	**£ 10,048,191**	**£ 10,089,107**	**- £ 40,916**	**£ 10,177,124**	**- £ 128,933**		
Income from non-Scottish resident patients					-87,793	87,793	-87,793	87,793		**E-mail from Julie Montgomery, 18/19/2023**
Income from delayed discharges:					-59,360	59,360	-59,360	59,360		
						0	0	0		
Total Net Expenditure		**130.55**	**£ 10,048,191**	**£ 10,048,191**	**£ 9,941,954**	**£ 106,237**	**£ 10,029,971**	**£ 18,220**		
			£ 0	£ 0						
	Contract value		£ 10,048,191	10,048,191						
					£		**£**			
Fixed					9,263,074		9,351,091			
Variable					678,879		678,879			
					£ 9,941,954		**£ 10,029,971**			
Qensiu Ahp Project - G39841										
Physiotherapist	7	1.00	63,449	63,449	2,049	61,400	2,049	61,400	+ 97%	Appointed start date 18/03/2024
Occupational Therapist	7	1.00	63,449	63,449	1,368	62,081	1,368	62,081	+ 98%	Appointed start date 18/03/2024
Dietician	6	0.80	41,587	41,587	0	41,587	0	41,587	+ 100%	
Speech & Language Therapist	7	0.80	50,759	50,759	6,518	44,241	6,518	44,241	+ 87%	Appointed awaiting start date
SALT Support	4	1.00	39,216	39,216	4,503	34,713	4,503	34,713	+ 89%	Appointed awaiting start date
		4.60	**258,460**	**258,460**	**14,439**	**244,022**	**14,439**	**244,022**		

7. Audit & Clinical Research / publications

Clinical Audit Program

The clinical audit meetings are held once a month in a hybrid format. The invitation has been extended to include other rehabilitation teams to promote learning and improve networking. All members of the MDT have been involved in carrying out and presenting audits. Examples of some of the projects done in 2023/24 include:

- The Effectiveness of iCan charts on our rehabilitation ward.
- Venous Thromboembolism prescribing and review- rolling audit.

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

Student projects

Four third year medical students undertook their student selected components within the QENSIU. During these five week projects, which were undertaken in collaboration with the microbiology team in Glasgow North, the students investigated the prevalence of respiratory and urinary tract infections in the Unit over a 10 year period. It is hoped that this project will lead to national presentations and a journal article, and pave the way for the Unit hosting further student projects in the future.

Two Doctorate of Physiotherapy students from Glasgow Caledonian University are working on projects related to remote rehabilitation interventions and QENSIU physiotherapy service provision, with a further student due to start an upper limb functional electrical stimulation cycling project later in the year.

Research

The Scottish Centre for Innovation in Spinal Cord Injury (SCISCI) is an umbrella group to support translational research in a clinical setting. QENSIU acts as an embedded research micro site within the NHS to promote research and to provide access and stimulation for clinicians, patients and researchers to work together. The group conducts research in all areas of spinal cord injury from clinical review and outcome through understanding and promoting neural repair and regeneration to active intervention assessment and treatment strategies all based on basic science. The research is patient orientated and extends from harvesting and growing olfactory stem cells to robotic walking and brain computer interfacing. Psychological studies and the impact of disability are equally important. The aim is to scientifically assess the extent, natural history and recovery pattern of SCI and harness agents that promote and optimise the functioning and health of those living with disability.

In 2023/2024 our researchers have continued to undertake world leading research across a range of areas of SCI. The last year saw people with a SCI take part in eight different clinical studies, with more research studies funded for 2024/2025.

Current areas of focus include:

- A European-wide data collection study investigating the changes in the body following a spinal cord injury (EMSCI).
- Electrical spinal stimulation to improve upper extremity performance in individuals with spinal cord injury (Pathfinder).
- Electrical spinal stimulation to enhance walking function in chronic SCI (E-Walk).
- Intensive physiotherapy to improve rehabilitation outcomes for inpatients with spinal cord injury (Intensive motor training)
- Electroencephalograph predictors of central neuropathic pain in subacute spinal cord injury
- Mechanisms of neuropathic pain after spinal cord injury
- Motor conditioning to enhance the effect of physical therapy
- Neurofeedback to improve spasticity after incomplete spinal cord injury
- The feasibility of virtual reality based activities for upper limb rehabilitation of people with acute/subacute tetraplegia

