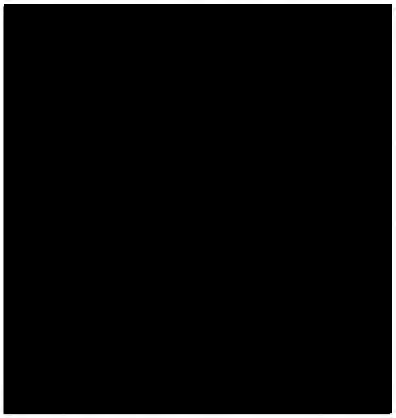
Initial Professional Development (IPD) Report



I obtained Interim Registration in 2011 following Recognition of Educational Qualifications by IPEM. The following IPD report details my career since completion of my undergraduate degree. References are given to the competencies required by the Engineering Council. The appendices provide additional evidence as referenced in the IPD report.

1	My career in Clinical Engineering began in October 2006, following graduation from [redacted] University with a First Class Honours Masters of Engineering (MEng) degree in Medical Engineering. I commenced my IPEM Part 1 training post with [redacted] University Hospitals NHS Foundation Trust. I was awarded the IPEM Postgraduate Diploma, DipIPEM(S), in May 2009. My advanced pre-registration training (IPEM Part II training) started with [redacted] Community NHS Trust in May 2009 specialising in Gait Analysis, Functional Electrical Stimulation and Upper Limb Assessment under the guidance of [redacted] CEng). Following a change in employment, my training continued with [redacted] Hospital NHS Foundation Trust specialising in wheelchair and custom seating. My work was overseen by [redacted] (MIPEM, ClinSci) and [redacted] (CEng). I obtained the certificate of Attainment from the Association of Clinical Scientists in 2011, along with becoming a corporate member of IPEM (Appendix A) and obtaining Interim CEng Registration (Appendix B). I was registered with the HCPC in October 2011(Appendix C) and as a Chartered Scientist (through IPEM) in 2012.	A1 E1
2	Alongside my Part 1 training, I graduated from the University of [redacted] with a Master's of Science (MSc) in Biomedical Engineering. My dissertation developed and tested a protocol to evaluate the validity of a portable activity monitor against commercial oxygen consumption equipment. Following approval from the [redacted] University ethics committee, I tested the	C1 D1

	protocol on 6 adult subjects. I completed the project under the supervision of [redacted] (CEng).	
3	Following my dissertation, I put together a proposal for the purchase of oxygen consumption equipment by the Gait Laboratory. A number of options were researched and trialled, before quotes were obtained and funding secured from NHS Trust charitable funds. I created operator instructions, developed a clinical protocol and subsequently trained colleagues on its use and maintenance requirements.	B1
4	I developed a new clinical service at [redacted] Hospital evaluating upper limb function using a toolkit of physical tests. This was initially to provide input in to the Specialist Spasticity Service, providing a method of assessing upper limb function to monitor changes in function following Botulinum Toxin injections. I then expanded the service to receive referrals for inpatients on the neuro-rehabilitation wards, from the community neuro teams and from therapists working with upper limb prosthetics patients. I was asked to carry out a number of teaching sessions on upper limb assessment to clinical professionals at the Hospital and externally on the Biomedical Engineering MSc course at [redacted] University.	B1
5	In December 2010 I was appointed to a band 6 rehabilitation engineer post with [redacted] Hospital NHS Trust. This role involved the design and prescription of seating systems for complex individuals using wheelchairs, which involved devising concept designs, drawings, risk assessments and liaising with technical staff. More detail for this role is given in my ACS portfolio.	B2 B3
6	In January 2014 I was appointed to band 7 Specialist Rehabilitation Engineer working with the [redacted]) Wheelchair Service. This post brought the opportunity to expand my clinical skills including assessment, design and manufacture of complex custom seating solutions. Training in these areas was provided by [redacted] (Head of Rehabilitation Engineering, [redacted] Hospital) and prior to leaving the post I conducted weekly seating clinics independently. Where I was unclear about the most appropriate seating solution I was able to confer with colleagues both from within my local team and the wider [redacted] Rehabilitation Engineering Division.	B2 B3
7	This role included being responsible for reporting product defects and safety concerns to the MHRA. In December 2014 I identified a safety hazard with a chair used within the (GSTT) wheelchair service. After reporting the issue to the MHRA, I communicated directly with the manufacturers to aid their investigation. I coordinated the replacement of all defective parts across the wheelchair service and then circulated the information to the rest of my department so that services across London and the South East of England were also made aware of the quality issue. (See Appendix D)	C4 E2

8	Whilst reviewing disposal and recycling procedures at the wheelchair maintenance service, I identified a number of high costs components that were currently being disposed of which had the potential for re-use or recycling. After consultations with the manufacturers, I was able to negotiate agreements for both refurbishment and return (at a discounted price) or for their safe disposal / recycling (with subsequent discount applied to the account). These agreements resulted in significant cost saving to the wheelchair service. (Detail in Appendix E)	C1 E3 E5
9	In February 2016, I was appointed to the post of Senior Clinical Scientist with [redacted] University Hospital NHS Foundation Trust (Band 8a). This post is split between managing a team of 12 rehabilitation engineers and technicians (See Appendix F) and a clinical role within the regional Environmental Control (EC) service, commissioned by NHS England. I am supervised jointly by [redacted] (Head of Rehabilitation) and [redacted] (CEng).	C3
10	At the start of my post the Rehabilitation Engineers and Technicians were segregated across the wheelchair, special seating and prosthetic and orthotics services. I am now reviewing the practices across the services, together with the clinical service leads, with the aim of integrating the team and developing cross-service skillsets.	C3
11	My current management role requires me to develop and implement a robust quality management system (QMS) into the Rehabilitation Engineering team, This will ultimately be used by the rehabilitation engineers and technicians across the wheelchair, prosthetics, orthotics and special seating services to standardise procedures such as risk assessment, technical drawing and adverse incident reporting. I am using the ISO 9001:2015, ISO 13485:2016 and newly published BS 70000:2017 standards to guide me through developing the QMS, and have also sought advice from colleagues within the Medical Physics Department as well as the Trust Quality Team.	A2 B1 C2 C4 E1
12	I hold the budget for the regional Special Seating Service. I review the budget on a monthly basis to ensure that the service does not overspend and also look for areas of cost saving to comply with the Trust annual budgetary plans. (Example in Appendix G) For this current year I am looking at reducing stock levels as a cost saving exercise. This will be carried out in conjunction with the service clinical lead, the workshop technicians and the stock manger to ensure that any changes in stock levels do not have a detrimental effect on the service delivery.	C2
13	The EC service is commissioned by NHS England and covers users across South West London, Surrey and West Sussex. As well as typical clinical duties, I submit monthly activity reports to NHS England (example in Appendix H) and must monitor budgetary constraints on both an individual and service wide basis. I carry out regular service reviews / audits together with the service lead. I recently carried out an audit on our clinical notes which has led to redesign of all our clinical documentation in order to comply with local and national Note-Taking standards.	C2 C4

14	The EC service holds contracts with 4 specialist suppliers who install and maintain patient equipment. Together with the service lead, I am responsible for reviewing these contracts on an annual basis. I am currently reviewing their activity and purpose to investigate whether any of their functions can be carried out by my own team of rehabilitation engineers to provide a cost saving to the service. A number of similar EC services in the UK operate at least part of their installation and maintenance service in-house; I will be visiting some of them later this year in order to gain some insight into how they operate.	C4 E3
15	During my time at [redacted] wheelchair service, I was involved in the recruitment process for two clinical posts – a band 4 technical instructor (technical) and a band 5 therapist (clinical). These involved reviewing applications, shortlisting candidates, writing interview questions and in the case of the technical post, creating and administering a practical test. In my present role I am currently reviewing the job roles within my team with a view to recruit to both an existing vacant role as well as the creation a new band 5 rehabilitation engineering post.	C3
16	I have had an active involvement in Clinical Scientist training since my own registration and have provided joint supervision to 3 trainees through the IPEM accredited Part 1 Training Scheme and more recently through the NHS Scientist Training Programme (STP). From September 2014 until May 2015 I supervised a student in the final year placement of his BSc Rehabilitation Engineering degree. As well as completing the final year of his degree he was simultaneously preparing a portfolio for submission to IPEM for registration as a Clinical Technologist. I was responsible for planning his placement in relation to the required competencies, carrying out regular supervision meetings and guiding him through compiling his portfolio. The student shadowed me in clinic and domiciliary visit appointments where I demonstrated clinical and practical aspects of the job. Over the course of the placement, I trained him in various skills and gradually let him lead the clinics under my supervision. I reviewed his written work on a weekly basis, suggesting changes and improvements where applicable.	C3 E4
17	I have received several plaudits from professionals and families for my work. (See Appendix I) I also often have to deal with difficult situations regarding prescribed equipment for clients; these can often be challenging due to differences of opinions and service constraints and eligibility criterion. To further enhance my skills I have completed online training in Equality and Diversity, face to face training on Conflict Resolution and more recently have attended an induction course for managers. This will be followed up by a more in depth 2- day course on leadership later this year.	D3
18	I was a member of the IPEM Rehabilitation Engineering and Biomechanics special interest group, from Sep 2011 – Sep 2015 including two years as chair of the group. During my time I organised a successful 1-day meeting on Integrated	A1

