SCOTTISH NATIONAL OBSTETRIC BRACHIAL PLEXUS INJURY SERVICE

Annual Report 2022/23

NHS Greater Glasgow & Clyde

NSD603-001.01 V2

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Please refer to Guidance Notes for completion of the Annual Report prior to submission

The completed Annual Report should be sent electronically by 31 May to:
Email: nss.specialistservices@nhs.scot

Executive Summary

The Children's Brachial Plexus Injury Service is based at the Royal Hospital for Children (surgery and clinics) and the New Victoria Hospital (administration) within NHS Greater Glasgow & Clyde.

The Children's Service became a designated National Service for Scotland in April 2006.

The brachial plexus is a complicated network of nerves which controls the muscles in the shoulder, arm, elbow, wrist, hand and fingers, as well as providing them with feeling.

In children brachial plexus injury usually occurs during birth. It can also occur as a result of traumatic brachial plexus injury (e.g. falls, road traffic accidents, sporting accidents) or tumours involving the brachial plexus.

Children are referred from throughout Scotland by maternity units, paediatricians, orthopaedic surgeons, or plastic surgeons who have carried out initial assessment. Referrals are also accepted from Northern Ireland and occasionally from the north of England.

The service provides assessment, intervention, treatment and outpatient follow-up care for patients through an integrated multidisciplinary service for obstetric brachial plexus injury, traumatic brachial plexus injury, and tumours involving the brachial plexus, including:-

- Diagnosis: clinical examination, MRI, ultrasound, neurophysiology.
- Surgery: early surgical exploration and nerve repair; secondary reconstruction for shoulder and other deformities.
- Physiotherapy.
- Occupational Therapy.
- Psychological support.

In 2022/23 the service undertook the following activity for patients from across Scotland:

- 33 assessments.
- 3 procedures (including 0 primary operations such as nerve explorations and nerve reconstructions and 3 secondary operation such as tendon transfers).
- 147 follow-up appointments.

During the year Claire Murnaghan, Consultant Paediatric Orthopaedic Surgeon, left the service. Tim Hems and Professor Andrew Hart continue to provide the medical and surgical part of the service. Staffing will be kept under review.

A review of activity levels since the service was designated in 2006 has shown a fall in the serious cases of obstetric brachial plexus injury causing long term deficit, particularly during the last 5 years. This change has implications for future provision of the service.

Further details can be found on the dedicated website at
https://www.brachialplexus.scot.nhs.uk

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1. Service Delivery

The Obstetric Brachial Plexus Injury Service (OBPIS) provides integrated multidisciplinary management for obstetric brachial plexus injury, traumatic brachial plexus injury and tumours involving the brachial plexus including:

- Diagnosis: clinical examination, MRI, ultrasound, neurophysiology.
- Surgery: early surgical exploration and nerve repair, secondary reconstruction for shoulder and other deformities.
- Physiotherapy.
- Occupational Therapy.
- Psychological support.

Target Patient Group

Children with obstetric brachial plexus injury are the main group managed by the service.

Patients with traumatic brachial plexus injury or benign or malignant tumours involving or arising from the brachial plexus are also seen.

Patients are typically referred by neurologists, paediatricians, orthopaedic surgeons or plastic surgeons.

In the year 2022/23 a total of 33 children with suspected obstetric brachial plexus injury were referred to the service. None were referred with a traumatic brachial plexus injury. All were referred from within Scotland, with no patients referred from Northern Ireland.

Referral Process

Referral forms are available on the service website and are emailed or posted to the administration office. Referral letters are accepted provided the referring Health Board includes sufficient background information on the injury. Patients can also be referred by their general practitioner via the electronic GP Gateway.

Patients are usually referred by paediatricians, orthopaedic surgeons or plastic surgeons who have carried out initial assessment, after which the Obstetric Brachial Plexus Injury Service provides assessment, intervention or treatment, and outpatient follow-up care for patients.

Description of Service/Care Pathway

Clinical Assessment

Along with their parents children with obstetric brachial plexus injury (OBPI) are assessed in the outpatient clinic by medical staff and therapists to confirm the diagnosis, exclude immediate complications (e.g. shoulder dislocation), counsel parents, ensure optimal parent-child bonding, address parental perceptions of the injury mechanism (and any related blame attribution) and to establish a likely prognosis. Some children are seen prior to this first clinical review by the specialist therapists and receive instruction on therapeutic exercises.

Care Plan

A management plan is formulated that includes parental counselling, physiotherapy (initial passive stretching to mitigate shoulder deformity, later active range exercises, post-operative therapy as required), occupational therapy (safe positioning and optimal handling, age-specific sensorimotor developmental assessments, activity-based interventions, provision of aids, fit-for-schooling assessment, school visits and educational liaison role), psychological optimisation (screening assessment to arrange therapeutic intervention where appropriate, primarily addressed at the parents' needs during infancy, and the child's needs during later development), investigations when necessary (neurophysiology, imaging studies) and monitoring of progress (developmental milestones, school progression, body-image development, pain, psychosocial welfare, fit-for-life).

Clinical Psychology

A clinical psychologist was appointed to the service in summer of 2018 and is contributing to the above. The clinical psychologist undertakes screening assessment and therapeutic support both during clinics and out-with clinic times (either on an on-one basis or with telephone consultations), and can liaise with local services where capacity is available.

Surgical Intervention

Surgical decisions on nerve surgery and prophylactic shoulder interventions are made at around three months of age and on secondary surgery (shoulder procedures, hand reanimation, functional muscle transfers) as necessary during growth into adulthood.

Interventions are carried out by the surgical team to:

- Optimise recovery from nerve injury: in a small percentage of children (more severe lesions with inadequate motor recovery at 3 to 6 months of age) exploration and microsurgical reconstruction of the brachial plexus nerves may benefit recovery and enable prognostic stratification.

- Optimise growth trajectory: early nerve surgery may reduce growth disturbance in more severe nerve injuries (detailed above). In these, and in other children with early shoulder subluxation/instability, conservative interventions (e.g. casting, Botox injections) can forestall more severe shoulder abnormalities. Consideration is being given to late nerve transfer surgery to enhance shoulder function and growth.

- Correct functionally significant secondary deformity/functional impairment: joint releases, tendon transfers, bony procedures and free functional muscle transfers for upper limb deformities resulting from OBPI. These most commonly affect the shoulder.

