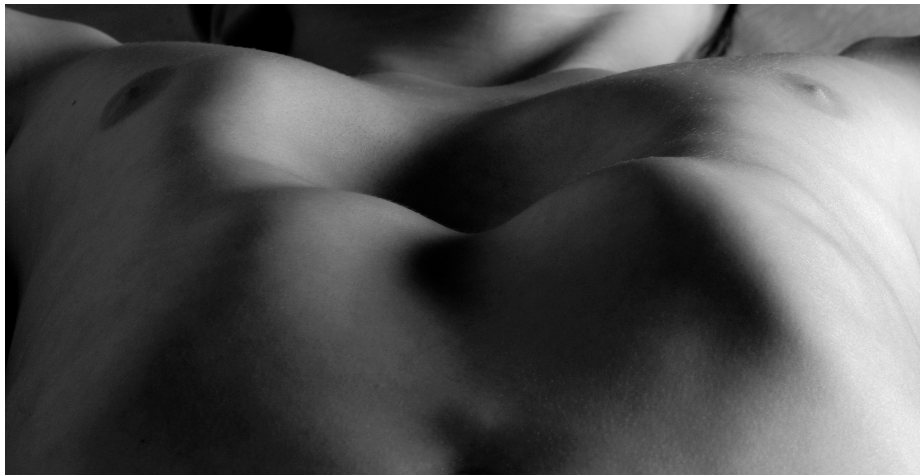




THE PAEDIATRIC & ADOLESCENT
ANTERIOR CHEST WALL DEFORMITY SERVICE
ANNUAL REPORT

1st October 2016 – 31st July 2017



Royal Hospital for Children, Glasgow

“The right option for the right patient”

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The completed Annual Report should be sent electronically by 31 May to:

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Section A Service

A1 Aim / Purpose / Mission Statement / Date of Designation

- The **Aim** of the service is to provide a comprehensive multidisciplinary service to all children and adolescents in Scotland with anterior chest wall deformities.
- The **Mission Statement** is “The right option for the right patient”
- The service received National Service designation on **1st October 2016**

A2 Patient Group and Pathway

As a result of the withdrawal of the Paediatric Cardiothoracic Service from this work some years ago, referrals to the Lead Clinician increased and necessitated the development of a dedicated clinic for patients with anterior chest wall deformities. From mid-2010, the Orthotic service assisted with the development of a bespoke dynamic brace for Pectus Carinatum. As a result, the number of such referrals continued to rise and the need for a multidisciplinary clinic became apparent. Such a clinic was impossible without national service designation and the support of a number of individuals and services.

The national service receives referrals from General Practitioners and Specialists, the latter usually from Paediatric Medicine, Cardiothoracic Surgery, Orthopaedics and Paediatric Surgeons from other Scottish Units. All referrals are vetted and patients are reviewed in clinic, though there are few treatment options available for those under 6 years. Many patients develop their chest wall deformity later, typically as they transition from Primary to Secondary education.

There are two main treatment pathways in the service. The first is for Pectus Excavatum patients and is a wait and see until in their teens at which time surgery can be offered for suitable patients. The Nuss operation (thoracoscopically assisted) is our operation of choice for such patients. In selected younger patients a Vacuum Bell may be considered though this is not in the Service Level Agreement.

The second pathway is for Pectus Carinatum patients and is focused on Dynamic Bracing for those suitable (>6 years old, sufficiently compliant chest wall and suitable motivated patient). The brace is worn for 18 plus hours each day in the treatment phase and this is reduced once correction is achieved (the maintenance phase). Those who fail, who are not suitable for bracing, or who opt for surgery by choice are considered for surgical correction of their Pectus Carinatum with a modified Ravitch Operation.

A3 Service Components

The service is made up of a number of staff groups. The core group consist of:

- 2 Consultant Paediatric Surgeons
- 2 Paediatric Orthotists
- 1 Paediatric Physiotherapist

Other services essential to the success include:

- Paediatric Clinical Psychology
- Paediatric Anaesthetic & Theatre nursing team
- Inpatient Paediatric Nursing
- Paediatric Pain Team
- Medical Illustration
- Paediatric Radiology

- Paediatric Cardiology
- Paediatric Respiratory Physiology Laboratory

Section B Quality Domains (HEAT)

B1 Health Improvement

As anterior chest wall deformities rarely have clinical indications for surgical correction, it is essential that we continue to ensure all surgical interventions are safe and that surgery for cosmetic and body image improves quality of life for those undergoing it.

a) Measures of health improvement in patients

Our dedicated Physiotherapist will be assessing the impact of treatment (surgical and bracing) by utilising the PedsQL™ Paediatric Quality of Life Inventory. Appendix 1 & 2 show the ones we will be using, one for the teenagers and one for the parents.

