REHABILITATION ENGINEERING SERVICES FOR ELECTRONIC ASSISTIVE TECHNOLOGY

To be used in conjunction with

Rehabilitation Engineering Services:

Functions, Competencies, and Resources

Produced by

Rehabilitation Engineering Services Management Group

and

IPEM Institute of Physics and Engineering in Medicine

In collaboration with

Health Design & Technology Institute

Issue 1.1

March 2015

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Produced by *RESMaG*
(The Rehabilitation Engineering Services Management Group)

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(Health Design & Technology Institute, Coventry University)

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This interim competencies document has been produced by the RESMaG Electronic Assistive Technology Group in collaboration with the RESMaG Education & Training Working Group in response to requests for guidance on the impact upon the delivery of assistive technology services of the introduction of Modernising Scientific Careers (MSC). An updated version will be issued once MSC has been fully implemented.

1. INTRODUCTION

This document has been produced by the Electronic Assistive Technology (EAT) Special Interest Group of RESMaG to identify guidelines that can be used as a benchmark for EAT services involved in the prescription, provision and repair of communication aids, alternative methods of computer access, environmental controls and specialised wheelchair controls. The specification for these services are defined by NHS England for complex disability equipment that covers the specialist services that support patients with complex physical disabilities (including those with a combination of physical, sensory, intellectual, learning or cognitive disabilities). This includes specialist assessment for equipment, as well as its provision, maintenance and management [1]. This document is to be used in conjunction with *Rehabilitation Engineering Services: Functions, Competencies, and Resources* [2].

Depending on the role of the person in the service, competencies for wheelchair and special seating may also be required and this document can be used in conjunction with *Rehabilitation Engineering Services for Wheelchairs and Special Seating* document [3].

Many NHS providers and commissioners are unclear of the service provided by Healthcare Science professionals specialising in rehabilitation engineering and the framework in which they work. This is, in part, due to the relatively small numbers of Healthcare Science Associates, Rehabilitation Engineers and Clinical Engineers working in the NHS.

It is vitally important that resources are employed in the most economical manner in order to provide the most effective solution to a client's needs. Healthcare Science professionals have an important contribution to make in their field and it is anticipated that these standards will act as a foundation for the provision and development of this discipline.

The guidelines have been developed alongside other interim competencies documents in: 'Wheelchairs and Special Seating' [3] and 'Prosthetics and Orthotics' [4] which, in turn, were based upon the DoH Technician Training Programmes, both Basic and Advanced [5, 6] and the IPEM Policy Statement on Rehabilitation Engineering Services [7]. These are used to define a minimum acceptance standard of personal competence for Rehabilitation Engineering staff, but will also be of use to fellow professionals involved in the assessment, provision and repair of EAT.

The guidelines follow the structure of the overall recommendations in *Rehabilitation Engineering Services: Functions, Competencies, and Resources* [2], which should be read in conjunction with this document.

Please note that throughout this document HCSA refers to Healthcare Science Associates, RE to Rehabilitation Engineers and CE to Clinical Engineers [2].

2. SERVICE OBJECTIVES

2.1 Outline of EAT Service Objectives

2.1.1 To provide multi-disciplinary assessments for service users with EAT needs, including those with more complex requirements, and their carers.

2.1.2 To provide information and technical advice on standard and bespoke EAT solutions to meet the needs of service users.

2.1.3 To provide information and advice to health, social care and other professionals on the range of available EAT solutions, their technical specifications and suitability.

2.1.4 To manufacture bespoke EAT solutions to meet the needs of service users where appropriate.

2.1.5 To provide technical advice to users, carers and professionals on the use and maintenance of equipment.

2.1.6 To review users on regular basis to ensure their changing needs are being met

2.1.7 To monitor and assist in the management of equipment reconditioning where appropriate.

2.1.8 To ensure that technical safety standards of work undertaken by manufactures and contractors is satisfactory, of good quality and meets relative standards (e.g. National Service Framework Agreement for the provision of EAT equipment).