Continuation of Care

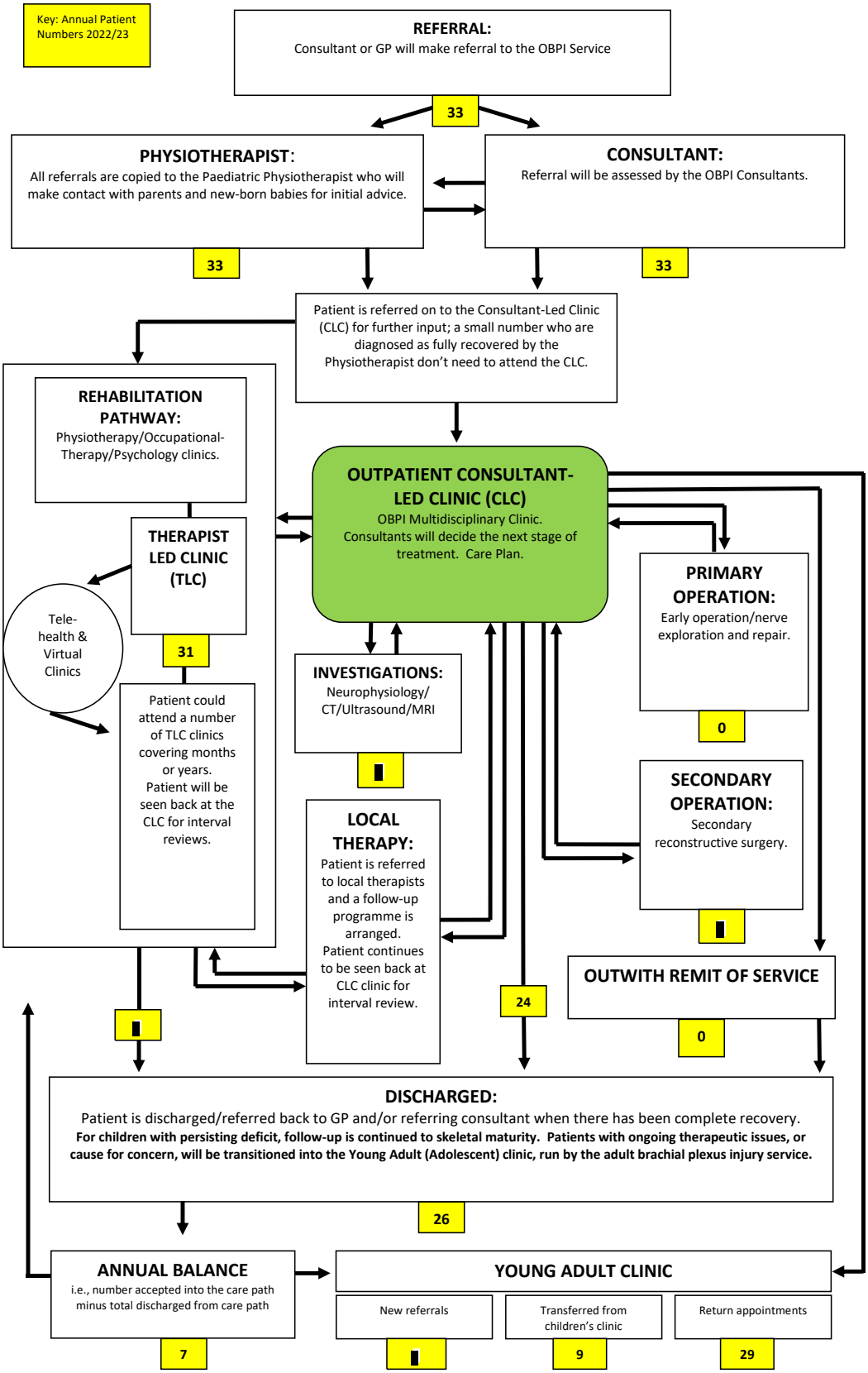
Children with persisting deficit are followed up in outpatients at least until skeletal maturity.

Review of patients who live in the north of Scotland and other remote areas is facilitated by the option of video appointment and some outreach clinics held at Woodend Hospital in Aberdeen.

Patients can be transitioned into the young adult clinic in Glasgow once they are deemed to have reached an appropriate level of physical and cognitive development, and if they have ongoing issues best addressed through adult services.

(See flowchart on next page)

Obstetric Brachial Plexus Injury (OBPI) - Patient Pathway



2. Activity Levels

Referrals and Interventions

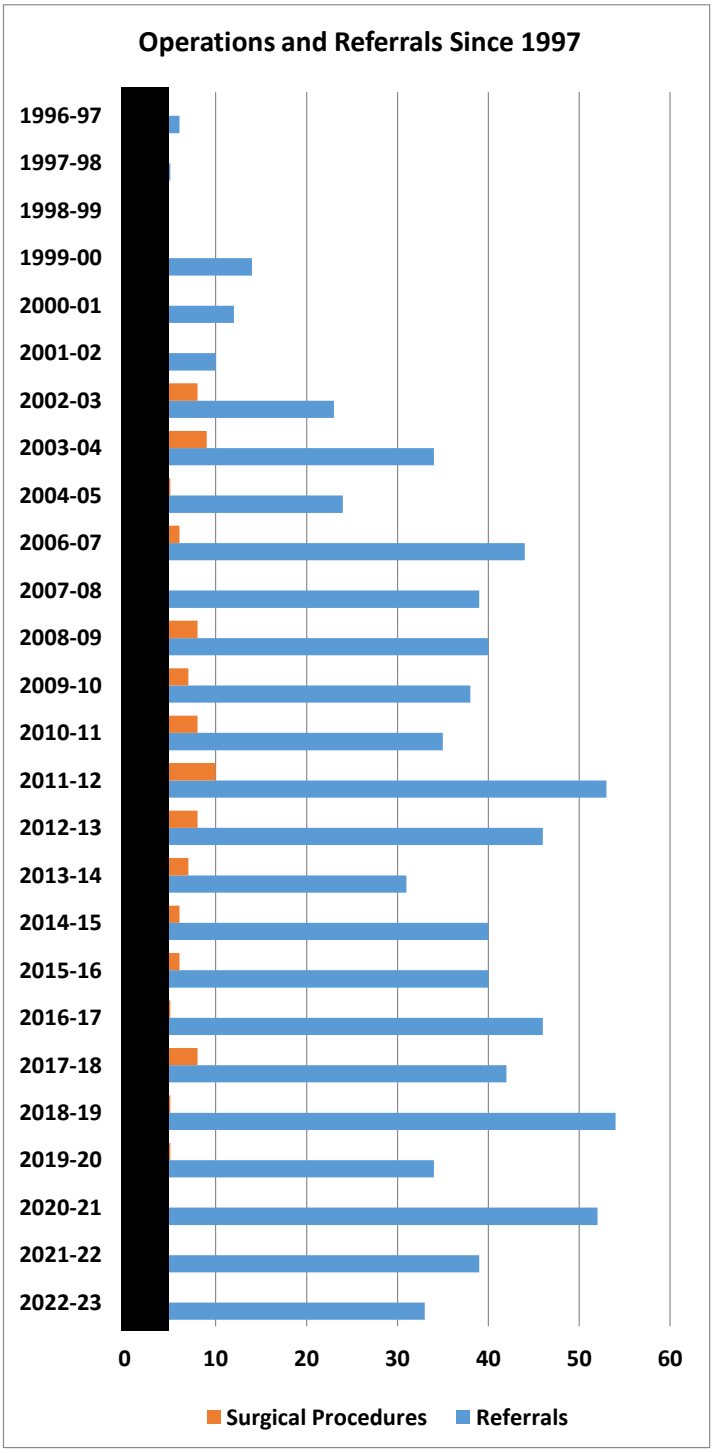
Referrals and Interventions				
	SA Level	**2022/23**	**2021/22**	**2020/21**
New patient referrals				
Referrals received		**33**	**39**	**52**
Referral does not meet criteria		**0**	**0**	**0**
Assessments				
Accepted for treatment by service	*40*	**33**	**39**	**52**
Did not attend (DNA)		**0**	[redacted]	[redacted]
Discharged following first assessment		**15**	**24**	**34**
Discharged from treatment		**26**	**35**	**47**
Number of patients retained for longterm care		**7**	[redacted]	[redacted]
Outpatient Follow-Up Appointments	*190*	**147**	**185**	**191**
Intervention /procedures				
Nerve		**0**	**0**	[redacted]
Other (shoulder/elbow)		[redacted]	[redacted]	[redacted]
Total Procedures:	*7*	[redacted]	[redacted]	[redacted]
Ward Bed Days				
HDU/ITU		**0**	**0**	**0**
Nerve Surgery		**0**	**0**	[redacted]
Other Surgery		**9**	[redacted]	[redacted]
Total Ward Bed Days		**9**	[redacted]	**9**
Day Cases		**0**	[redacted]	**0**
Average length of stay for inpatients (days)		[redacted]	[redacted]	[redacted]

The activity for return appointments should be representative of children who have ongoing problems resulting from OBPI.