B2 Efficiency

a) Workforce and Service Interdependencies

All the components of the service are outlined a mind map format in Appendix 3.

b) Workload

Most patients attending the multidisciplinary chest wall clinic have either Pectus Carinatum or Pectus Excavatum. A minority have other or complex chest wall deformities. This is demonstrated graphically for the database of patients extending back to 1999 in Figure 1. The service workload has been increasing rapidly since Dynamic Bracing was first offered at the Royal Hospital for Sick Children in mid 2010. This historical outpatient and surgical workload pre-national service designation is represented in Figures 2 & 3. The workload for the 4 main components of the service (Surgery, Outpatients, Orthotics, Physiotherapy) since 1st October 2016 is shown in Tables 1 & 2.

Figure 1 Prevalence of chest wall deformity subgroups

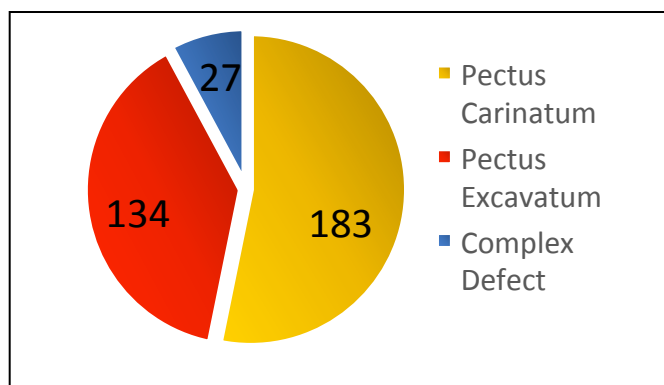


Figure 2 Outpatient activity 2010-2016

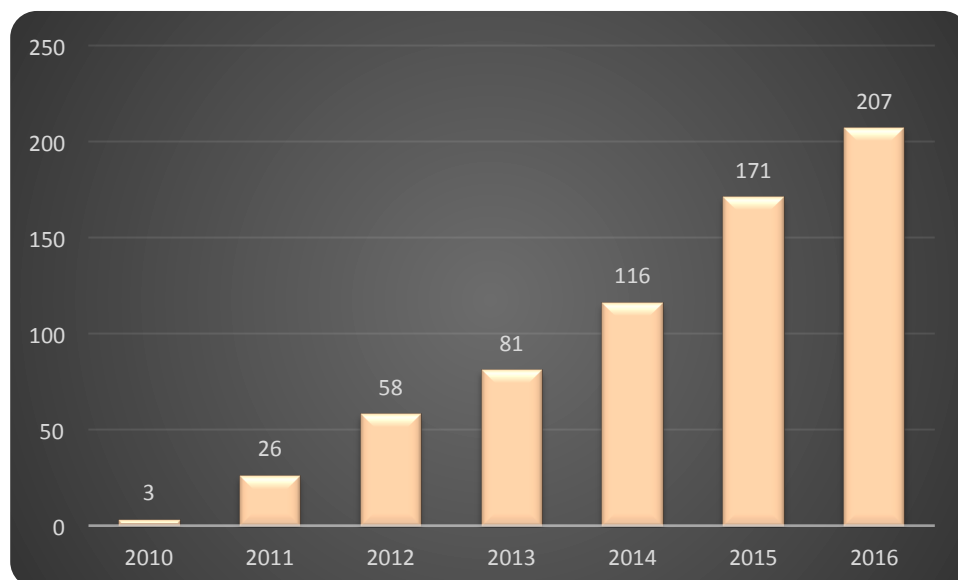


Figure 3 Surgical Chest Wall Workload 1999-2016

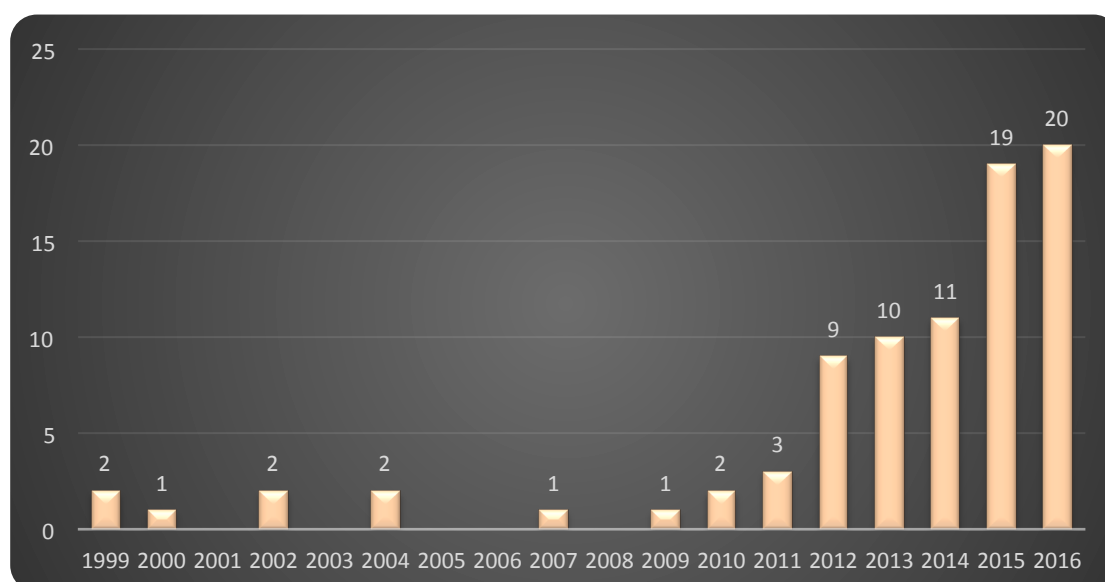


Table 1 Surgical workload 1-10-16 to 28-7-17

Total Operations	Thoroscopically assisted Nuss operation	Modified Ravitch operation	Removal metal	Surgery for complications
22	13	3	5	1

Table 2 Outpatient workload 1-10-16 to 28-7-17

Total Number	Non- GG&C Health Board	Physio review (from May 2017)	Orthotics review	Clinical Photograph	Psychology review
228	128	21	75	120	0

c) *Finances*