	Access in Assistive Technology (Appendix J), sat on the organising committee of the IPEM annual meeting (Glasgow 2014), represented the group on the IPEM Science, Research & Innovation Council (SRIC) and jointly wrote an IPEM policy document on "The Role of the Healthcare Scientist in Rehabilitation Engineering Services" (Appendix K). I am currently a member of the Posture & Mobility Group (PMG) 'Conference, Education and Communications' committee. Activities carried out over the past year include development of the new PMG website, reviewing national guidelines and organisation of the annual conference, including peer review of conference abstracts and developing the conference programme. In 2017 I joined the Rehabilitation Engineering Services Managers Group (RESMaG). I hope to use membership of this group to help shape the future of rehabilitation engineers as well as keeping my own team fully informed about developments within the profession. I attend quarterly meetings of the National Environmental Controls Consultation Group. This has allowed me to establish connections with other professionals across the UK, as well as be involved in developing national strategies for EC provision and commenting on NHS commissioning of specialist services.	A2 D1 D2 E1
19	I have been a registered StemNet ambassador since 2010. Over the last 7 years I have carried out a number of activities in local schools including careers fairs, specialist (medical) engineering seminars, speaking in assemblies, mentoring science projects and engineering workshops	D1 E5
20	I follow a comprehensive SMART based CPD programme and ensure regular attendance at local and national conferences to keep abreast of developments within the field. In the next year I plan on attending various training courses with manufacturers within the environmental controls sector to improve my product knowledge in this field. In addition to this, I regularly review my own working practice through written reflection and keep an up to date CPD folder in line with both IPEM and HCPC guidelines.	D3 E4 E5
21	I recently organised a parallel session at the PMG annual conference (See Appendix L) As well as a chance to present at a national conference, this also served as an opportunity to learn new techniques myself from colleagues working in other centre across the UK.	A2 D2
22	I have established a network of professionals through my clinical scientist training, attendance at conferences, working with companies supplying wheeled mobility and environmental controls devices and internet forums; these enable me to seek advice and consult with those who may be more experienced in the field when required. I am registered on Assist Tech, Biomech-I and EAT forums and take part in the discussions when appropriate.	E4

Appendices

A. Corporate IPEM Membership Certificate

B. IPEM CEng Interim Registration Certificate

C. HCPC Registration Certificate

D. Evidence of MHRA investigation

E. Evidence of cost saving initiatives

F. Management role diagram

G. Special seating monthly budget statement

H. Environmental controls service monthly activity report

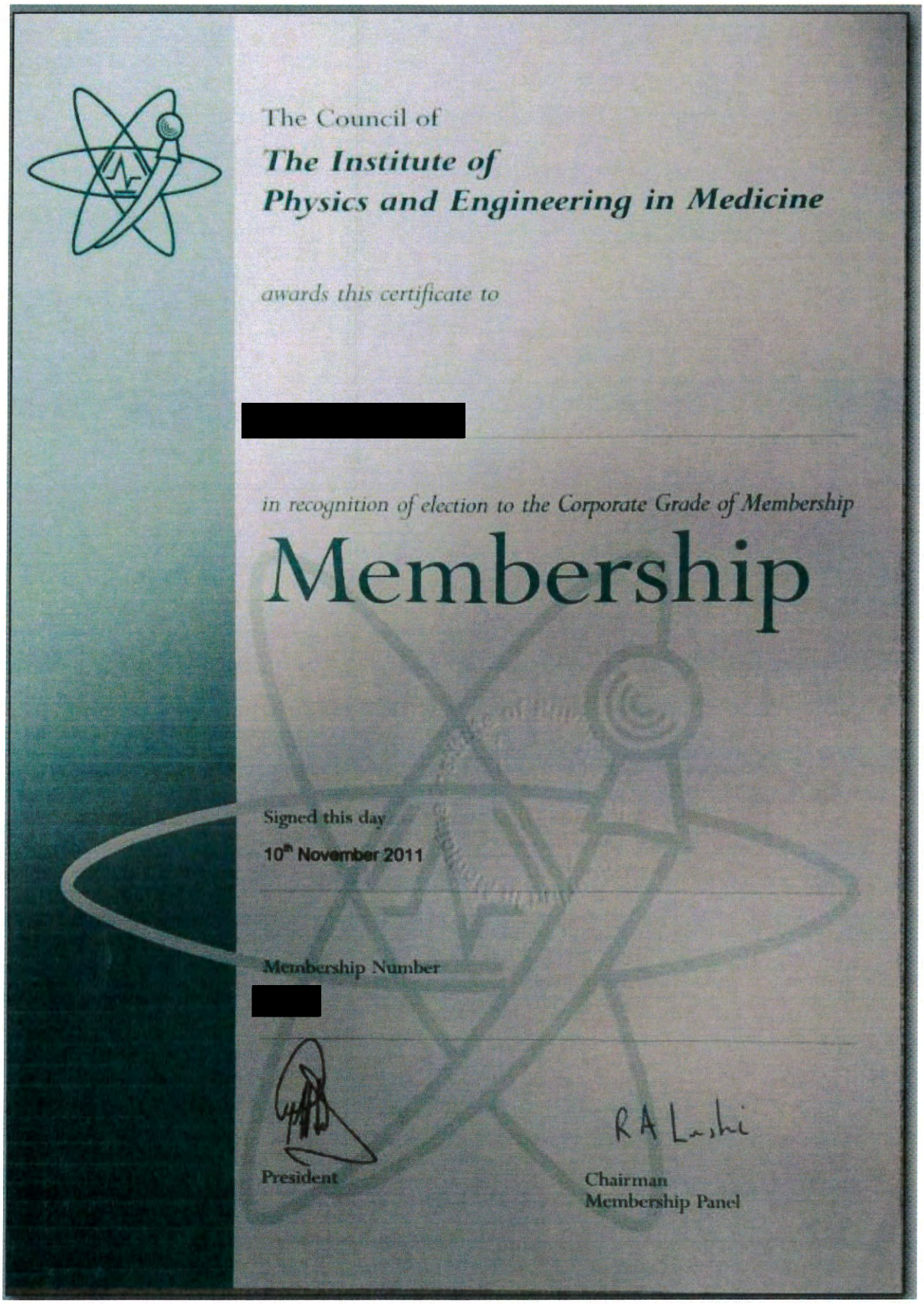
I. Plaudits

J. Programme for Integrated Access 1-day Meeting

K. [redacted] (2017), The Role of the Healthcare Scientist in Rehabilitation Engineering Services, IPEM Publications

L. [redacted] (2015), A practical exploration of shape capture techniques for custom contoured seating, Presentation/Workshop at PMG annual conference

Appendix A – IPEM Corporate Membership



The Council of

The Institute of Physics and Engineering in Medicine

awards this certificate to

[redacted]

in recognition of election to the Corporate Grade of Membership

Membership

Signed this day

10th November 2011

Membership Number

[redacted]

President

R A Lashi

Chairman
Membership Panel

Appendix B – CEng Interim Registration

Engineering Council

Established for the promotion and development
of the knowledge and best practice of engineering

This is to certify that

[redacted]

Satisfied the academic requirements of professional formation and has been granted

Interim Registration

in the

Chartered Engineer

Section of the Engineering Council Register on

16 December 2010

Chairman

Chief Executive Officer

Date of issue 16 December 2010

Registration No [redacted]
This certificate is the property of the Engineering Council
Returnable on request

Appendix C – HCPC Regsitration

Park House
184 Kennington Park Road
London SE11 4BU

Tel +44 (0)845 300 4472
Fax +44 (0)20 7820 9684
www.hcpc-uk.org

hcpc health & care professions council

Chair Elaine Buckley
Chief Executive and Registrar Marc Seale

This is to certify that [redacted]

is registered with the Health and Care Professions Council and is entitled to practise using the following title(s)

Clinical Scientist

for the period 01 October 2015 - 30 September 2017

Registration number [redacted]

Marc Seale

E C Buckley

Marc Seale
Chief Executive and Registrar

Elaine Buckley
Chair

Please consult the online Register at www.hcpc-uk.org to check current registration status.

Registration Department
+44 (0)845 300 4472

This certificate remains the property of the Health and Care Professions Council and must be surrendered upon request.