Trends in Activity

Referrals and Operations

Operations and Referrals Since 1997		
Year	Referrals	Surgical Procedures
1996-97	6	
1997-98		
1998-99		0
1999-00	14	
2000-01	12	
2001-02	10	
2002-03	23	8
2003-04	34	9
2004-05	24	
2006-07	44	6
2007-08	39	
2008-09	40	8
2009-10	38	7
2010-11	35	8
2011-12	53	10
2012-13	46	8
2013-14	31	7
2014-15	40	6
2015-16	40	6
2016-17	46	
2017-18	42	8
2018-19	54	
2019-20	34	
2020-21	52	
2021-22	39	
2022-23	33	
Total:	837	133



During 2022/23: No patients were treated for traumatic brachial plexus injury.

After assessment: 10 patients were found not to have evidence of brachial plexus injury, although referral for assessment was considered appropriate.

Diagnostics

Neurology/Neurophysiology

A consultant neurologist at the Royal Hospital for Children provides clinical assessment for OBPI patients along with neurophysiology investigations, which is particularly useful for those who may require surgical intervention. The numbers of referrals to Neurology have decreased since 2019, with some patients being referred to local neurology centres outwith the GG&C area.

Location of Children's Neurology

The neurology clinics within GG&C are held in the outpatient department of the Royal Hospital for Children in Glasgow.

Neurophysiology Activity (within NHS GG&C)			
	2022/23	2021/22	2020/21
Assessments	[redacted]	[redacted]	[redacted]
Maximim Wait (Weeks)	0.0	3.0	7.0
Minimum Wait (Weeks)	0.0	1.9	0.0
Median Wait (Weeks)	0.0	2.4	2.0
Did not attend (DNA)	0	0	0

Note: [redacted] received inpatient neurophysiology assessment prior to referral to the brachial plexus service.

Neurophysiology Activity (carried out in other centres)			
	2022/23	2021/22	2020/21
Assessments	[redacted]	[redacted]	[redacted]
Maximim Wait (Weeks)	11.3	0.0	0.0
Minimum Wait (Weeks)	0.0	0.0	0.0
Median Wait (Weeks)	5.6	0.0	0.0
Did not attend (DNA)	0	0	0

Note. [redacted] patients were seen within Lothian Health Board. [redacted] was referred and seen prior to assessment by the brachial plexus service.

Imaging/Radiology

X-Ray, CT, MRI and Ultrasound

In addition to radiographs, CTs and MRIs obtained at the children's hospital the brachial plexus consultants also have access to the hospital's ultrasound machines in order to facilitate imaging of shoulders in young patients under the age of one year.

Radiology Activity (within NHS GG&C)			
	2022/23	2021/22	2020/21
MRI	0	0	0
CT scan	0	[redacted]	0
Ultrasound	0	[redacted]	0
Total Imaging	0	[redacted]	0
Maximim Wait (Weeks)	0.0	10.9	0.0
Minimum Wait (Weeks)	0.0	0.0	0.0
Median (Weeks)	0.0	3.0	0.0
Did not attend (DNA)	0	0	0

Note: No imaging was carried out on patients within GG&C.

Radiology Activity (carried out in other centres)			
	2022/23	2021/22	2020/21
MRI	[redacted]	[redacted]	[redacted]
CT scan	0	0	0
Ultrasound	0	0	[redacted]
Total Imaging	[redacted]	[redacted]	[redacted]
Maximim Wait (Weeks)	40.3	0.0	2.0
Minimum Wait (Weeks)	40.3	0.0	0.0
Median (Weeks)	40.3	0.0	1.0
Did not attend (DNA)	0	0	0

Note: [redacted] with longstanding injury and rehab.

X-rays continue to be routinely provided at clinic when necessary and are outwith the scope of the above tables.

3. Performance and Clinical Outcomes

3.1 Equitable

NHS Board for Referrals

NHS Board for Referrals								
	2022/23	% of total	**2021/22**	% of total	**2020/21**	% of total	*% of Population of Scotland*	*Actual Population of Scotland**
Ayrshire and Arran	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*6.7*	*367,990*
Borders	**0**	0	**0**	0	**0**	0	*2.1*	*115,240*
Dumfries and Galloway	**0**	0	[redacted]	[redacted]	**0**	0	*2.7*	*148,290*
Fife	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*6.8*	*374,130*
Forth Valley	[redacted]	9	[redacted]	14	**7**	14	*5.6*	*305,930*
Grampian	[redacted]	[redacted]	**0**	0	[redacted]	[redacted]	*10.7*	*585,550*
GG&CHB	**18**	55	**19**	51	**24**	48	*21.7*	*1,185,240*
Highland	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*5.9*	*320,860*
Lanarkshire	[redacted]	15	**7**	19	**13**	26	*12.1*	*661,960*
Lothian	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*16.7*	*912,490*
Orkney	**0**	0	**0**	0	**0**	0	*0.4*	*22,400*
Shetland	**0**	0	**0**	0	**0**	0	*0.4*	*22,870*
Tayside	**0**	0	**0**	0	**0**	0	*7.6*	*416,550*
Western Isles	**0**	0	**0**	0	**0**	0	*0.5*	*26,500*
England	**0**		[redacted]		**0**		-	-
Northern Ireland	**0**		[redacted]		[redacted]		-	-
Total:	**33**	100	**39**	100	**52**	100	*100.0*	*5,466,000*

**Source: 2020 mid-year estimates, www.nrscotland.gov.uk. Patients from England and Northern Ireland normally receive primary treatment within their own health boards and are therefore not included in this population analysis.*

Distribution of Referrals

Referrals remain well distributed from around Scotland. The referrals from Greater Glasgow and Clyde were thought to be appropriate for the Obstetric Brachial Plexus Injury Service. New referrals from Northern Ireland have fallen.

Travelling to Clinics

Information on how to claim travel expenses is routinely issued to new patients with their first appointment letter and highlighted on the service website, to encourage patients from outlying areas to attend clinics in Glasgow without encountering prohibitive financial constraints.