**NHS Greater Glasgow & Clyde
Women & Children's Directorate
Chest Wall Service**

Twelve Month Report: 2016/17

Activity:	
Actual activity in the six month contract period	6
Target activity in the six month contract period	6
Activity variance	nil

	6 Months Funded Value Oct 2016 to March 2017 £	Actual Outturn As At 31st March 2017 £	Variance £
<u>FIXED</u>			
Medical	19,542	19,542	0
Nursing	18,629	18,629	0
AHP's	80,654	80,654	0
Facilities	38	38	0
A&C	2,905	2,905	0
<u>Total Fixed</u>	<u>121,767</u>	<u>121,767</u>	<u>0</u>
<u>VARIABLE</u>			
Drugs	2,290	2,748	-458
CSSD / Diagnostics	300	359	-60
Surgical Sundries	15,661	18,794	-3,132
Other	8,054	9,664	-1,611
<u>Total Variable</u>	<u>26,304</u>	<u>31,565</u>	<u>-5,261</u>
<u>Indirect</u>			
Imaging	2,104	2,104	0
Labs	138	138	0
<u>Total Indirect</u>	<u>2,242</u>	<u>2,242</u>	<u>0</u>
<u>Overheads</u>			
	22,548	22,548	0
<u>Total Overheads</u>	<u>22,548</u>	<u>22,548</u>	<u>0</u>
TOTAL	172,861	178,122	-5,261
Sternal Saw		£7,244	
Final Total		£185,366	

Note

Contract Only Funded From 1st October 2016.

B3 Access to Treatment

a) Measures of ease of access to service

The service is relatively new and has not been actively promoted to date. So far, word of mouth and personal communications with colleagues in the field have been the main promotions. Medical Appointments are channelling all anterior chest wall referrals to the service.

b) Review of Health Board patient distribution

Data on referrals by Health Board are show in Figures 4 & 5 below.