Appendix D – MHRA Investigation

Adverse Incident Report - Wheeled Mobility and Associated Equipment

About you

Your name	[redacted]
Position/Occupation	Specialist Rehabilitation Engineer
Organisation	[redacted] Hospital NHS Foudnation Trust
	Rehabilitation Engineeimg Division
	Medical Engineering & Physics
Your address	[redacted]
Your telephone number	
Your email address	
Email Copy To	
Local reference number	
Consultant in charge	
Type of device	Wheeled Mobility and Associated Equipment
Incident Number	2014/012/002/401/006

Type of injury	Minor
User weight kg (Stones)	26-50 (5-8)
Usage	Domestic/Similar
Severity of use	Moderate
Type of device	Manual wheelchair
Component	Upholstery Side Panel/Thigh guide
Type of failure	Not applicable
Type of failure (Other)	Sharp bolts poking through upholstery

Details of equipment

Model / Item	Corgi Sprint
Manufacturer / Reconditioner	Activate
Batch no	
Serial no	
Supplier / UK Rep	
Date of manufacture	
Date supplied to user	
Is there a CE mark?	Yes
If YES has the manufacturer been contacted	No
Present location of equipment	

Details of incident

Is litigation likely	No
Date of incident	
Contact name for further details	[redacted]
Telephone number	
Description of incident	School therapist rang WCS to complain about Corgi chair for one of her students. Complained of sharp screws poking through side panels/thigh guides. Client has strong abduction of legs and as such lateral aspect of knees pressing on thigh guides. WCS investigated on held models of chair and found same issue to be present. When you press against the inside of the thigh guides, you can clearly feel the sharp points of the fastening screws.
Details of injury (if relevant)	

Action taken by staff / manufacturer / supplier

Details	On particular client, will fit additional padding to chair to protect skin
Manufacturer's ref no (if known)	
Attachments	

Re: Corgi Sprint Hip Guides - [redacted] https://email.nhs.net/owa/#viewmodel=ReadMessageItem&ItemI

Re: Corgi Sprint Hip Guides

Daniel Steedman <dsteedman@activateforkids.yourhostedexchange.net>

[illegible]

[illegible]

Warning: This message contains unverified links which may not be safe. You should only click links if you are sure they are from a trusted source.
Thanks Helen.

We are coming up with the batch dates and will get back to you. A material thickness changed, and we have to check across the serial numbers.

There may well be others affected, and we will supply further pads F.O.C.

Be in touch soon

Regards

Dan Steedman

Sent from my BlackBerry 10 smartphone.
From: [redacted] (TAL NHS FOUNDATION TRUST)
Sent: [redacted]
To: [redacted]
Subject: [redacted]

Hi Dan

[illegible]

Kind regards

Helen Nelson

From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: [redacted]

Warning: This message contains unverified links which may not be safe. You should only click links if you are sure they are from a trusted source.
Thanks Helen.

[illegible]

Regards

Dan Steedman

Sent from my BlackBerry 10 smartphone.
From: Nelson Helen [redacted]
Sent: Tuesday, 13 Jan [redacted]
To: Dan Steedman
Subject: RE: Corgi Spr [redacted]

Hi Dan,

[illegible]

[illegible]

[illegible]

Kind regards

Helen Nelson

From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: [redacted]

Warning: This message contains unverified links which may not be safe. You should only click links if you are sure they are from a trusted source.
Thanks Helen.

[illegible]

Kind Regards

[illegible]

ACTIVATE

[illegible]

Tel: +44 (0)1722 [illegible] Fax: +44 (0)1722 [illegible]
Email: [illegible]
Web: http://www.activateforkids.co.uk

From: Nelson Helen [illegible] NHS FOUNDATION TRUST) [illegible]
Sent: 12 January [illegible]

Re: Corgi Sprint Hip Guides - [redacted] https://email.nhs.net/(

To: Dan Steedman
Subject: RE: Corgi Sprint Hip Guides

Hi Dan,

Serial number of the chair due for handover this week is: 418060RPA2268. Date of manufacture 06/08/2014

Waiting on the therapist to find out about the other one, I'll email you later with the details of that chair.
We haven't got any other chairs here at Bowley at the moment so can't quality check any others at the moment.

Kind regards

Helen

[redacted]

King's College Hospital NHS Foundation Trust

Mobile - 07973486864
e-mail - helen.nelson2@nhs.net

web - http://www.kch.nhs.uk/ed

[redacted]

Warning: This message contains unverified links which may not be safe. You should only click links if yo

Hello Helen.

I would like to discuss the recent issue with the fixing on the Corgi Sprint Hip Guides – could you let me know you telephone number?

Kind Regards

Dan Steedman

ACTIVATE

Unit 3 Watt Road, Churchfields Industrial Estate, Salisbury, Wiltshire, SP2 7UD United Kingdom.

Tel. +44 (0)1722 340600 Fax +44 (0)1722 414884
Email: da@activateforkids.com
Web: http://www.activateforkids.co.uk

User Closure Letter MHRA Ref: 2014/012/002/401/006

[redacted]

[redacted]

MHRA Ref: 2014/012/002/401/006 quote this in any response

Your Ref: BCWS-hn-021214-corgi sprint

Dear [redacted]

Thank you for your report in connection with the following
Device: Wheelchair Manufacturer: Activate Ltd

We asked the manufacturer to investigate your report. Their response is as follows:

"On inspection of stock, Activate were unable to detect the staples in use on a chair. i.e. when the hip guide is pressing against the thigh as it would in use. They could however feel something there when fingers were pressed into the padding, but they did not feel that this could cause an injury.

The current layout was adopted in June 2012 where a thicker spaced fabric was replaced with Darlex which is much thinner and allows the staple to penetrate further.

Neither MHRA nor Activate have been made aware of any similar reports.

To reduce the potential for similar complaints, Activate plan to use shorter staples in future production (they have confirmed that this should not compromise how well they stay in place). They have also confirmed that replacement pads have been provided to Bowley Close Wheelchair Service to meet their concerns."

We have reviewed the manufacturer's conclusions and consider them acceptable so we won't investigate any further.

However, tell us about any similar incidents as we use this information to identify problems.

If you wish to discuss the investigation please contact Device Specialist, Emma Rooke on 020 3080 6609 or email us on [redacted]

Yours sincerely
Adverse Incident Centre

[redacted]

Appendix E – Cost Saving Initiatives

[redacted]

[redacted] Wheelchair Service
Jay 3 backrest refurbishment

Over the period of April 2014 and March 2015, 30 Jay 3 backrest have been issued at an average cost of £470 (ex VAT) equating to a spend of approximately £14,100 (ex VAT).

These backrests provide postural support through posterior pelvic stabilisation along with increased trunk stability to enable an improved seated position. Refurbishment of the backrests is not something that is covered within the current Repair and Maintenance contract. Due to the durability of the backrests, the service saw the potential to refurbish them, though was mindful of the need for this to be done in line with manufacturers guidelines as they are a medical device. For this reason the service decided to trial the Sunrise Medical Jay Backrest Refurbishment Scheme.

The first batch of backrests was sent off in March 2015. This comprised 17 backrests all of which were refurbished at a cost of £185 (ex VAT). This released a saving of £285 (ex VAT) per backrest.
The second batch of backrests was sent off in September 2015. This comprised 17 backrests all of which were refurbished at a cost of £210 (ex VAT). This released a saving of £260 (ex VAT) per backrest. There was an increase in cost of refurbishment due to an increase in the cost of parts.

This process has not only saved the service £9,265 (ex VAT), but has also meant that there are a range of backrests on the shelf ready for issue. This means that on numerous occasions clients have been issued with a backrest on the day of their initial appointment, rather than having to wait for it to be ordered and delivered, and then attending a further follow up appointment. This has reduced the amount of staff contact time which in itself releases savings as well as providing a more efficient service for the client.

The service will continue to have their Jay 3 backrests refurbished through the Sunrise Medical Scheme.