NHS Board for Follow-up Appointments

NHS Board for Follow-up Appointments							*% of Population of Scotland & N. Ireland*	*Actual Population of Scotland & N. Ireland*
	2022/23	% of total	**2021/22**	% of total	**2020/21**	% of total		
Ayrshire and Arran	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*5.0*	*367,990*
Borders	**0**	0	[redacted]	[redacted]	[redacted]	[redacted]	*1.6*	*115,240*
Dumfries and Galloway	**6**	4	[redacted]	[redacted]	**6**	3	*2.0*	*148,290*
England & Wales	[redacted]	[redacted]	[redacted]	[redacted]	**0**	0	-	-
Fife	**7**	5	[redacted]	[redacted]	**6**	3	*5.1*	*374,130*
Forth Valley	[redacted]	3	**7**	4	**7**	4	*4.2*	*305,930*
Grampian	**7**	5	**10**	5	**7**	4	*8.0*	*585,550*
GG&CHB	**44**	30	**65**	35	**76**	40	*16.1*	*1,185,240*
Highland	[redacted]	[redacted]	[redacted]	[redacted]	**8**	4	*4.4*	*320,860*
Lanarkshire	**12**	8	**19**	10	**21**	11	*9.0*	*661,960*
Lothian	**24**	16	**20**	11	**16**	8	*12.4*	*912,490*
Northern Ireland	**27**	18	**37**	20	**31**	16	*25.7*	*1,895,510*
Orkney	**0**	0	[redacted]	[redacted]	[redacted]	[redacted]	*0.3*	*22,400*
Shetland	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*0.3*	*22,870*
Tayside	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	*5.7*	*416,550*
Western Isles	**0**	0	**0**	0	**0**	0	*0.4*	*26,500*
Total:	**147**	100	**185**	100	**191**	100	*100.0*	*7,361,510*

**Sources: 2020 mid-year estimates. www.nrscotland.gov.uk & www.nisra.gov.uk*

The above table represents the NHS Health Board local to the patient's home address at the time of their clinic appointment.

NHS Board for Inpatient Procedures

NHS Board for Inpatient Procedures							*% of Population of Scotland*	*Actual Population of Scotland**
	2022/23	% of total	**2021/22**	% of total	**2020/21**	% of total		
Ayrshire and Arran	**0**		**0**	0	**0**	0	*6.7*	*367,990*
Borders	**0**		**0**	0	**0**	0	*2.1*	*115,240*
Dumfries and Galloway	**0**		**0**	0	**0**	0	*2.7*	*148,290*
Fife	**0**		**0**	0	**0**	0	*6.8*	*374,130*
Forth Valley	**0**		**0**	0	[redacted]	[redacted]	*5.6*	*305,930*
Grampian	**0**		**0**	0	**0**	0	*10.7*	*585,550*
GG&CHB	**0**		[redacted]	[redacted]	[redacted]	[redacted]	*21.7*	*1,185,240*
Highland	[redacted]		**0**	0	**0**	0	*5.9*	*320,860*
Lanarkshire	**0**		**0**	0	**0**	0	*12.1*	*661,960*
Lothian	**0**		**0**	0	**0**	0	*16.7*	*912,490*
Orkney	**0**		**0**	0	**0**	0	*0.4*	*22,400*
Shetland	**0**		**0**	0	**0**	0	*0.4*	*22,870*
Tayside	**0**		**0**	0	**0**	0	*7.6*	*416,550*
Western Isles	**0**		**0**	0	**0**	0	*0.5*	*26,500*
England	**0**		**0**		**0**		-	-
Northern Ireland	[redacted]		**0**		[redacted]		-	-
Total:	[redacted]	0	[redacted]	[redacted]	[redacted]	[redacted]	*100.0*	*5,466,000*

**Source: 2020 mid-year estimates, www.nrscotland.gov.uk. Patients from England and Northern Ireland are not included in this population analysis.*

Outreach Clinics

Aberdeen

The Aberdeen outreach clinic was set up to improve assessment and follow-up for patients in the north of Scotland. Utilisation of these clinics is variable. Both children and adults are seen at these clinics. The need for outreach clinics is kept under review according to the numbers of patients in each area. Due to continuing problems with the Covid pandemic and a low number of patients from Grampian needing review, no face-to-face clinics have been held in Aberdeen. However, video clinics have been carried out with in-person appointments arranged when necessary.

Campbeltown

One consultant from the brachial plexus service occasionally attends an orthopaedic outreach clinic in Campbeltown in Argyll & Bute region. Brachial plexus patients can be seen for review when this clinic is running. No Campbeltown clinics were carried out during 2022/23 due to Covid restrictions.

3.2 Efficient

Efficient

a) Actual v Planned Activity

See Section 2: Activity Levels

b) Resource Use

See other parts of the report.

c) Finance & Workforce

See Section 6: Financial report and workforce

d) Targets (Referral to appointment to treatment)

See Section 3.3: Timely

3.2.1 Cost efficiencies

Not applicable.

3.3 Timely

1. Time from referral to first clinic appointment being offered < 6 weeks.

The mean wait between referral and the first outpatient appointment was 4.7 weeks and the median was 4.4 weeks (range 0.0 to 11.4 weeks).

Time from Referral to Treatment			
	2022/23	2021/22	2020/21
% within target	61	69	71
Maximum Wait (weeks)	11.4	10.0	10.9
Minimum Wait (weeks)	0.0	0.0	0.0
Median Wait (weeks)	4.4	4.4	5.6

Note: 79% of patients were seen within 8 weeks of referral. Max Wait = 11.4 weeks: nine year old child recently arrived in U.K, not urgent, incorrect postal address on original GP referral so didn't attend first appointment.

2. Clinic letters issued within 2 weeks.

All clinic letters and operation notes were typed and checked within a few days of dictation.

3. Assessment and stratification for nerve surgery benefit by 4 months; nerve surgery by 6 months.

No new-born patients required nerve surgery in 2022/23.

Prompt theatre access remains difficult within RHC, although senior management support has been of critical assistance when needed, and is greatly appreciated.

3.4 Effectiveness

OBPI Nerve Exploration/Repair Cases 2004 to 2022

A continuing audit is being carried out to monitor the operations for nerve exploration and repair carried out for obstetric brachial plexus injury in Glasgow.

Since the appointment of Professor Andy Hart in 2008, exploration of the brachial plexus has been included in the interventions offered by the obstetric brachial plexus injury service. A few cases had been carried out before 2008 with the help of Professor Rolfe Birch, from the Royal National Orthopaedic Hospital and by Mr Tim Hems.

Nerve exploration is only considered in the most severe cases of OBPI. The main indication is failure of recovery of elbow flexion and shoulder movement by 4 to 6 months of age, which may be associated with complete or partial paralysis of the hand.

Interpretation of results is affected by:

- The small number of cases.
- The variation in the extent and severity of the injuries.
- Follow up is incomplete in a few cases.

22 cases (13 male, 9 female) have been carried out between 2004 and January 2019, with no new cases since 2019.

One child underwent a 2nd nerve repair procedure in 2020.

Timing of Operation

The mean age at operation was 5.4 months (median = 5 months, range 4 to 14 months). (The child who had operation at 14 months was born 3 months prematurely and was not fit for earlier intervention).

Classification

Cases were classified using the Narakas system:

		Number
Group 1	C5, 6. Biceps and deltoid paralysis.	[redacted]
Group 2	C5, 6, 7. Only the long finger flexors work.	9
Group 3	Whole plexus involved with slight finger flexion only.	[redacted]
Group 4	Whole plexus involved plus Horner's syndrome.	7

Indications for operation:

In 19 cases the aim of the procedure was reconstruction for elbow flexion and shoulder elevation. In [redacted] of these the lesion was found to be recovering and no repair was carried out. Nerve repair was performed for shoulder function in 13 patients and 12 for elbow flexion.