Figure 4 Health Board distribution for complete database

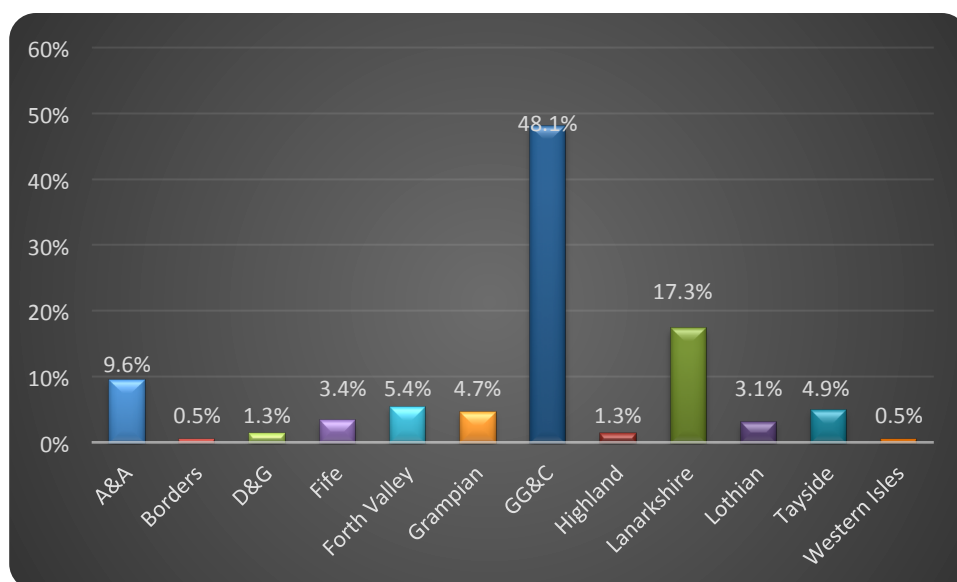
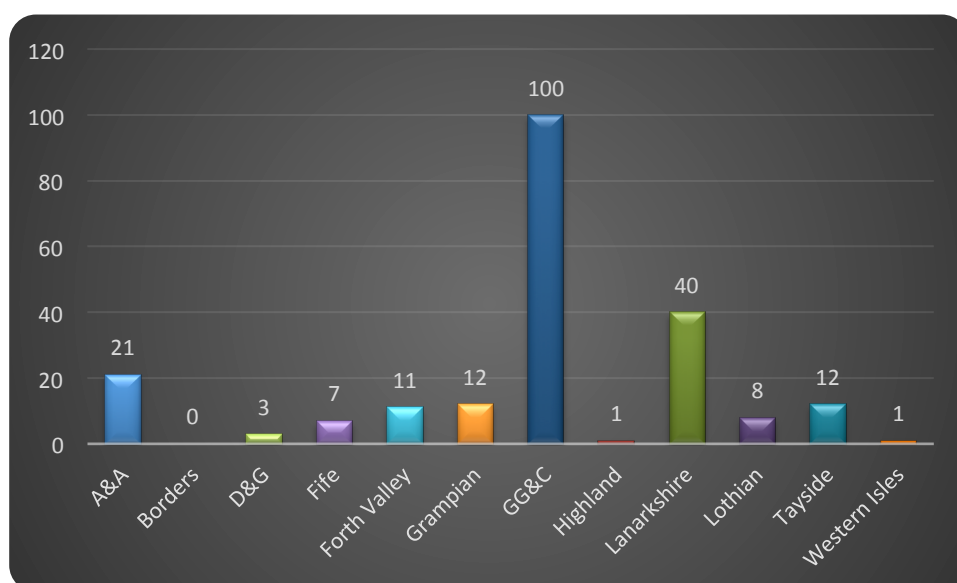


Figure 5 Number by Health Board from 1/10/16



B4 Treatment, effectiveness and safety

a) Chest Wall Database

Our comprehensive Microsoft Access database puts us in a fantastic position to analyse our workload and results and is a powerful audit tool.

Agreed recordable outcomes are listed in Table 3.

Table 3 Recordable outcomes for chest wall service

Quality Dimension	Data Indicator
Efficient	Number of referrals
	Number of patients assessed
	Number converted to bracing
	Number converted to surgery
	Type of surgery – Nuss - insertion
	Nuss - removal
	Modified Ravitch
	Occupied bed days
	Length of stay
	Breakdown of above activity by NHS Board
Timely	Waiting time from referral to first consultation
	Waiting time from referral to treatment starting (for bracing)
Effective	Mortality less than 1%
	Number of complications – bleeding following removal of Nuss bar
Safe	Number of significant adverse events
	HAI outbreaks and notification of surveillance concerns
Equitable	Age of patient at referral
	Equity of referral and treatment across geographical locations
Person centred	Complaints less than 1%
	Pre and post intervention quality of life measures such as EuroQOL

b) KPIs

KPIs for this service have not yet been formally agreed. Appropriate measures of performance would include:

1. Waiting time for first review
2. Time from first review to fitting of brace for Pectus Carinatum patients
3. Success rate for Dynamic Bracing (as assessed by clinicians and patient)
4. Surgical complication rate and adverse incidents
5. Time to coming off Opiate analgesics following Pectus surgery
6. Success rate & patient satisfaction following Nuss surgery for Pectus Excavatum
7. Premature bar removal rate

c) Scottish Patient Safety Programme (SPSP)

The Royal Hospital for Children (RHC) is at the forefront of patient safety, the chest wall surgical team aim is to ensure delivery of safe high quality peri-operative care for all patients with pectus deformities. In line with SPSP

recommendations, RHC theatres use a standardised approach to patient safety ensuring surgical team briefing and surgical safety checklists are carried out prior to commencing and following any surgical procedure. These processes allow the team to ensure key equipment, personnel and resources are available prior to commencement of surgery (e.g. Sternal saw available in theatre and within our theatre complex support is available from the Scottish Paediatric Cardiac Surgery Service). As part of the surgical team debrief, each case is reviewed and any perceived improvements or risks are addressed. Improvements in ward staffing and training have allowed us to manage these patients in a ward setting rather than being transferred to Critical Care immediately post-operatively as was the case historically.

c) *Successes and Risk Register*

The core team attended the Chest Wall International Group International Congress in Florence in June. Donna McHugh presented a paper outlining our success to date with dynamic bracing and showed the attendance the “Glasgow Brace”. (Appendix 4) We also presented a poster at the joint BAPS/IPEG Congress in London in July 2017 outlining our service and results to date. (Appendix 5) As a result of these meetings, we will be hosting a team from Florence and from Newcastle in September, both of whom who are interested in exploring our bracing model.