[redacted]
21/03/2016

SUNRISE MEDICAL

www.sunrisemedical.co.uk

QUOTATION

Sunrise Medical Limited
Thorns Road
Brierley Hill
West Midlands DY5 2LD England
TEL +44 (0)845 605 6688
FAX +44 (0)845 605 6689
MAILTO orders@sunmed.co.uk

Purchase Order No: WORKS ORDER # 1102 Date 05/03/2015 Sales Order 4436612

Contact [redacted]
Account
Company
Address

Ship To HAYDEN JACKSON TECH SERVICE
SUNRISE MEDICAL
THORNS ROAD
BRIERLEY HILL
WEST MIDLANDS, DY5 2LD

Sales Person [redacted]
Marked For
Remarks S NOT ACCEPTED AFTER 12
Ship Via
FOB Point
Order Type E-MAIL

Telephone 0207 065 5000
Credit Terms [illegible] 30 DAYS FROM EOM

LN	Item Number	Description	Ex Works	Qty	List Price	Discount	Price
1	REPAIRS/PARTS	PARTS REQUIRED TO REPAIR WHEELCHAIR	19/03/15	17	185.00		3,145.00
		JAY 3 REFURBISHMENT PACKAGE @ [illegible] PER UNIT UNITS CODED AS BACK IDENTIFICATION = "A - Q"					
2	LABOUR	LABOUR RATE	19/03/15	1	0.00		0.00
		LABOUR RATE IS INCLUDED IN LINE 1					
3	CARRIAGE3	CARRIAGE TO COLLECT AND RETURN MANUAL/JAY	19/03/15	1	0.00		0.00
		CARRIAGE COST INCLUDED IN LINES 1 & 2					
		PLEASE UPDATE PATIENT REFERENCE WHEN STATED					
		QUOTE TO REFURB X17 JAY 3 BACKS @ 185.00 PER UNIT					

SUNRISE MEDICAL

Sunrise Medical Ltd
Thorns Road
Brierley Hill
West Midlands
DY5 2LD England

Tel 0845 6056688
Fax 0845 6056689
www.sunrisemedical.co.uk

F.A.O [redacted]

31st March 2015

We have listed below the work carried out Refurbished Jay 3 backs identification as (BACK A - Q)
If there are any queries or questions in relation to the Jay 3 back, please contact us directly

Works below -

1 Investigated incorrect operation of Jay 3 backs (A -Q)
2 Cleaned back shell
3 Checked back shell safety check
4 Replaced inner foam
5 Replaced outer cover
6 Fitted new inner foam
7 Fitted new outer cover
8 Fitted loosely to the back new back attaching hardware kit
9 Not fitted but sent in box back accessories/ laterals
10 Tested & re-checked

Advisory

1 Client - Stock
2 Kings College S/N - N/A
3 Sunrise S/N - (BACK A - Q) W/O # 1102

Best Regards
Sunrise Medical UK Technical Service Centre Team

HOW TO CONTACT US

Tel 0845 605 6688

Fax 0845 605 6689

Email: help.technical@sunmed.co.uk

TECHNICAL SERVICE CENTRE

V-Trak Refurbishment

From: [redacted]
Sent: 16 June 2015 09:54
To: [redacted] HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: V-trak recycling

No problem,

Thank you. I will let Veena know and we will update your account to 10% from today. We will also look at the diary and if we have someone down that way we will book in an initial collection and contact Duane directly.

Hopefully we will see you in Leeds in a few weeks! I can't believe PMG is here so soon...

Thanks again.

Best wishes,

[redacted]

From: [redacted] HOSPITAL NHS FOUNDATION TRUST)
[mailto[redacted]
Sent: 15 June 2015 16:06
To: [redacted]
Subject: RE: V-trak recycling

Hi [redacted]

Thanks for your email. I've discussed this with the team here at Bowley Close and we are happy to go ahead with your proposal of 10% discount. The only aspect I would query is the frequency of collections. We don't get a lot of hardware back so I propose 2 collections a year may be more realistic. We do have a lot for the first collection though as this is hardware we have accumulated over quite a few years!

The hardware is stored at our maintenance service:

Wheelchair Maintenance Service (South London)
Units 4-5 British Wharf Ind Est
Landmann Way
London SE14 5RS

The contact there would be [redacted] If you require any detail about size/weight of the box for collection please contact him direct.

Any other questions please let me know and I hope to see you at PMG in a few weeks time.

Kind regards

[redacted]

[redacted]
Specialist Rehabilitation Engineer – [redacted] Wheelchair Service
Rehabilitation Engineering Division

From: [redacted]
Sent: 05 June 2015 11:39
To: [redacted] HOSPITAL NHS FOUNDATION TRUST)
Subject: RE: V-trak recycling

Hi [redacted]

I hope you are well and apologies for the delay !

Ok so recycling... We haven't found the perfect solution as yet for both parties. We believe the best way forward is a flat yearly discount for quarterly recycling collections. This will save huge amounts of times on counting what is collected by both parties and the complication of applying appropriate discounts.

We propose a 10% flat rate discount on NHS prices. This would then mean we would arrange 4 quarterly collections of any V-TRAK hardware. We would then recycle this at base in line with environmental guide lines. We would keep track of collections and review this at the end of the financial year.

The reason we wouldn't be comfortable with refurbishment is that we couldn't guarantee the structure of the arms. With parts like the o-ring and nylocks would all have to be replaced as with time and use they will degrade. We can offer this discount as we know that a better and safer product is being used, this in turn will help save one of your staff disassembling and stripping the product. Providing you with a warrantied and quality assured product at a discounted rate.

Please let me know your thoughts and we can arrange a collection date ! Any questions please just ask.

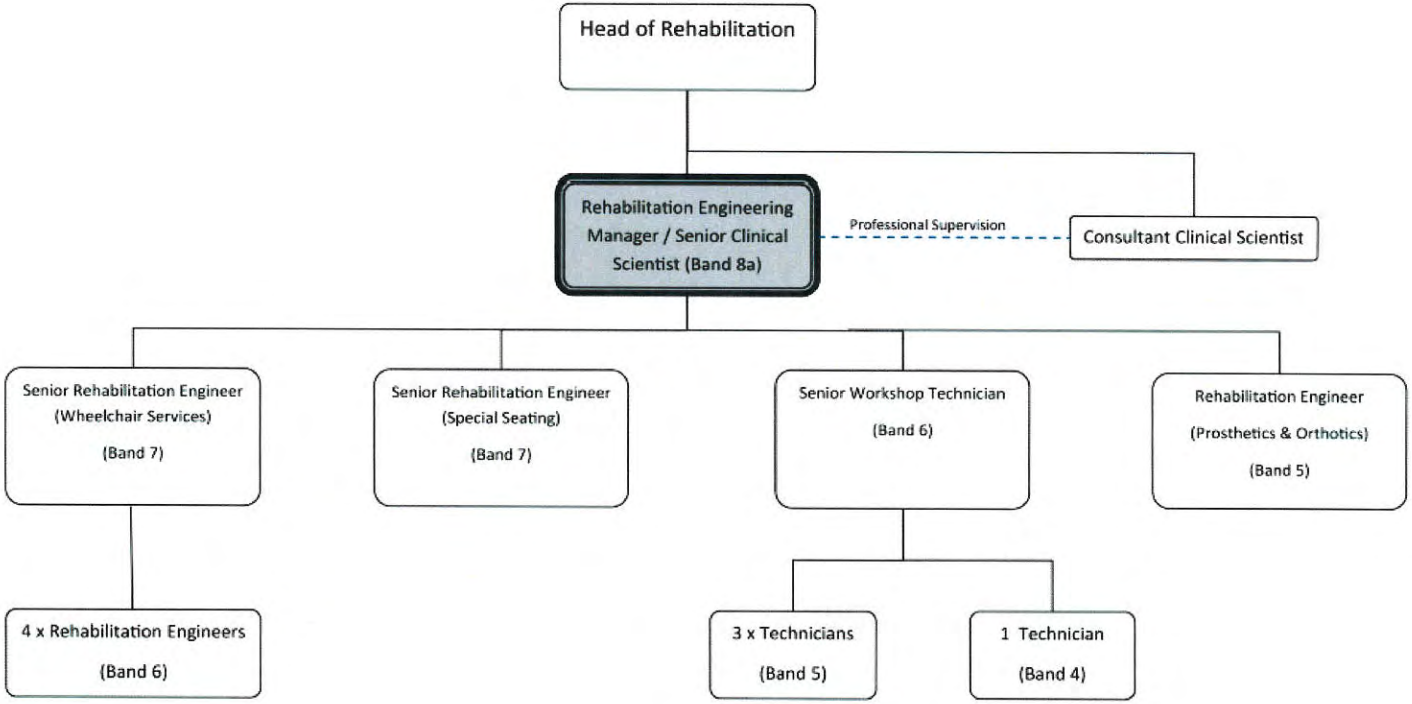
Best wishes,

[redacted]
V-TRAK | Performance Health Products Ltd
17 Kent Road, Bridgend Industrial Estate, Bridgend, Wales CF31 3TU
Phone: 0044 (0)1443 236 530 Fax: 0044 (0)1443 239 355
[redacted] www.v-trak.com | YouTube