Research Spotlight

Intensive Motor Training
The most promising and readily implementable intervention that could make a lasting difference to the lives of people with SCI is early and intensive motor training directed at recovery below the level of the injury. The aim therefore of The Early & Intensive SCI-MT Trial is to determine the effectiveness of early and intensive motor training on neurological recovery and function in people with SCI. The QENSIU is one of two UK sites in a multi-centred international study that compares the effect of getting an extra 12 hours of physiotherapy per week for 10 weeks with usual care for people with a recent SCI. The primary endpoint will be motor recovery after this 10 weeks of training, with the study expected to finish in September 2024. The QENSIU recruited nine to this study in 2023/24

Virtual Reality Upper Limb Therapy
Virtual Reality (VR) training has been used as a form of arm and hand rehabilitation in different neurological conditions, with limited evidence in SCI, especially at the acute stage. In VR, people are able to complete exercises in an immersive and interactive virtual environment. This can foster more enjoyable and motivating experiences compared to traditional exercise therapy, potentially increasing the amount of therapy undertaken. The VR Upper Limb Therapy (VRULT) study is a randomised controlled feasibility study. The aim of VRULT is to investigate the feasibility of immersive games for upper limb exercise with inpatients at the QENSIU. Participants will undertake three 30-minute VR sessions per week for six weeks. The VR games have been co-created with spinal cord injury rehabilitation specialists and people with lived experience of tetraplegia. The study aims to recruit up to 24 participants. VRULT is funded by Stoke Mandeville Spinal Research. SIShas also assisted with recruitment of people with lived experience of SCI to contribute to the co-creation of the VR games.

Publications and conferences
Our researchers published 13 articles on SCI in 2023/2024. More information about these articles can be found on the SCISCI website: www.scisci.org.uk. Our researchers were also active at a number of conferences, presenting their work at the International Spinal Cord Society Annual Conference in Edinburgh, Scotland, and the International Spinal Research Trust Annual Meeting in London, amongst others.

Connect with us
Our dedicated research website was updated in 2021. Further information about our research activities can be found at scisci.org.uk. We can now also be found on 𝕏 @ScisciScotland

Research database
We are compiling a database of people living with a SCI who would be interested in taking part in research. This will enable our researchers to conduct their research more efficiently, and enable people with a SCI to have access to world leading research. All ethical and governance approvals are in place. More information can be found at: https://www.gla.ac.uk/research/az/scisci/getinvolved/

Papers and Authorship
Research Profile available on requestor https://www.gla.ac.uk/research/az/scisci

8. The Year Ahead

The comprehensive review of the service in 2017 noted that the Unit's therapy departments were considerably understaffed compared to peer Units in the UK and further investigation confirmed that the Unit was also understaffed in comparison to rehabilitation services of Major Trauma Centres (MTCs). A Business Case was submitted to the national commissioners for funding additional therapy time, funding to appoint one additional therapist to each discipline was approved with three of these four posts now filled. Review of the benefit of these additional posts is underway.
We successfully applied for endowment funds to refurbish the dayroom, this should be completed later this year.
Self-Administration of Medicines (SAM) will be introduced in the coming months into Philipshill, the rehabilitation ward. There is currently no SAM policy available in NHS GG&C, the lead nurse is working with the Safe Medicine's Group and Governance to implement this, safely aligning with the electronic prescribing system.
NHS GG&C Continues Intervention for Stress and Distress Framework is being piloted in the QENSIU, using this framework will help reduce distress of patients and staff, ensure safety and reduce incidence of harm including falls.
Due to COVID pressures the Unit has lost its clinic space in the Astley Ainslie Hospital for Lothian patients and we are exploring alternative venues in Edinburgh and East Lothian to host the clinic. All other clinics remain intact.
Staff are working collaboratively to launch the first phase of the Spinal App which is public facing. It is anticipated that patient's families and healthcare professional from across the country will be able to use the App pre admission, during admission and that it will be a lifelong resource.
In parallel with the launch of the Spinal App the content and design of the Unit website is under review, a more professional facing platform.

The Glasgow Coma Scale (GCS) was described in 1974 by Graham Teasdale and Bryan Jennett, ASSESSMENT OF COMA AND IMPAIRED CONSCIOUSNESS - The Lancet, it has had a worldwide impact and remains a source of pride, the 50th anniversary of the GCS will be marked with celebrations for GCS 50 in June 2024. Congratulations are due to colleagues in the INS.

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 few days 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.