Laura Baxter was awarded a Gold Medal by the Institute of Medical Illustrators for the photo on the cover of this document.



The main risk going forward is the difficulty coping with the outpatient workload.

f) *Adverse events & Complaints*

To date there have been no complaints. There was a question raised by an MSP on behalf of a patient about funding for a Vacuum Bell. This is a specialised kit that is used to treat milder Pectus Excavatum, particularly in younger patients. At present, this is not part of the National Service Level Agreement and must be purchased privately from the sole supplier in Germany (circa €500).

There have been no serious adverse events.

Section C Developments

C1 Service Developments

a) *3D scanning and milling proposal*

This is a very exciting development both for the Chest Wall Service and also for the Orthotics Department as a whole, as it has the potential to revolutionise orthosis production, patient satisfaction and departmental productivity, as well as providing a much-enhanced environment by removing plaster of Paris from the environment.

3D scanning will allow us to monitor treatment in a non-invasive way and will hopefully provide positive feedback to patients as to progress, particularly for those undergoing Dynamic Bracing. It will also allow non-invasive objective assessment of Nuss surgery results without the need for irradiation.

b) *Introduction of thermal sensor into brace*

We have just started to insert thermal sensors into braces that continuously record temperature and whose data can be downloaded by Bluetooth technology. They will give us objective evidence of “wear time” for braces. This will assist us to better interpret results of bracing.

c) *Physiotherapy*

Physiotherapy input has been extremely beneficial since a dedicated Senior Physiotherapist joined the team on 1/5/17. Her presence in clinic means all new referrals have a physiotherapy assessment and a treatment plan instituted where appropriate. Peri-operatively, respiratory and post-surgery protocols have been developed to enhance recovery. Appendix 6 is the Physiotherapy In-Patient Pathway for Pectus Surgery and Appendix 7 shows the Pectus Surgery Recovery Protocol.

d) *Clinical Psychology*

As the service beds in, we will formalise the role for Clinical Psychology in supporting the service. The aim is to refer all future patients, due to be listed for surgery, for formal psychological assessment before being listed for surgery.

C2 Research Developments

a) *Joint collaboration with Strathclyde University Engineering*

We are working with Professor Terry Gourlay from the Engineering Department at Strathclyde University. There are many mutually positive areas we are exploring, including 3D modelling with a view to 3D printing Nuss bar template (or even bars) to optimally correct deformities, especially complex and asymmetrical ones. We are also exploring the biomechanics of the tissues to understand the stresses on the bars and how to minimise these.

C3 Information developments

a) *Website and patient information leaflet developments*

We need to develop a suitable library of information for patients and families to aid in decision-making re treatment options and potential benefits and risks. We would plan to have written, web based and social electronic media options.

Section D Issues going forward

D1 Agree appropriate KPIs for the service

D2 Budget for Clinical Psychology

D3 Deal with increasing pressure to achieve waiting times for new patients

D4 We need to agree a position on the use of the Vacuum Bell

D5 Develop website and appropriate information literature and social media platforms

ID#	_____
Date:	_____

PedsQL™

Paediatric Quality of Life Inventory

Version 4.0 - English (United Kingdom)

TEENAGER REPORT (ages 13-18)

INSTRUCTIONS

On the following page is a list of things that might be a problem for you.
Please tell us **how much of a problem** each one has been for you over the
PAST MONTH by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

Over the **PAST MONTH**, how much of a **problem** has this been for you...

ABOUT MY HEALTH AND ACTIVITIES (problems with...)	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard for me to walk more than a couple of streets (about 100 metres)	0	1	2	3	4
2. It is hard for me to run	0	1	2	3	4
3. It is hard for me to do sports activities or exercise	0	1	2	3	4
4. It is hard for me to lift heavy things	0	1	2	3	4
5. It is hard for me to have a bath or shower by myself	0	1	2	3	4
6. It is hard for me to do chores around the house	0	1	2	3	4
7. I have aches and pains	0	1	2	3	4
8. I feel tired	0	1	2	3	4

ABOUT MY FEELINGS (problems with...)	Never	Almost Never	Some-times	Often	Almost Always
1. I feel afraid or scared	0	1	2	3	4
2. I feel sad	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I have trouble sleeping	0	1	2	3	4
5. I worry about what will happen to me	0	1	2	3	4

HOW I GET ON WITH OTHERS (problems with...)	Never	Almost Never	Some-times	Often	Almost Always
1. I have trouble getting on with other teenagers	0	1	2	3	4
2. Other teenagers do not want to be my friend	0	1	2	3	4
3. Other teenagers tease me	0	1	2	3	4
4. I cannot do things that other teenagers my age can do	0	1	2	3	4
5. It is hard to keep up with other teenagers my age	0	1	2	3	4