In [redacted] cases the aim of the procedure was reconstruction for shoulder elevation and external rotation only. In [redacted] of these the lesion was found to be recovering and no repair was carried out. Nerve repair was performed in [redacted] patients.

Method of Repair

Elbow flexion: Nerve grafting of the upper trunk of the brachial plexus or nerve transfer using ulnar nerve fascicle.

Shoulder elevation: Re-innervation of the Suprascapular nerve was by transfer of the Accessory nerve in 13 of 15 cases, transfer of the dorsal scapular nerve graft in [redacted] case, and nerve suture in [redacted].

7 children had release of shoulder contracture or MUA & Botox at the same time as nerve reconstruction which will also have affected the result for shoulder recovery.

Results

All 16 cases who had nerve repair have sufficient follow-up for evaluation

Elbow flexion:

Mean active elbow flexion = 96° (0 - 140)

[redacted] children have subsequently had free muscle transfers to strengthen elbow flexion.

Shoulder:

Mean active shoulder elevation (Flexion or abduction) = 94° (Range 30 – 160^{o})
Mean active shoulder external rotation (in adduction) = 32° (Range -30 – 100^{o})

Mean Mallet score = 14.9 (Range 5 - 21)

Complications

Overall the interventions appear safe.

One patient had phrenic nerve dysfunction after operation. However, the phrenic nerve may be injured in association with OBPI. It is therefore likely that the condition had been present before surgery. In subsequent cases phrenic nerve function has been assessed before operation.

Conclusions

These results appear satisfactory taking into account the severity of injuries being treated.

Shoulder function: Results are suggestive of an improved outcome over spontaneous recovery in many of the cases treated.

Gradual improvement in outcomes for the shoulder and elbow has been observed with longer term follow-up.

The unit will continue to monitor new cases and longer term outcomes.

3.5 Safe

Staff Vetting

All healthcare professionals funded within the structure of the Obstetric Brachial Plexus Injury Service meet Greater Glasgow & Clyde Trust requirements for vetting by Disclosure Scotland and registration with the Information Commissioner's Office.

Governance

Patients reviewed or treated at the RHC site fall under the hospital's own governance system, reinforced by internal audit within the Orthopaedic and the Plastic Surgery services. No significant governance issues have been identified through these mechanisms during 2022/23.

Compliance

The outpatient clinic has fully adopted recommendations on hand hygiene, dress code, and cleaning of equipment as recommended nationally. These measures are also in full implementation within the inpatient ward and theatre complex used. Regular monitoring of compliance within the hospital is performed by assessors independent to the SNBPIS. No peri-operative bacterial infections occurred during the period 2022/23.

Child Protection

Child protection level 1 LearnPro was completed by all staff.

Child Protection level 2, risk assessment, maltreatment in infants LearnPro was completed by Prof Hart & Mr Hems.

Safe Transfusion Practice for Paediatrics completed by Prof Hart.

3.6 Person centred

Patient Information

Parents are directed to the service website which contains information on obstetric brachial plexus injury.

Patient Satisfaction Survey

A patient satisfaction survey was carried out in 2021/22 (s*ee Section 4: Quality and Service Improvement in last year's report).*

An electronic version of the Satisfaction Survey form has been set up by the service administrator to allow for easier and ongoing feedback from patients, this will be available on the service website and highlighted to patients in the near future (*see the Administration section of this report*).

Young Adult Clinic

Patients seen in the children's obstetric brachial plexus clinic often require ongoing review upon reaching the age of sixteen. It was felt inappropriate to continue seeing these patients in the children's clinics, therefore a clinic for young adults was created, first held in April 2011. A robust pathway is therefore in place for patients to transition from child to adult care.

The young adult clinic is held twice per year at the New Victoria Hospital, Glasgow, which is the same location as the adult brachial plexus clinic. The clinical nurse specialist, occupational therapist and physiotherapist from the adult service are contributing. Many appointments are now carried out via video using the Near Me/Attend Anywhere system.

Adults with problems resulting from an OBPI are also referred to the service and are usually seen first at the young adult clinic.

4. Quality and Service Improvement

Educational talks with referring specialties, care providers, and professional groups within and out-with NHS GG&C

During the 2022/23 period brachial plexus injury (adult & obstetric) has been taught to medical students, occupational therapy students, general plastic and orthopaedic surgeons and neurophysiology trainees. (*Also see Appendices*)

Physiotherapy Report

Role of Physiotherapy

- Attend consultant and therapy led clinics.
- Assess new babies/children referred to physiotherapy with concerns of OBPP. Over the past year 3 of the new referrals to the service that have been seen in physiotherapy for their initial assessment have not required a consultant clinic appointment as they have resolved.
- Liaise with physiotherapists across Scotland and Northern Ireland regarding children with OBPP to feedback on clinic appointments and offer advice to local therapy teams.
- Promoting early intervention of babies born with OBPP by ensuring early referral to physiotherapy from the maternity hospitals. This is also coordinated through the service administrator who ensures all new referrals are also emailed to physiotherapy.
- Continue to educate junior physiotherapy staff and students in the role of physiotherapy in OBPP.

Over the past year there have been some staffing changes within physiotherapy and as a result Susan Leiper, highly specialist paediatric physiotherapist has been working in conjunction with Heather Farish, Team Lead Paediatric Physiotherapist. Susan has been attending therapy and consultant clinics with Heather to gain an understanding of the service and how this patient group is managed. This ensures that all clinics can be covered by physiotherapy during periods of leave as well as passing on knowledge of the service to another physiotherapist within the musculoskeletal physiotherapy service at RHC, hence ensuring succession planning.

Patient Numbers

The following table shows the patient numbers seen by physiotherapy during the year 2022/2023:

Numbers of Patients Seen by Physiotherapy				
		2022/23	2021/22	2020/21
Consultant Clinic	New	12	14	15
	Return	32	54	26
Physiotherapy	New	9	12	9
	Return	16	10	11
Therapy Clinic	New	0	0	0
	Return	25	31	24

Paediatric Occupational Therapy

Occupational Therapy Report for the OBPI service

Nicola Hart (Clinical Specialist Occupational Therapist) has continued to perform the requirements of the Obstetric Brachial Plexus Injury specialist post, as outlined in previous annual reports.

Service developments

Consultant Clinics

The consultant-led clinic (CLC) has changed location to Clinic 12/Rehab Hub in the RHC/QEUH in line with the therapy-led clinic (TLC). This environment is more appropriate for assessing and providing therapy for children with an OBPI, and provides for a relaxed multidisciplinary approach. Discussion will occur at the beginning of the clinic to clarify which patients are to be seen by the therapists and/or consultants. If a patient/family requires to be seen by an individual therapist then the service has access to another clinic room. This then means that the family are being seen by the appropriate therapist/consultant and avoids additional trips to the outpatient service.