Company number 3144459

Pasted from <https://email.nhs.net/owa/?bO=1>

Appendix F - Management Structure



Appendix G – Special Seating Monthly Budget Statement

Period 10
Run FINAL

04-Jul-17
9:30 AM

[redacted]NHS TRUST
BUDGETARY CONTROL STATEMENT
Period Ending 31st May 2017

[redacted] **Rehab - Seating Service** **SDU: Special Seating**

CURRENT MONTH							YEAR TO DATE				
BUDGET WTE	ACTUAL WTE	BUDGET £	ACTUAL £	VARIANCE £	%	ACCOUNT CODE DESCRIPTION	ANNUAL BUDGET £	BUDGET £	ACTUAL £	VARIANCE £	%
						INCOME					
0.00	0.00	(45,939)	(53,667)	(7,728)	17%	1003 SLAM Income Outpatients (OP)	(544,705)	(85,315)	(93,917)	(8,602)	10%
0.00	0.00	(9,996)	(3,859)	6,138	61%	1198 Other Trust Healthcare Income	(119,954)	(19,992)	(15,776)	4,216	21%
0.00	0.00	0	(243)	(243)	0%	1940 Other Income	0	0	(243)	(243)	0%
0.00	0.00	(55,935)	(57,769)	(1,833)	-3%		(664,659)	(105,308)	(109,936)	(4,629)	-4%
						PAY					
1.00	0.92	5,780	5,304	(476)	-8%	2741 PAMS - Occ Therapist Band 8A	69,359	11,560	10,606	(954)	-8%
1.00	1.00	2,814	2,815	0	0%	3834 MTO / ODP Band 4	33,771	5,628	5,627	(1)	0%
3.00	2.00	10,774	6,770	(4,004)	-37%	3835 MTO / ODP Band 5	129,289	21,548	13,537	(8,012)	-37%
1.00	1.00	4,398	4,398	0	0%	3836 MTO / ODP Band 6	52,775	8,796	8,795	(1)	0%
1.00	0.56	4,968	2,352	(2,616)	-53%	3837 MTO / ODP Band 7	59,617	9,936	18,527	8,591	86%
1.00	1.00	2,476	2,188	(288)	-12%	4033 Clerical Band 3	29,711	4,952	4,374	(578)	-12%
1.00	1.00	2,743	2,743	0	0%	4034 Clerical Band 4	32,917	5,486	5,485	(1)	0%
9.00	7.48	33,953	26,570	(7,383)	-22%		407,438	67,906	66,952	(955)	-1%
						NON PAY					
0.00	0.00	123	0	(123)	-100%	5030 Dressings	1,478	246	0	(246)	-100%
0.00	0.00	47	222	175	371%	5050 M & S Equipment	565	94	222	128	136%
0.00	0.00	5,938	6,113	175	3%	5540 Artificial Limbs & Wheelchairs	71,258	11,876	18,390	6,513	55%
0.00	0.00	12	3	(9)	-75%	5649 Carriage Charges Medical	147	24	3	(21)	-88%
0.00	0.00	3	0	(3)	-100%	5850 Bedding & Linen Non Disp	42	7	0	(7)	-100%
0.00	0.00	18	16	(2)	-9%	5900 Printing & Stationery	210	35	100	65	186%
0.00	0.00	11	0	(11)	-100%	6010 Travel Subs & Removal - Staff	126	21	0	(21)	-100%
0.00	0.00	0	0	0	0%	6340 Computer Consumables	0	0	0	0	0%
0.00	0.00	47	0	(47)	-100%	6380 Computer Leasing	567	94	0	(94)	-100%
0.00	0.00	0	0	0	0%	6447 Mntnce Contracts Other	0	0	0	0	0%
0.00	0.00	6,199	6,354	155	2%		74,393	12,399	18,715	6,316	51%
						INTERNAL X CHARGES					
0.00	0.00	0	0	0	0%		0	0	0	0	0%
						CAPITAL CHARGES & RESERVES					
0.00	0.00	0	0	0	0%		0	0	0	0	0%
9.00	7.48	40,153	32,925	(7,228)	-18%	TOTAL EXPENDITURE	481,830	80,305	85,666	5,361	7%
									0		
9.00	7.48	(15,783)	(24,844)	(9,061)	-57%	TOTAL INCOME AND EXPENDITURE	(182,829)	(25,003)	(24,270)	732	3%

Appendix H – Environmetnal Controls Monthyl Activity Report

Financial Year	(All)
Registration_Year	(All)

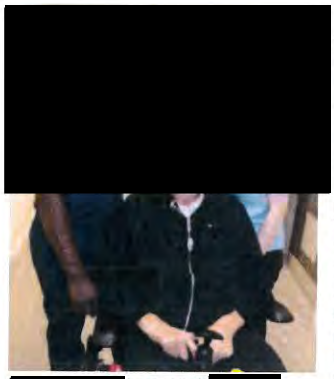
Count of Qty	Column Labels			
Row Labels	Assess and Discharge	Install - Hardware	Install - Therapy	Registration
07V		1	1	3
08J			1	
08P	2	1	1	1
08R				2
08T		1	1	
08X	1			
09G		1	1	2
09H				1
09L	1			2
09N		1	1	1
09P				1
09X	1			2
09Y		2	2	7
10C				1
99H	1			5
99M		1	1	3
(blank)				
Grand Total	**6**	**8**	**9**	**31**

Financial Year	(All)
Registration Year	(All)

Sum of Value (Hardware only)	Column Labels
	Install -
Row Labels	Hardware
07V	£2,882.40
08P	£5,204.22
08T	£2,985.60
09G	£5,219.40
09N	£2,219.40
09Y	£9,565.20
99M	£7,843.20
Grand Total	**£35,919.42**

Financial Year	Activity Type	PostCode	Date of Birth	GP Practice Code	CCG Code	Start Date (of Registration)	Start Date (of Activity)	Qty
1718	Registration	[redacted]	[redacted]/1971		09X	04/04/2017		1
1718	Registration		[redacted]/1960	[redacted]025	09H	04/04/2017		1
1718	Registration		[redacted]/1950	[redacted]110	07V	10/04/2017		1
1718	Registration		[redacted]/2004	[redacted]075	99H	01/04/2017		1
1718	Registration		[redacted]/1946	[redacted]007	09P	05/04/2017		1
1718	Registration		[redacted]/1999	[redacted]057	09Y	04/04/2017		1
1718	Registration		[redacted]/1953	[redacted]063	09X	06/04/2017		1
1718	Registration		[redacted]/1969	[redacted]109	99H	07/04/2017		1
1718	Registration		[redacted]/1934	[redacted]110	99M	12/04/2017		1
1718	Registration		[redacted]/1930	[redacted]033	08R	14/04/2017		1
1718	Registration		[redacted]/1949	[redacted]668	09Y	07/04/2017		1
1718	Registration		[redacted]/1957	[redacted]668	09Y	20/04/2017		1
1718	Registration		[redacted]/1996	[redacted]965	10C	19/04/2017		1
1718	Registration		[redacted]/1958	[redacted]134	09Y	25/04/2017		1
1718	Registration		[redacted]/1929	[redacted]056	09L	25/04/2017		1
1718	Registration		[redacted]/1947	[redacted]064	09N	24/04/2017		1
1718	Registration		[redacted]/1939	[redacted]060	09L	18/04/2017		1
1617	Install - Therapy		[redacted]/1955	[redacted]031	09N	09/01/2017		1
1617	Install - Hardware		[redacted]/1955	[redacted]031	09N	09/01/2017	25/04/2017	1
1617	Assess and Discharge		[redacted]/2007	[redacted]206	08P	15/06/2016	22/11/2016	1
1617	Assess and Discharge		[redacted]/1946	[redacted]017	09X	12/12/2016	03/01/2017	1
1617	Install - Therapy		[redacted]/1954	[redacted]062	08J	29/02/2016	14/07/2016	1
1718	Registration		[redacted]/1998	[redacted]058	09G	31/05/2017		1
1718	Registration		[redacted]/1960	[redacted]641	09Y	08/05/2017		1
1718	Registration		[redacted]/1959	[redacted]031	07V	09/05/2017		1

Appendix I – Plaudits



[redacted] (centre) with [redacted] physiotherapist, and [redacted] rehabilitation engineer

[redacted]story

[redacted] 65-year-old former publican, was diagnosed with motor neurone disease in 2012. This rare condition affects the nerves that control the muscles, making them weaken and waste away. It can also lead to breathing problems.

Desmond was cared for at [redacted] Rehabilitation Centre in Crystal Palace, where he received his wheelchair. The Centre has supplied wheelchairs to 12,000 residents in Lambeth, Southwark and Lewisham. They make customised seating for wheelchairs and also provide a standard wheelchair service. Staff carry out assessments that enable patients to use powered wheelchairs that can be driven in different ways, like using specialist chin controls.

[redacted] daughter, [redacted], says: "Dad wouldn't have been independent without [redacted]. They adapted his wheelchair so there was a breathing machine on the back. It meant he could sit up and join us in the front room. He loved watching his 19-month-old granddaughter play and he felt part of the family."