ABOUT SCHOOL / COLLEGE (problems with...)	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard to pay attention in class	0	1	2	3	4
2. I forget things	0	1	2	3	4
3. I have trouble keeping up with my school / college work	0	1	2	3	4
4. I miss school / college because of not feeling well	0	1	2	3	4
5. I miss school / college to go to the doctor or hospital	0	1	2	3	4

ID# _____

Date: _____

PedsQLTM

Paediatric Quality of Life Inventory

Version 4.0 – English (United Kingdom)

PARENT REPORT for TEENAGERS (ages 13-18)

DIRECTIONS

On the following page is a list of things that might be a problem for **your teenager**.

Please tell us **how much of a problem** each one has been for **your teenager** during the **past ONE month** by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.

If you do not understand a question, please ask for help.

In the past **ONE month**, how much of a **problem** has your teenager had with ...

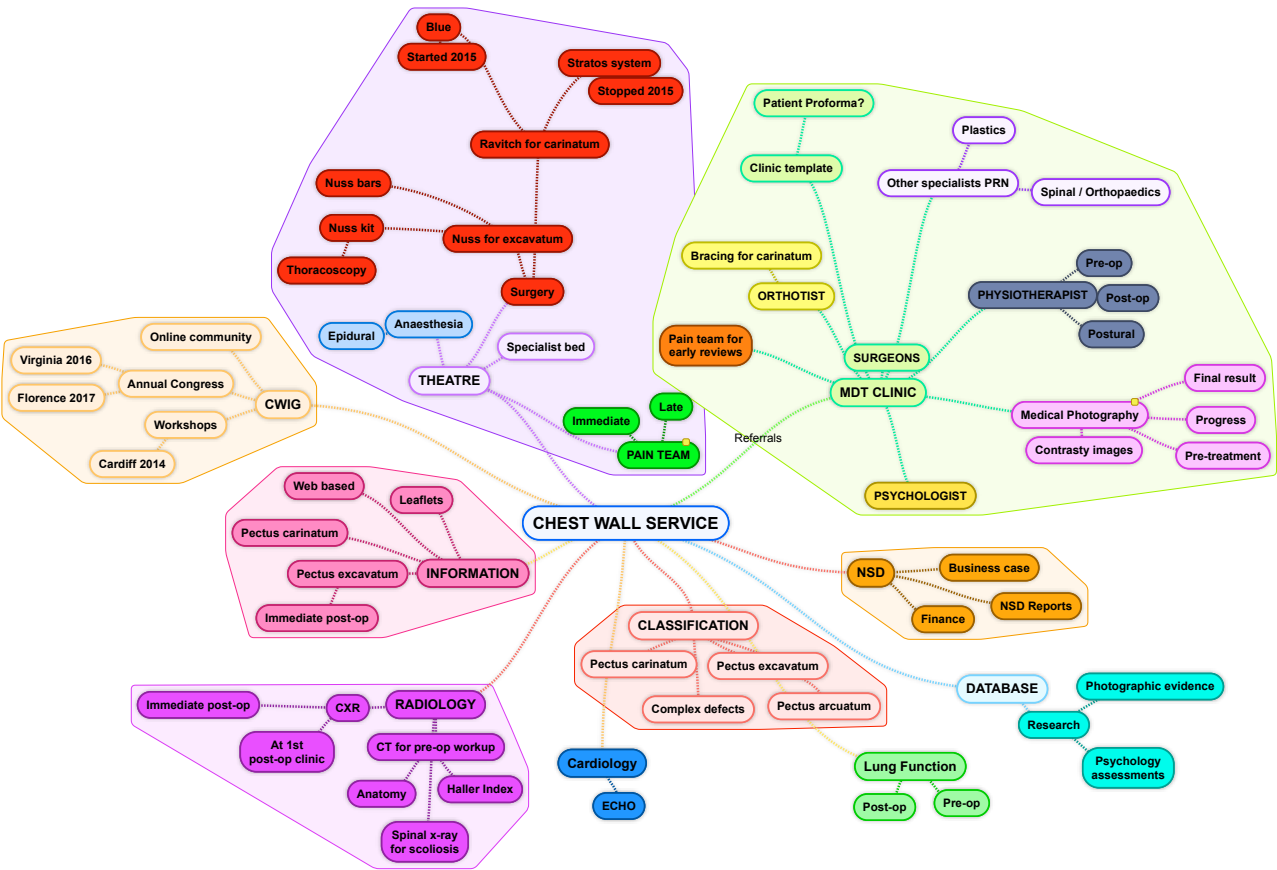
PHYSICAL FUNCTIONING (problems with...)	Never	Almost Never	Some- times	Often	Almost Always
1. Walking 100 metres	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activities or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having aches or pains	0	1	2	3	4
8. Feeling tired	0	1	2	3	4