Therapy Clinics

The therapy-led clinic continues to have collaborative input from Physiotherapy, Occupational Therapy and Clinical Psychology. The clinic provides an excellent opportunity for AHP and medical students to attend and observe multidisciplinary working. All therapists engage with the patient and families to offer their own expertise and provide advice. The Occupational Therapist will carry out the Brachial Plexus Outcome Measure (BPOM), which is universally used in line with other services in the UK and Europe. This provides an initial basis for discussion with the patient/families and appropriate measurements of the affected upper limb can be completed and uploaded onto the patient's portal notes. If there are changes in the patient's range of movement then these are discussed further in line with how it may affect their participation in activities of daily living. Due to the smooth and collaborative running of the therapy-led clinic the Occupational Therapist is able to provide universal and targeted OT intervention in this setting.

Other Duties

Continued liaison with community occupational therapists throughout Scotland and Northern Ireland, pre and post outpatient appointments where deemed appropriate. Follow-on communication with nursery, primary and secondary schools either by myself, or via the local occupational therapists, providing strategies and support. Signposting families to the Erb's Palsy Group/website for ongoing support/advice and resources.

International Collaboration

The International Collaborative Group continues to meet twice a year. This meeting provides a basis for sharing of knowledge, and an opportunity for therapists to share best practise. The next meeting is in Stockholm in September. I have been working together with therapists in Leeds and London to compile therapist competencies and plan to share this with the rest of the group. Please refer to the agenda for the next meeting in September (*in Appendix*).

Therapy-Led Clinic (TLC)

The therapy led clinic continues to run well. This clinic allows longer appointment times for additional assessment/management strategies to be discussed with families. It also allows joint working between physiotherapy, occupational therapy and psychology ensuring that families can access all services within the one appointment.

Patients Appointed to the Therapy-Led Clinic (TLC) by Health Board							*% Population of Scotland & N Ireland*	*Actual Population of Scotland & N Ireland**
	2022/23	% of total	2021/22	% of total	2020/21	% of total		
Ayrshire and Arran	[redacted]	*3.6*	**0**	*0.0*	**0**	*0.0*	*5.0*	*367,990*
Borders	**0**	*0.0*	**0**	*0.0*	[redacted]	*3.2*	*1.6*	*115,240*
Dumfries and Galloway	[redacted]	*3.6*	[redacted]	*5.4*	[redacted]	*3.2*	*2.0*	*148,290*
Fife	**0**	*0.0*	**0**	*0.0*	[redacted]	*3.2*	*5.1*	*374,130*
Forth Valley	[redacted]	*3.6*	[redacted]	*5.4*	[redacted]	*6.5*	*4.2*	*305,930*
Grampian	[redacted]	*3.6*	[redacted]	*8.1*	**0**	*0.0*	*8.0*	*585,550*
GG&CHB	**13**	*46.4*	**19**	*51.4*	**16**	*51.6*	*16.1*	*1,185,240*
Highland	**0**	*0.0*	**0**	*0.0*	[redacted]	*3.2*	*4.4*	*320,860*
Lanarkshire	[redacted]	*10.7*	[redacted]	*5.4*	[redacted]	*6.5*	*9.0*	*661,960*
Lothian	[redacted]	*10.7*	[redacted]	*10.8*	[redacted]	*12.9*	*12.4*	*912,490*
Orkney	**0**	*0.0*	**0**	*0.0*	**0**	*0.0*	*0.3*	*22,400*
Shetland	[redacted]	*3.6*	**0**	*0.0*	**0**	*0.0*	*0.3*	*22,870*
Tayside	**0**	*0.0*	**0**	*0.0*	[redacted]	*3.2*	*5.7*	*416,550*
Western Isles	**0**	*0.0*	**0**	*0.0*	**0**	*0.0*	*0.4*	*26,500*
England	**0**	*0.0*	**0**	*0.0*	**0**	*0.0*	*0.0*	-
Northern Ireland	[redacted]	*14.3*	[redacted]	*13.5*	[redacted]	*6.5*	*25.7*	*1,895,510*
Total:	**28**	*100.0*	**37**	*100.0*	**31**	*100.0*	*100*	*7,361,510*

**Sources: 2020 mid-year estimates. www.nrscotland.gov.uk & www.nisra.gov.uk . Patients from England are not regularly seen at this clinic.*

Attendance at Therapy-Led Clinic (by Age)			
	2022/23	2021/22	2020/21
Under 5 years	[redacted]	15	11
5 to 10 years	7	12	8
10 to 16 years	16	10	12
Did not attend	8	7	[redacted]

Clinical Psychology

Dr Helen Lowther, Principal Clinical Psychologist

Clinical Psychology has provided 0.2 WTE (one day per week) NSD funded resource dedicated to and ring-fenced for the Obstetric Brachial Plexus Injury since the service began in July 2018. Planning for the Clinical Psychologist's role in the service is outlined in the Annual Report 2017-18.

Over the past 12 months, the focus of the service delivery has continued to be a strong MDT approach, offering consultation and brief, psychoeducation within the clinic setting. The Psychologist has continued to work within the MDT, and has carried out targeted interventions, alongside preventative, early intervention work within the Consultant-led and Therapy-led clinics. Service delivery has primarily been face-to-face, however the ability to use VC technology has continued to benefit this patient population, allowing some interventions to occur with patients based in Northern Ireland (for example supporting preparation for surgery). As such, there is still a significant benefit to having VC technology as an option; to enable geographical equity when accessing Specialist Psychology provision, rather than referring to local Psychology services.

Quantitative Data

Patients seen by Clinical Psychology at either the consultant-led or therapy-led clinic April 2022 – March 2023:-

Patients Seen by Psychology at CLC or TLC			
	2022/23	2021/22	2020/21
Under 5 years of age	17	26	18
6 to 10 years of age	17	16	11
11 to 16 years of age	19	11	12

There have also been 31 one-to-one Psychology appointments offered. The following table shows the geographical spread of these sessions:-

Health Board	No of patients	No of sessions
NHS Greater Glasgow & Clyde	[redacted]	12
NHS Ayrshire	[redacted]	8
Northern Ireland	[redacted]	7
NHS Lothian	[redacted]	[redacted]
NHS Orkney	[redacted]	[redacted]
NHS Dumfries & Galloway	[redacted]	[redacted]

Current Work

MDT Clinics

The clinic location has been moved to a different area of the hospital, where the therapists have access to a larger room in order to take the lead on assessing the patients who do not require consultation around surgery. This has helped to highlight the therapeutic role as hugely significant, and a priority when living with OBPI. Psychology presence at the OBPI clinics has continued to be important in terms of providing early intervention, brief targeted psychoeducation to patients and families. It has also allowed families to meet the Psychologist and gather information about this aspect of the service, before being referred for one to one input.

Healthcare Related Quality of Life

Utilising a standardised questionnaire within the clinic setting would allow the collection of data focussed around psychosocial factors. This would facilitate screening for distress, but would also allow the collection of a data set that may be helpful in the future for audit or research purposes. Utilising a quality of life measure, such as the Pediatric Quality of Life Inventory (PEDSQL) would allow health-related quality of life to be measured. This measure has been suggested by Pondaag et al. in their abstract (yet to be fully published), in order for all specialist services supporting children and adolescents with OBPI standardise their data-set to allow for continuity across services. The Psychologist is currently in discussion with the wider team about rolling out of regular, standardised screening at clinics but foresees that this will be an imminent development.