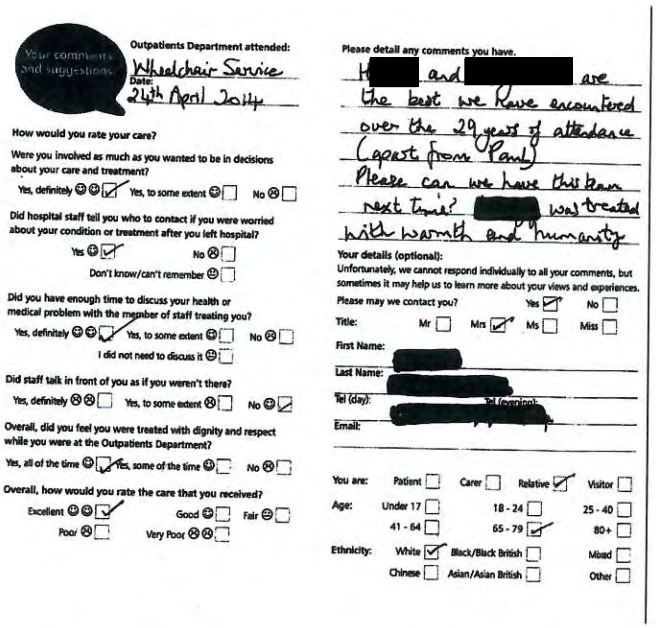
In memoriam

[redacted] sadly passed away earlier this year. Our thanks to his daughter, [redacted], who wanted his story to be shared in this issue of *the GiST*.

We provide community health services in a variety of locations across Lambeth and Southwark. Find out more by visiting [redacted]/community

[redacted] 15

Excerpt from [redacted] Magazine Issue 15 (2015)



Your comments and suggestions

Outpatients Department attended: Wheelchair Service
Date: 24th April 2014

How would you rate your care?

Were you involved as much as you wanted to be in decisions about your care and treatment?
Yes, definitely ☺☺☑ Yes, to some extent ☺☐ No ☹☐

Did hospital staff tell you who to contact if you were worried about your condition or treatment after you left hospital?
Yes ☺☑ No ☹☐ Don't know/can't remember ☺☐

Did you have enough time to discuss your health or medical problem with the member of staff treating you?
Yes, definitely ☺☺☐ Yes, to some extent ☺☐ No ☹☐ I did not need to discuss it ☺☐

Did staff talk in front of you as if you weren't there?
Yes, definitely ☹☹☐ Yes, to some extent ☹☐ No ☺☑

Overall, did you feel you were treated with dignity and respect while you were at the Outpatients Department?
Yes, all of the time ☺☐ Yes, some of the time ☺☐ No ☹☐

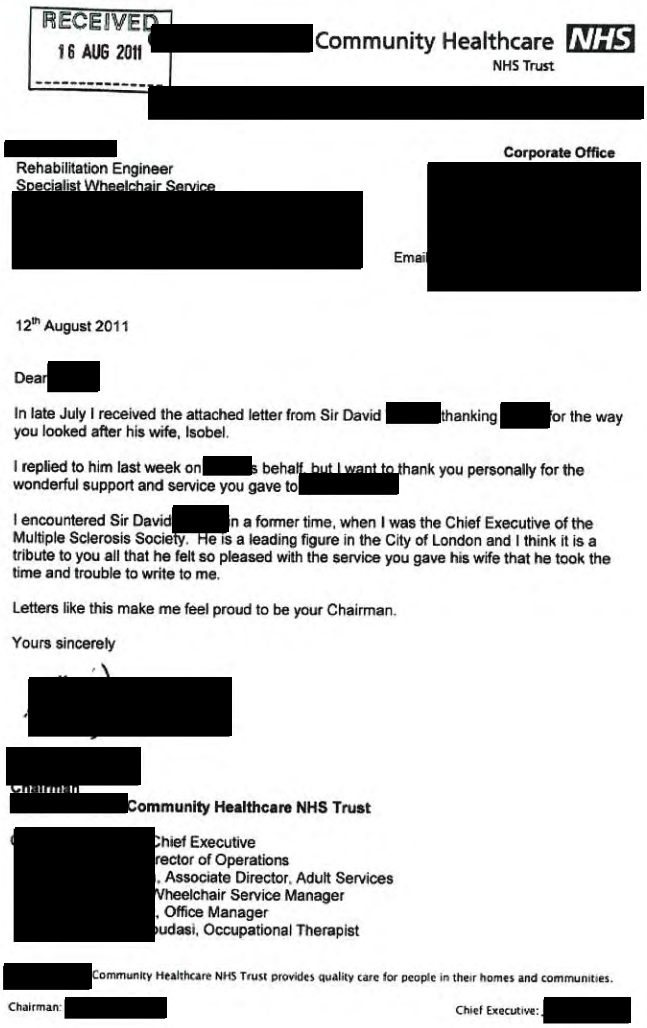
Overall, how would you rate the care that you received?
Excellent ☺☺☑ Good ☺☐ Fair ☺☐ Poor ☹☐ Very Poor ☹☹☐

Please detail any comments you have.
H[redacted] and [redacted] are the best we have encountered over the 29 years of attendance (apart from Paul). Please can we have this team next time? [redacted] was treated with warmth and humanity.

Your details (optional):
Unfortunately, we cannot respond individually to all your comments, but sometimes it may help us to learn more about your views and experiences.
Please may we contact you? Yes ☑ No ☐
Title: Mr ☐ Mrs ☑ Ms ☐ Miss ☐
First Name: [redacted]
Last Name: [redacted]
Tel (day): [redacted] Tel (evening):
Email: [redacted]

You are: Patient ☐ Carer ☐ Relative ☑ Visitor ☐
Age: Under 17 ☐ 18 - 24 ☐ 25 - 40 ☐ 41 - 64 ☐ 65 - 79 ☑ 80+ ☐
Ethnicity: White ☑ Black/Black British ☐ Mixed ☐ Chinese ☐ Asian/Asian British ☐ Other ☐

Complement received whilst working for [redacted] Hospital Wheelchair Service (2014)



RECEIVED
16 AUG 2011

[redacted] Community Healthcare NHS
NHS Trust

[redacted]

[redacted]
Rehabilitation Engineer
Specialist Wheelchair Service
[redacted]

Corporate Office
Email [redacted]

12th August 2011

Dear [redacted]

In late July I received the attached letter from Sir David [redacted] thanking [redacted] for the way you looked after his wife, Isobel.

I replied to him last week on [redacted]s behalf, but I want to thank you personally for the wonderful support and service you gave to [redacted]

I encountered Sir David [redacted] in a former time, when I was the Chief Executive of the Multiple Sclerosis Society. He is a leading figure in the City of London and I think it is a tribute to you all that he felt so pleased with the service you gave his wife that he took the time and trouble to write to me.

Letters like this make me feel proud to be your Chairman.

Yours sincerely

[redacted]

[redacted]
[redacted] Community Healthcare NHS Trust

[redacted] Chief Executive
[redacted] rector of Operations
[redacted], Associate Director, Adult Services
[redacted] Wheelchair Service Manager
[redacted], Office Manager
[redacted] budasi, Occupational Therapist

[redacted] Community Healthcare NHS Trust provides quality care for people in their homes and communities.

Chairman: [redacted] Chief Executive: [redacted]

Complement received whilst working for [redacted] Community Healthcare Wheelchair Service (2011)

Appendix J – Integrated Access Meeting January 2013

IPEM conferences

Integrated Access for Assistive Technology
Friday 25th January 2013
Fairmount House, York

FINAL PROGRAMME

09:00 - 09:55	**Coffee and registration**
09:55 - 10:00	**Introduction** Helen Nelson, Rehabilitation Engineering, Kings College Hospital NHS Hannah Griffiths, Chailey Clinical Services, Sussex Community NHS
10:00 - 10:30	**Recent developments in integrated access** Jeremy Linskell, EAT Service, NHS Tayside
10:30 - 10:50	**A multidisciplinary, multi-agency approach to implementing a novel wheelchair mounted robot device** Paul Doyle, ACCESS, Hereward College, Coventry
10:50 - 11:10	**Android for integrated access** Gary Derwent, EAT Team, Royal Hospital for Neurodisability, Putney
11:10 - 11:30	**Coffee**
11:30 - 12:00	**Integrated systems** Colin Clayton, Assistive Technology Consultant, Berkshire
12:00 - 12:30	**Practical aspects to integrating powered wheelchair controls with other Assistive Technology equipment** Geoff Harbach, West Midlands Rehabilitation Centre, Birmingham
12:30 - 12:50	**The challenges of integrating complex electronic assistive technology - 10 years experience in a nutshell** Marcus Friday, AT Team, Barnsley District Hospital NHS
12:50 - 14:00	**Lunch**
14:00 - 14:30	**Product Update from Industry** Rob Woodcock, Sunrise Medical
14:30 - 14:45	**Coffee**
14:45 - 16:00	**Structured Panel Discussion** Jeremy Linskell, Rob Woodcock, John Ward
16:00 - 16:30	**Discussion and Close**

Organised by the IPEM Rehabilitation Engineering & Biomechanics Special Interest Group

Co-sponsored by Posture & Mobility Group

PMG

Integrated Access for Assistive Technology

25th January 2013
Fairmount House, York

[redacted] Hospital NHS Foundation Trust) and [redacted] Clinical Services)

On 25th January 2013 the Rehabilitation Engineering and Biomechanics Special Interest Group (REBSIG) held a one day meeting on Integrated Access at the IPEM offices in York. Integrated access is the means of using an input device to control a number of other devices. For example using the controller of a powered wheelchair (accessed using a joystick or switches) to not only drive the powerchair, but also to control devices such as a communication aid, computer or environmental control system. The meeting was attended by 29 professionals working across a range of professions and clinical areas which provided the background for interesting discussions throughout the day.