EMOTIONAL FUNCTIONING (problems with...)	Never	Almost Never	Some- times	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4

SOCIAL FUNCTIONING (problems with...)	Never	Almost Never	Some- times	Often	Almost Always
1. Getting on with other teenagers	0	1	2	3	4
2. Other teenagers not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other teenagers	0	1	2	3	4
4. Not being able to do things that other teenagers his or her age can do	0	1	2	3	4
5. Keeping up with other teenagers	0	1	2	3	4

SCHOOL FUNCTIONING (problems with...)	Never	Almost Never	Some- times	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4
4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

Appendix 3



Analysis of the Orthotic Management of Pectus Carinatum with Dynamic Bracing at the Royal Hospital for Children, Glasgow, Scotland

18th CWIG Annual Meeting, Florence, June 14-16, 2017, Istituto degli Innocenti

Donna McHugh (Orthotist), Laura Andrews (Orthotist), Mr Carl Davis (General Surgeon), Mr James Andrews (General Surgeon), Royal Hospital for Children, Glasgow

A REVIEW OF CHEST WALL ANOMALIES IN SCOTLAND

The Glasgow Experience

S DAVIS, J ANDREWS, D McHUGH, C DAVIS.

Aim

A move from cardiothoracic to general surgeons performing surgery to correct chest wall anomalies in our institution has resulted in increased referrals. As the service has recently received national service designation (October 2016), this offered the opportunity to review experience to date.

Method

The authors interrogated a prospective local database of chest wall referrals to general paediatric surgery over an 18 year period between 1999-2016.

Results

344 persons were referred for assessment in the study period (81% male). 133 (39%) had pectus excavatum, 184 (53%) had pectus carinatum and 27 (8%) had a variety of complex defects (Figure 1). Numbers and severity of the defects for each condition is outlined in Figure 2. 74% excavatum but only 29% carinatum defects were symmetrical. Where defects were asymmetrical, there was a bias towards the right side for both conditions. Significant scoliosis was noted in 10% of excavatum and 7% of carinatum cases. Marfan's syndrome was confirmed in 2%.

Dynamic bracing using a Glasgow designed and manufactured carbon fibre brace (Figure 3) was offered as first-line therapy for Pectus Carinatum from May 2010. Of those braced (n=132), 30% had a full correction, 48% are still undergoing bracing treatment, 4% discontinued treatment, 12% were lost to follow-up and the remaining 9 patients opted for surgery.

49 patients with chest wall deformities have undergone surgery. All those who underwent surgery had moderate or severe defects. 37 patients had a Nuss procedure for Pectus Excavatum (32 were thoroscopically assisted). 12 patients underwent surgical management for Pectus Carinatum either by choice, failure of dynamic bracing or unsuitability for bracing. All had a modified Ravitch procedure; 5 using the Stratos system and 7 using the Sternalock system.

There were 22 complications across all surgeries. 4 late Stratos system failures were identified. One deep Nuss bar infection was successfully managed with long-term antibiotics. 7 superficial wound infections and 3 hypertrophic scars occurred following Nuss operations. One patient developed opioid dependency.

Conclusion

This series demonstrates that Pectus Carinatum is more common than Pectus Excavatum within the setting of a multidisciplinary service that offers operative and non-operative management strategies for young persons with chest wall deformities. Surgery should be reserved for moderate or severe defects. The Nuss operation is the procedure of choice for Pectus Excavatum. Dynamic bracing is the first-line treatment for Pectus Carinatum with surgery being reserved for those who fail or are unsuitable for bracing.