Future Work

- A group of pre-teen patients were invited to a pilot group to target education around their diagnosis, treatment adherence and activities of daily living. Unfortunately only one patient opted into the group. As a therapy team, we are keen to think about other ways in which this patient group can be supported, and we had thought about compiling a brochure written by the MDT to provide information and support around treatment adherence and education around this developmental stage.

- Increasing the awareness of psychological needs at particular points such as transition to the adolescent service. Within the current resource, it would be useful to scope out if it would be beneficial to provide information to the teenagers and families before they transition, to help them emotionally prepare for this step, and to ensure they are well informed about taking this step. It is commonplace in the RHC, Glasgow to support adolescents around transition and it important to ensure this population is supported.

Administration

Overview

Administrative duties for both the adult and children's services are provided by the service administrator based at the New Victoria Hospital in Glasgow, with access to offices and clinics at the Royal Hospital for Children and the Queen Elizabeth University Hospital.

The service administrator's main duties include: setting up clinics on the NHS TrakCare system; receiving and processing new referrals to the service; adding patients to the in-house MS Access database; creating an electronic record for new patients on the TrakCare system and appointing to the appropriate clinic as required; monitoring clinic attendance and booking review appointments as necessary; liaising with all members of the brachial teams in relation to patient reviews; gathering and recording clinical and attendance data for each patient for the database; providing monthly activity reports to NHS National Services Division (NSD); updating, monitoring and improving the service website; providing administrative support to the department of Trauma and Orthopaedics as required; collating year-end activity data for annual service reports; all other day-to-day ancillary administrative duties.

Clinics

Adult OBPI clinics, for patients over sixteen years of age, are run by the adult service normally twice per year at the New Victoria Hospital (*see the adult service report for activity levels*). Monthly adult BPI clinics are run at the same location. Children's OBPI clinics take place at the Royal Hospital for Children in Glasgow, usually once per month. Outreach clinics in Aberdeen encompassing both the adult and children's services are organised by the service administrator up to twice per year.

Near Me/Attend Anywhere Virtual Appointments

Children's brachial plexus clinics continue to combine virtual video or telephone consultations alongside face-to-face consultations. Virtual reviews can be beneficial for families who would normally travel long distances to attend the clinic in Glasgow.

Requirements for face-to-face versus virtual appointments are closely monitored by the service administrator and clinic templates are adjusted accordingly. During the year 2022/23 82% of patients were seen face-to-face. 18% were seen virtually with the vast majority of these being seen by video. Only one patient required a telephone review to plan surgical treatment.

Virtual v Face-to-face Appointments			
	2022/23	2021/22	2020/21
% Face-to-face	82	67	
% Telephone	[redacted]	[redacted]	
% Video	17	32	

The benefits of accessing virtual consultation systems has been highlighted by both patients and staff, particularly for patients in outlying areas and in Northern Ireland. Virtual appointments will continue to be offered alongside face-to-face appointments in the longer term.

Service Website (www.brachialplexus.scot.nhs.uk)

The service website is a useful resource for clinicians and patients alike and is regularly monitored and updated by the service administrator. Patients can access various resources via the website including general information on the nature and treatment of brachial plexus injury, links to outside resources and support groups, and contact details for the service. Clinicians use the website to access referral forms and guidelines, and to contact the service.

Database

The children's service database is maintained by both the administrator and the lead consultant. It is under constant revision, and is a primary resource in facilitating reporting and service developments. Data from all clinics is gathered and recorded both in the electronic patient record (EPR) and on the service database for future clinical and reporting purposes. The administrator endeavours to gather this data within seventy-two hours of clinic attendance thus keeping available clinical information as current as possible.

Electronic Patient Record (EPR)

Clinical data is recorded electronically on the clinical portal via electronic forms. These forms were custom-made for the service and went live in September 2020. The service was therefore able to withdraw the previous paper assessment sheets.

The result has been quicker and more accurate data gathering for the service, enhanced security, less pressure on staff resources and the elimination of the need to manually scan paperwork into the EPR. Clinicians can now input the data at source (i.e. during a clinic appointment) into the patient's electronic record. This data is then retrieved remotely by the service administrator.

Developments – Electronic Patient Satisfaction Survey Form

Patient satisfaction surveys are carried out every two years (*see the 2021/22 report*). Obtaining patient feedback is a challenge particularly for the children's service with families living as far afield as Northern Ireland and having limited time to fill out paper forms while at the clinic. With this in mind the service administrator has created an electronic survey form using Microsoft Forms. The electronic form is in development, but once finalised it can be made available all year round via the service website and also highlighted to patients via appointment letters and at clinic appointments.

Shortened URL: https://forms.office.com/e/FA9AHtBTpr

5. Governance and Regulation

5.1 Clinical Governance

The brachial plexus team holds regular multidisciplinary meetings before or after clinics to discuss developments and any problems with the service.

Local governance reports for the Paediatric Orthopaedic Service are submitted monthly; incidents are reported, investigated and reviewed. Information is then passed to the quarterly Paediatric Orthopaedic GG&C Clinical Governance meetings and relevant information then passed to the GG&C groups attended by senior management.

No significant governance issues have been identified through these mechanisms during 2022/23.

5.2 Risks and Issues

No adverse events arose during 2022/23.

5.3 Adverse Events

The service uses existing Greater Glasgow & Clyde thresholds for instigation of adverse event reporting and investigation, plus online reporting systems.

No adverse events have been reported to occur during the period 2022/23.

5.4 Complaints and Compliments

The GG&C policy on complaint handling is followed. There have been complaints relating to the Children's Brachial Plexus Injury Service during 2022/23. Compliments are directed specifically to the service providers.

5.5 Equality

The Scottish National Brachial Plexus Injury Service complies with NHS rules on Equality & Diversity in the appointment of staff. Similar care is taken in providing equal care standards to patients and relatives. Appropriate use of interpreters and awareness of cultural, ethnic and religious practices in regard to examination and interaction with parents is facilitated.

Staff have completed required LearnPro modules, as set by NHS GG&C (Module 004: Equality, Diversity & Human Rights).

6. Financial reporting and workforce

NHS Greater Glasgow & Clyde
Women & Children's Directorate
Obstetric Brachial Plexus
Twelve Month Report: 22/23

Actual Activity	3
Projected Activity	3
Contract Activity	10
Contract Type	C&V

	Full Year Funded Value Of Agreement £	Twelve Month Funded Value Of Agreement £	Actual Outturn As At 31st March 2023 £	Variance £	Projected Full Year Outturn £
FIXED					
Nursing/PAM	83,491	83,491	87,139	-3,648	87,139
Medical	12,301	12,301	12,480	-179	12,480
Other direct	53,877	53,877	56,231	-2,354	56,231
Indirect	17,696	17,696	17,914	-218	17,914
Capital charges	58	58	58	0	58
Total Fixed	167,423	167,423	173,822	-6,399	173,822
VARIABLE					
Pharmacy	5,653	5,653	1,732	3,921	1,732
Travel & Training	2,368	2,368	726	1,642	726
Total Variable	8,021	8,021	2,458	5,563	2,458
TOTAL	**175,444**	**175,444**	**176,280**	**-836**	**176,280**

Summary

Fixed	173,822	173,822
Variable (3 Cases)	2,458	2,458
Total	176,280	176,280
Less		
Variable Non Contract (2 Cases)	1,639	1,639
Fixed Costs (2 Cases)	33,528	33,528
Final Total Owed By NSD	**141,113**	**141,113**

7. Audit & Clinical Research / publications

Tim Hems

Research

Peer reviewer for Erb's palsy for BMJ Best Practice, July 2022.
Editor, Journal of Hand Surgery, European Volume.