Invited speakers **Jeremy Linskell** (EAT Service, NHS Tayside) and **Colin Clayton** (Colin Clayton Assistive Technology Ltd.) not only looked at some of the systems available on the commercial market, but also the theory and reasoning behind assessing for and setting up an integrated access system. They both recognised that integrated access requires a specialist level of service provision, and that the main areas of integration, namely: specialist wheelchairs (including complex postural seating and powered wheelchair controls), specialist augmentative and alternative communication aids, specialist environmental controls are now commissioned through the national (for England) specialised commissioning arrangements.

Jeremy began the day by talking about what an integrated system is and when to integrate. Jeremy advised that it is best to integrate systems as early as possible. This benefits clients, particularly those with progressive conditions as they have more time to become familiar with the systems and it may also help with acceptance of technology as their condition progresses. For the service early integration, or at least the consideration of integration at the point of equipment prescription, enables appropriate functions to be incorporated. Jeremy emphasised that in assessment you need to find out what the client's needs, abilities, aspirations and desires for the equipment are. As a service you need knowledgeable and skilful staff, a multidisciplinary infrastructure as well as a functional relationship with other services. Jeremy then spoke about current devices on the commercial market, including some control methods, integrated devices, powerchair control systems and systems for integrating with Android and iOS systems as well as computers (PC and Macs).

Colin initially focused on the assessment needed when considering integrating assistive technology systems. Colin highlighted that the most appropriate access method for one system is not necessarily the most appropriate access method for another. He gave the example of using a joystick to control a powerchair and also to access a communication aid or an environmental control system. With a communication aid there is a generally a large selection set (the vocabulary package) which needs to be accessed quickly, reliably and accurately. While a powerchair has a small selection set (the directions to drive in). It too has to be accessed quickly and reliably, however it does not require the same level of accuracy. For example, a small deflection of the joystick (and therefore fine motor control skills) is needed to move the cursor on a communication aid whereas control movement of a powerchair requires the joystick to be deflected for a longer period of time (and to a greater extent).

Presentations from **Marcus Friday** (Barnsley AT Service) and **Geoff Harbach** (West Midlands Rehabilitation Centre) spoke about custom integrated systems they have developed within their organisations, focussing on a couple of case studies. **Gary Derwent** (Royal Hospital for Neurodisability, Putney) talked about the applications currently available for both the Android and iOS operating systems and also presented a case study on the use of these together with communication and environmental control systems. This prompted discussion as attendees discussed similar cases they had been involved in.

In the afternoon **Rob Woodcock** (Sunrise Medical) gave an overview of integrated systems from a manufacturers perspective, before he joined a panel together with **Jeremy Linskell**, and **Jon Ward** (King's College Hospital, Rehabilitation Engineering Division). Attendees were then invited to ask the panel questions regarding the problems encountered with integration of control systems. This session sparked another discussion around the ideal approach to integrated access and how clients can be better provided for in terms of service provision of these types of systems.

The meeting was well received and there was a consensus that the current methods for providing integrated systems is (generally) not ideal. Following the panel discussion, it was felt that this topic needed further exploration. Details were taken from attendees interested in taking part in further work and this is to be followed up by REBSIG.

Appendix K – The Role of the Healthcare Scientist in Rehabilitation Engineering

Institute of Physics and Engineering in Medicine

IPEM

POLICY STATEMENT: The Role of the Healthcare Scientist in Rehabilitation Engineering Services

1. What is Rehabilitation Engineering?

Rehabilitation Engineering is the application of engineering principles and technology in the provision of services, research and innovation to meet the needs of individuals with disabilities and long term conditions. It reduces environmental barriers, improves the physical, mental and social abilities of a person with a disability and contributes to therapeutic interventions and rehabilitative care in the management of long term conditions.

Healthcare Scientists (HCS) provide services to patients. They develop and implement new technologies, and drive improvements in service provision, in collaboration with many other clinical disciplines. HCS are uniquely placed to provide scientific and technical input into these clinical settings due to their training in both engineering and clinical subjects such as biomechanics and anatomy and physiology. This combination of skills and knowledge benefits the patient by ensuring the right engineering solutions are prescribed to meet clinical needs thus improving experience and outcomes whilst reducing risks and costs.

Rehabilitation Engineering includes many different clinical services. Patients often access multiple services concurrently and an understanding of the other services leads to joined up working which in turn, for example, reduces the number of appointments a patient needs or streamlines the provision of equipment. It also ensures compatibility of equipment supplied by different services, for example safe and effective combinations of powered wheelchair, communication aid and environmental control systems. The breadth of their training enables HCS to drive interdepartmental working, increasing efficiency and benefiting patients.

Rehabilitation Engineering Services include:

- Posture and Mobility (P&M) e.g. Wheelchair Services, Custom Seating and Postural Management
- Electronic Assistive Technology (EAT) e.g. Specialist controls for powered mobility and alternative access to the computer and other technology

- Augmentative and Alternative Communication (AAC) and Environmental Controls (EC)
- Activities of Daily Living (ADL)
- Functional Electrical Stimulation (FES)
- Prosthetics and Orthotics (P&O)
- Clinical Movement Analysis (CMA)
- Telehealth and Telecare

See appendix 1 for definitions of these services

The IPEM Policy Statement: Leading Medical Physics and Clinical Engineering Services (July 2015) describes the importance of these services provided by its members within the healthcare sector. It provides key principles of and recommendations for the effective and productive leadership of medical physics and clinical engineering services.

This document looks to provide more detail than the above policy statement on the types of services provided by HCSs working in Rehabilitation Engineering and the roles of those working in this field.

4. Staffing

Rehabilitation Engineering services employ Consultant Clinical Scientists, Clinical Scientists, Rehabilitation Engineers (who may be registered as Clinical Technologists or Healthcare Science Practitioners) and Healthcare Science Associates and Assistants. The mix of staff employed will depend on the type of service. For example, CMA services will typically only employ Clinical Scientists and Consultant Clinical Scientists, whereas wheelchair services incorporating specialist custom seating clinics generally utilise staff from all roles of Healthcare Science.

HCS work with various professionals including physiotherapists, occupational therapists, speech and language therapists, medical consultants, prosthetists and orthotists.

5. Training of Healthcare Scientists in Rehabilitation Engineering

Within England, Wales and Northern Ireland those wishing to train as a HCS will typically follow the associated training scheme as detailed by the National School of Healthcare Science (NSHCS) [See References/Bibliography]. IPEM [See References/Bibliography] and the Academy of Healthcare Science (AHCS) [See References/Bibliography] offer alternative routes. Below is summary of the NSHCS training routes. For those wishing to work in Rehabilitation Engineering, they will train in Clinical Engineering, which includes a specialism in Rehabilitation Engineering. In Scotland those wishing to training as a HCS will typically follow a comparable local training scheme, assessed through the AHCS's equivalence route

Table 1. NCHCS training programs

HCS role	NSHCS training scheme	Required Qualifications &/or experience	Content of training	Duration of training (years)	Qualifications on completion of training
Rehabilitation Engineer	Practitioner Training Programme (PTP)		Accredited BSc in healthcare science. Competency base work-place training	50+ weeks spread over 3 years	BSc, Eligibility for professional registration e.g. Register of Clinical Technologists (RCT) or AHCS Healthcare Sciences Practitioner Register
Clinical Scientist	Scientist Training Programme (STP)	Honours Degree (1st, 2:1) in relevant science or engineering subject (or 2:2 with MSc or PhD)	Masters Degree. Competency based work-place training	3	MSc, eligibility for registration with the Healthcare professions council (HCPC)
Consultant Clinical Scientist	Higher Specialist Scientific Training (HSST)	Registered and experienced Clinical Scientist	Bespoke training programme including professional doctorate if appropriate (depending on previous qualifications)	5	Professional Doctorate, eligibility for registration on AHCS Higher Specialist Scientific Register

HCS must engage in structured Continuing Professional Development (CPD) to maintain their statutory and/or professional registration. [1]. Guidance is given by the HCPC, AHCS, RCT and IPEM.