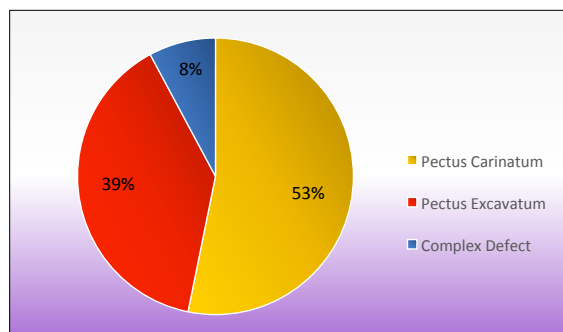


Figure 1 Chest wall defects by category

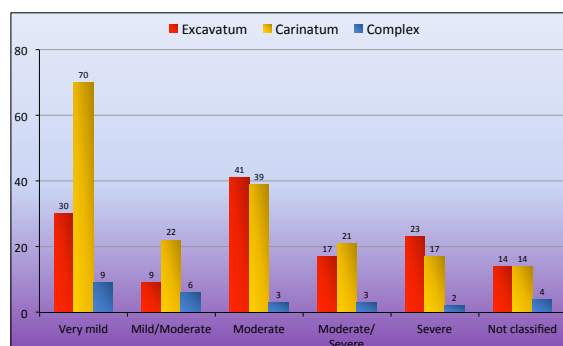


Figure 2 Severity of chest wall defects by category



Figure 3 Glasgow carbon fibre brace for Pectus Carinatum

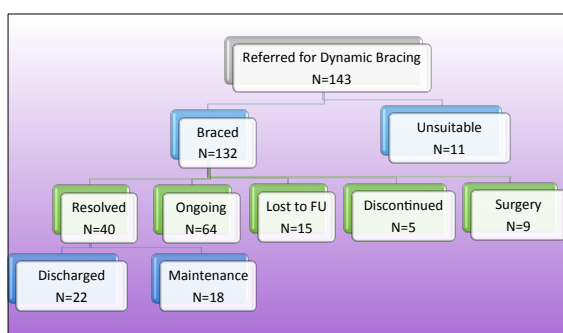


Figure 4 Dynamic Bracing

Appendix 6

Physiotherapy In-Patient Pathway for Pectus Surgery

Pre-Op

Issue Pectus Recovery Pathway
Respiratory Assessment
Provision of Incentive spirometer (Coach 2 Device)
Calculation of predicted Inspiratory Capacity (IC) and record IC achieved pre-op
Advice to commence Incentive Spirometry (IS) once able post-surgery: x10 breaths hourly
Advice regarding post-op precautions : No twisting, rolling, side lying, lifting
Completion of PedsQL & Nijmegen Questionnaires



Post-Op

Patient completion of Pectus Recovery Pathway - daily
Respiratory Assessment - daily
Encourage hourly IS setting daily goal for IC - starting day 0
Ensure good IS technique
Bed transfer practice in accordance with precautions from day 1
Up to sit from day 1 and encourage mobility from day 2
Commence UL ROM exercises, scapula setting / posture advice from day 1
Daily review of precautions: no twisting, rolling, side lying, lifting
Stair practice in preparation for discharge (day 4-5)



Discharge

IS to continue at home 2 hourly when awake, ensure good technique
Record IC achieved on discharge
Review of post-op precautions and discussion regarding completion of ADLs
Advice regarding sitting posture on discharge
Home Exercise Programme for posture and upper limb range of movement
Daily walking encouraged at home with steady increase in distance and speed
Follow up Physiotherapy Review appointment or phone call arranged for within

Appendix 7

Name:	CHI:
Date:	



PECTUS SURGERY RECOVERY

Please use this tool to track your recovery!
Check off each box as you complete the activity.

Predicted Incentive Capacity (IC) : _____ ml

Day 0 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 25 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Ensure awareness of precautions following surgery. To remain lying flat on back or with back of bed up - no side lying, rolling or twisting of spine. <input type="checkbox"/> Circulatory exercises of legs whilst remaining in bed – moving toes / ankles / bending knees.

Day 1 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 25 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Ensure awareness of precautions following surgery. To remain lying flat on back or with back of bed up - no side lying, rolling or twisting of spine. Get out of bed and up to chair with Physiotherapist / Nurse on 2 occasions. Try to stay up for about 1 hour. <input type="checkbox"/> 1 <input type="checkbox"/> 2 Start gentle arm and posture exercises with Physiotherapist on 2 occasions. <input type="checkbox"/> 1 <input type="checkbox"/> 2

Day 2 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 50 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Practice getting up and back into bed with minimal help <input type="checkbox"/> Aim to remain up out of bed Walk to the toilet or around your room on 3 occasions <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 Continue gentle arm and posture exercises on 3 occasions. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3

Name:	CHI:
Date:	

Day 3 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 50 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Aim to remain up out of bed <input type="checkbox"/> Practice getting up and back into bed with minimal help Walk a short distance along the corridor with supervision on 3 occasions <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 Continue gentle arm and posture exercises on 3 occasions. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3

Day 4 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 50 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Aim to remain up out of bed <input type="checkbox"/> Practice getting up and back into bed independently Walk the length of the ward on 3 occasions with supervision <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 Continue gentle arm and posture exercises on 3 occasions. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3
	Plan	<input type="checkbox"/> Start to think about going home and note down any queries.

Day 5 Date _____	Breathe Deeply	Use Incentive Spirometry every hour once awake (10 breaths each set) Aim for 75 % of IC: _____ml Value achieved: _____ml <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
	Be Active	<input type="checkbox"/> Aim to remain up out of bed Regular walks around the ward with supervision if still required <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Continue arm and posture exercises on 3 occasions. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Stair Practice with Physiotherapist
	Plan	You should be ready to go home soon! <input type="checkbox"/> Ask staff any questions you have before discharge. <input type="checkbox"/> Ensure you are confident with your home exercise program. Ensure you are confident regarding post-op precautions for going home.

*****DO NOT DISCARD*****
Please give to Physiotherapy Staff on discharge to file.