Presentations

3rd UK-Scandinavian BPBI workshop, Helsinki, Finland, May 2022.

Elbow flexion and forearm contractures in obstetric brachial plexus injury: Severity and progression.

Obstetric brachial plexus injury in Scotland: Incidence over 15 years.

Narakas International Symposium on Brachial Plexus Surgery, Berlin, May 2022.

Elbow flexion and forearm contractures in obstetric brachial plexus injury: Severity and progression.

Obstetric brachial plexus injury in Scotland: Incidence over 15 years.

Nerve repair for Obstetric Brachial Plexus Injury: Extended upper lesion. Discussion on evidence and indications.

Combined nerve transfer and grafting for shoulder reconstruction after traumatic injury to the supraclavicular brachial plexus.

Congress of the International Federation of Societies for Surgery of the Hand, London, June 2022.

Organised and chaired session on Paediatric Plexus.

Lecture – Obstetric Brachial Plexus Injury: Introduction and natural history.

Co-chaired sessions on traumatic brachial plexus injury.

Reviewed abstracts submitted for the congress.

Presented free papers:-

> Elbow flexion and forearm contractures in obstetric brachial plexus injury: Severity and progression.

Publications

Hems T. Natural history of elbow flexion and forearm rotation contractures in obstetric brachial plexus injury. Journal of Hand Surgery (European Volume). 2022, 47: 1121-7.

This study was based on data recorded during the long term follow-up of OBPI cases seen in the service over the last 25 years.

Hems T, Todd-Hems A. Obstetric brachial plexus injury in Scotland: Incidence over 16 years. Short report, Journal of Hand Surgery (European Volume). 2023, published online.

8. Looking ahead

Staffing and Activity Levels

During the year Claire Murnaghan, Consultant Paediatric Orthopaedic Surgeon, left the service. We would like to thank Claire for her contribution to the service over the last 14 years. Tim Hems and Professor Andrew Hart continue to provide the medical and surgical part of the service. The multidisciplinary design of the service has been strengthened with greater input from physiotherapy, occupational therapy, and clinical psychology for outpatient reviews. Staffing will need to be kept under careful review over the next few years taking into account activity levels.

Recent review of activity levels since the service was designated in 2006 has shown a fall in the serious cases of obstetric brachial plexus injury (OBPI) causing long term deficit in children born in Scotland, particularly during the last 5 years. There are consequently less children requiring early surgical intervention. This reduction appears to be a result of successful developments in obstetric practice, with protocols and simulation training for management of shoulder dystocia probably being of particular significance. There has also been a fall in referrals of new cases from Northern Ireland. However, it is notable that referrals of older children, who were born outside the UK, from immigrant families have continued. These cases will need longer term follow-up. The reduction in new-born cases has implications for future provision of the service, as it may raise difficulties with acquisition of experience of OBPI for new staff. It is likely that a system of integration of the service with other units in the UK with MDT discussions between centres being undertaken. Application of modern video conferencing should facilitate such a development.

National and International Interactions

The unit continues to interact regularly on a national and international basis. During 2022/23 Tim Hems attended and contributed to meetings in Helsinki and Berlin. He also organised a session on OBPI at the Congress of the International Federation of Societies for Surgery of the Hand, London, June 2022.

Looking forward members of the team plan to attend the next UK-Scandinavian meeting in Leeds and International Collaborative Therapists Group meeting in Stockholm.

Appendices

Teaching and Education

Tim Hems

Teaching 2022-23

9th September 2022	"Pathophysiology of nerve injury". British Society for Surgery of the Hand, Instructional course in hand surgery, Nerve Injury, Compression and Brachial Plexus. Manchester.
28th October 2022	Brachial plexus: Anatomy and Examination. Brachial Plexus Injuries: Investigation and Management. Obstetric brachial plexus injury. MCh Orth course, Dundee.
1st November 2022	Traumatic Brachial Plexus Injuries: Introduction and The Role of Surgery. Brachial plexus case presentations. Scottish National Brachial Plexus Injury Service virtual study day.
21st March 2023	Edinburgh Hand Surgery Course. "Principles of management of peripheral nerve injury". "Principles of tendon transfer". Small group teaching on clinical examination of upper limb neurology.

Continuing Medical Education

05/05/22 to 06/05/22	3rd UK-Scandinavian BPBI workshop, Helsinki, Finland. Live surgery demonstration. Presented two papers and one case for discussion.
19/05/22 to 21/05/22	Narakas Berlin 2022. 22ND INTERNATIONAL SYMPOSIUM ON BRACHIAL PLEXUS SURGERY.
060/6/22 to 10/06/22	Congress of the International Federation of Societies for Surgery of the Hand, London.

Preliminary schedule IBPRC-meeting in Stockholm, September 2023

THURSDAY – Birth related plexus injuries

9.00 Welcome and short presentations of each clinic and present ongoing research projects (5-10 min/clinic)

10.00 AHA-plex and CHEQ - Lena Krumlinde-Sundholm, Associate Professor at the Karolinska Institutet, Department of Woman's and Children's Health, Neuropediatric unit, Stockholm.

11.00 Swedish Fika

11.30 (*" Provide an outline of her role with this patient group" - Helen Lowther, clinical psychologist, Scotland)*

12.00 Rotation and development of the glenohumeral joint in brachial plexus birth palsy - Krister Jönsson

12.30 Lunch

13.30 Constraint-induced Movement Therapy (CIMT) - Tamsyn Brown, Senior Occupational Therapist Ireland

14.00 Swedish national assessment manual- for measuring motion of shoulder - My Jallinder physiotherapist and Anna Källströmer physiotherapist, Stockholm and Umeå

14.30 Workshop, Assessment

Mallet score, skatta efter filmer (Anna)

15.30 Swedish Fika

16.00 Workshops

- Patient information

FREDAG – Traumatic plexus injuries

8.30 Welcome

8.45 National quality register for hand surgery (HAKIR)- Marianne Arner, Associated professor and founder of HAKIR.

9.15 Return to work following TBPI + the initial results of the James Lind alliance priority setting partnership in TBPI - Hazel Brown clinical specialist physiotherapist

- Discussion "return to work", everybody

10.15 Update on COMBINE - Caroline Miller PhD physiotherapist (Link)

10.30 Fika

11.00 National survey study and Focus group discussion (och NHV) - Helena Millkvist, occupational therapist, PhD student in Umeå, Linda Evertsson occupational therapist/ PhD student and Stina Sjerén physiotherapist

12.00 Advancing diagnostics, outcome measures and rehabilitation in patients suffering from brachial plexus injury using intertial motion sensors and surface EMG Annas Källströmer Physiotherapist

12.30 Lunch

13.30 Workshops / tips and tricks where everyone contributes;

- Patient support groups, "Morning coffee" etc.
- Patient information

- Information to colleagues or other care givers
- Pain; treatments
- ”Life hacks”: News
- Carbonhand, Saebo glove

14.30 Next IBPRC-meeting

15.00 Tour at department of hand surgery at Södersjukhuset 15.30

Hejdå!