7. Clinical Activities

In Rehabilitation Engineering, clinical activity is a core component the role of a HCS. Most HCS carry a clinical caseload, interacting with patients from referral through to discharge. Whilst the functions of HCSs may differ between services and role, their daily tasks can include postural, movement or functional assessment, collection and analysis of clinical data, clinical reporting and prescription and provision of equipment including bespoke assistive technologies and custom made medical devices. Clinics may be carried out across both acute and community services.

Within Posture and Mobility (P&M), Prosthetics and Orthotics (P&O) and Electronic Assistive Technology (EAT) services RESMaG has developed competencies identifying the roles of the different professionals (see References/bibliography).

8. Safety

All HCS have knowledge (appropriate to role) of health and safety principles, the role of the MHRA and reporting adverse incidents, Quality Management standards such as ISO 9001, legal requirements such as COSHH and so on.

Clinical scientists' breadth of knowledge, understanding of standards and legislation, design and risk management skills are invaluable when providing bespoke services. They ensure that patients are not exposed to excessive risk, that equipment is fit for purpose, and that the service operates within statutory requirements.

9. Quality Management

HCSs provide safe, efficient and effective services and devices to patients. They do this by:

- Implementing and managing quality management systems, often externally audited and registered to ISO 9001 or 13485 (industry standards for device manufacturers).
- Producing detailed specifications for subcontracted work (manufacture of components, outsourced equipment maintenance)
- Testing equipment to verify its effectiveness and safety, which is often a statutory requirement.
- Ensuring devices manufactured in house (where the department would hold responsibility in the event of an injury to a patient) meet statutory requirements.
- Responding to device failures, reporting failures to the Medicines and Healthcare Regulatory Authority, and responding when they report safety concerns.
- Leading improvements, and ensuring that staff, patients and their carers are competent to implement them safely.

10. Service Design and Development

Clinical Scientists lead service design and development. They bring clinical knowledge, equipment management skills, and quality management techniques. They lead the adoption of new techniques. They evaluate clinical demand for services, manage risk and resources, and critically evaluate techniques. They define service level agreements.

11. Leadership

Clinical scientists manage people, resources and budgets, perform workforce planning, and manage and develop staff to meet key performance indicators. Clinical Scientists supervise staff. They should be provided with appropriate clinical, professional and managerial supervision.

An important role for the Clinical Scientist is to act as an expert in the field, not only to clinical colleagues but to industry, charities, policy makers or advisory boards. These duties may include advising on complex patient results, making recommendations for suitable equipment purchases or advising on best practice and methodology in new diagnostic or therapeutic techniques. The senior scientist may also be called upon to act as an expert witness.

13. Provision of Education and Training

HCS train junior staff, patients and other healthcare professionals. They contribute on groups such as Clinical Movement Analysis Society UK and Ireland (CMAS), IPEM special interest groups, The Posture & Mobility Group (PMG) and RESMaG. More information can be sought from the organisations respective websites. Clinical Scientists are often guest lecturers on undergraduate and postgraduate engineering courses.

14. Research and Innovation/Development

Clinical Scientists drive research and innovation. Their academic and clinical experience enables them to commission relevant research, and to quickly disseminate and apply it's outcomes to improve services to patients, reduce risk, and improve efficiency.

Clinical Scientists integrate emerging technology, and translate technology from other fields into clinical practice to improve outcomes for patients, reduce risk, and improve efficiency.

References/bibliography

[1] Health and Care Professions Council (HCPC). Available at: http://www.hpc-uk.org/ (Accessed: 4th August 2015).

[2] Medicines & Healthcare products Regulation Agency (MHRA). Available at https://www.gov.uk/government/organisations/medicines-and-healthcare-products-regulatory-agency (accessed 2nd September 2015)

[3] Institute of Physics and Engineering in Medicine (IPEM). Available at: http://www.ipem.ac.uk/CareersTraining/IPEMTrainingSchemes.aspx (Accessed: 4TH August 2015).

[4] Association of Clinical Scientists (ACS). Available at: http://www.assclinsci.org/acsHome.aspx (Accessed: 4TH August 2015).

[5] National School of Healthcare Science (NSHCS). Available at: http://www.nshcs.org.uk/fortrainees/training-programmes (Accessed: 4TH August 2015).

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Appendix 1 Summary of Rehabilitation Engineering Services

Wheelchair Services, Custom Seating and Postural Management

Wheelchair services provide a range of manual and powered wheelchairs to patients who are unable to walk independently. Specialist services provide bespoke contoured seating to accommodate and/or correct postural abnormalities that occur due to a range of musculoskeletal, neurological and physical disorders. Services are also able to provide specialist controls for powered wheelchairs (e.g. head, foot, chin); this may be carried out in conjunction with the Assistive Technology service. The broader aspects of postural management may also fall within the remit of the Clinical Scientist, e.g. adaptations to static seating systems, or complex lying positioning systems.

Electronic Assistive Technology

Electronic Assistive Technology is an umbrella term which includes Augmentative and Alternative Communication (AAC), Environmental Control (EC), Access to Technology (e.g. alternative methods of computer access) and can include specialist controls for powered wheelchairs.

Augmentative and Alternative Communication (AAC)

Augmentative and Alternative Communication (AAC) services provide an extensive range of techniques which support or replace spoken communication. These include gesture, signing, symbols, word boards, communication boards and books, as well as Voice Output Communication Aids (VOCAs).

Environmental Controls (EC)

Environmental control services provide devices that enable the control of devices such as the television, lights or front door release, for example from the patients bed or wheelchair. They can be set up so there are multiple control systems or more commonly one device is used to control many different devices.

Activities of Daily Living (ADL)

These clinics aim to provide people with equipment, often customised, which enables them to be more independent in daily activities such as washing, dressing and preparing meals.

Functional Electrical Stimulation (FES)

FES is a method of producing contractions in muscles through the application of electrical stimulation using skin, percutaneous or implanted electrodes. The vast majority of FES equipment

assumes that the muscles are paralysed due to central nervous system (CNS) lesions or injuries. Applications for FES include muscle strengthening and restoration of function e.g. correction of drop-foot following stroke.

Prosthetics and Orthotics

This service provides upper and lower limb prosthetic and orthotic devices. Whilst orthoses aim to aid limb movement or support deformity, prostheses are artificial replacements for missing limbs. There may be cases when the Clinical Scientist is involved with the Clinical Movement Analysis (see section below) to assist in the setting up and alignment of a complex prosthetic limb.

Clinical Movement Analysis (CMA)

Using a range of objective tools and relatively complex equipment, CMA services provide analysis and treatment recommendations of lower and upper limb function to enhance patient care and diagnosis; and can assess the effectiveness of interventions or monitor disease progression over time. It is important to note that CMA is often provided directly through a hospital orthopaedic service rather than as part of a rehabilitation engineering centre.

Appendix L – PMG Annual Conference Workshop Abstract

PS3

A practical exploration of shape capture techniques for custom contoured seating using vacuum formed bead bags

Summary
This parallel session will explore the casting methods employed to capture body shape through vacuum consolidation with the aim of sharing practice and ideas. It is aimed at a beginner/intermediate level. Note that seating materials and manufacturing methods will NOT be discussed.

Aims & Objectives
There are numerous techniques for capturing body shape using casting bags. It is the aim of this session to share practice across clinical staff, technical staff and manufacturers. There is no "gold standard" for casting and so the aim is NOT to identify a singular method, but to explore how approaches vary between organisations.

Background, Technique, Standards, Clinical Detail, Results & Testing
Custom contoured seating is provided routinely in wheelchair services across the country and, in a small number of cases, for static seating. It is a complex, highly skilled field of work, the clinician/engineer needing to have a sound understanding of postural management, coupled with the ability to think in three dimensions, in order to develop appropriate shaped supports to closely fit the human form. Manufacturers of seating, both commercial and NHS, do not generally share their practices as regards shape capture, not so much because of commercial sensitivities, but more because there is no platform so to do. Two books have been published in recent years which discuss custom contoured seating (Pope, 2007 and Taktak et al, 2014) but they do not expressly discuss the various techniques for shape capture. This session will facilitate the sharing of practice with the aim of improving outcomes for the patient. Please note that the framing method, used exclusively with the manufacture of (some) matrix seating systems, will not be covered as this is an entirely different technique.

The session will first introduce the subject area and briefly describe the reasons for using/not using custom contoured seating. This will be followed by a number of practical demonstrations using volunteers from the audience to demonstrate a variety of techniques. These will be facilitated by a selection of typical postures such as pelvic obliquity, rotation and tilt, extended hips, ab/adducted hips, flexed knees and kyphoscoliosis. It is intended that the session will be interactive, with the presenters acting as facilitators to discussion and the sharing of techniques, tips and ideas. The session will conclude with the presenters summarising the main learning points identified through the hour.

Discussion
It is hoped that the session will develop clinicians', engineers' and manufacturers' breadth of skills in capturing body shape for the purposes of manufacturing custom contoured seating.

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