2.1.9 To develop other rehabilitation/clinical engineering activities as agreed with the specialist commissioning team, for example by contributing to the support and establishment of local services (AAC and wheelchairs)

2.1.10 Work within the requirements of an established quality system or aspired to work towards the adoption of appropriate quality standards in the delivery of EAT services.

2.1.11 To continually try to improve the quality of service and cost effectiveness.

2.1.12 Maintain access to a loan bank of equipment for assessment, trial and long-term loan.

2.1.13 Ensure all equipment provided is maintained in a satisfactory state and checked in accordance with manufacturers' recommendations.

2.1.14 Manage, aggregate and analyse service data.

2.1.15 To lead on, and contribute to Research and development activities.

2.1.16 To monitor and assist in the management of a structured maintenance and service programme where appropriate.

3 PROFESSIONAL COMPETENCIES

3.1 Knowledge

In addition to having a qualified and sound engineering background, a high degree of knowledge and expertise is essential in the application of manufacturers' specifications for various EAT devices. Rehabilitation engineering staff working in this area should:

		Minimum Level
3.1.1	Be aware of the various roles within the multidisciplinary team and how each profession inputs to the assessment process.	HCSA
3.1.2	Have a working knowledge of all relevant common types of EAT, their operation, construction and assembly, including maintenance and repair procedures.	HCSA
3.1.3	Understand the environmental and safety requirements with respect to EAT.	HCSA
3.1.4	Be familiar with the various electronic communication and control devices and circumstances under which their use would be appropriate.	HCSA
3.1.5	Have an understanding and knowledge of disabling conditions, posture, mechanics, biomechanics, neurophysiology, cognition and pathologies.	HCSA
3.1.6	Have a working knowledge of the procedures and instructions contained within the manufacturers Quality Manuals, repair contracts and their negotiations where relevant.	HCSA
3.1.7	Have a working knowledge of ISO 9001 & EN 46000 Quality Management Systems and the Medical Devices Regulations in relation to EAT.	HCSA
3.1.8	Understand the use of Information Technology (IT) in the management and operation of EAT.	HCSA
3.1.9	Possess knowledge of commercial equipment and understand where bespoke equipment may be appropriate.	HCSA
3.1.10	Have knowledge of the limitations of prescription and consequences on anatomy, cognition, physiology and pathology.	RE
3.1.11	Have knowledge and understanding of possible contraindications.	RE
3.1.12	Have knowledge and understanding of the principles of cost management.	RE
3.1.13	Have an understanding and knowledge of the policy, resources and equipment that are available, including any contractual obligations.	RE

3.2 Skills

Rehabilitation Engineering staff, according to their minimum level of competence, are capable of:

		Minimum Level
3.2.1	Making or supervising technical adjustments or adaptations to assistive technology as specified by the clinical team	HCSA
3.2.2	Communicating in the manner appropriate to listener / audience, being mindful and respectful of their level and ability to comprehend, the effect of any impairments to hearing, comprehension or memory and any language or other barriers. Being respectful of cultural issues and sympathetic to the medical condition of users, their emotional situation and potential conflicting expectations.	HCSA
3.2.3	Recognising the boundaries of one's own professional competence and seeking advice when appropriate.	HCSA
3.2.4	Adopting a structured and reasoned approach.	HCSA
3.2.5	Inspect approved contractors work standards in relation to post installation to check appropriateness for the user (Quality Assurance).	RE
3.2.6	Incorporate the holistic needs of users and carers.	RE
3.2.7	Safely positioning the prescribed equipment including the user interface and access method to optimise the user's function including mounting of EAT.	RE
3.2.8	Providing valued judgment in prescription of equipment balancing costs against priority of needs.	RE
3.2.9	Understanding the technical risks associated with compatibility where integration is considered.	RE
3.2.10	Specifying and adapting equipment to solve user and carer problems, or being capable of supervising others to do so.	RE
3.2.11	Estimating the costs where possible solutions are being investigated.	RE
3.2.12	Making decisions based on clinical reasoning, including in clinical situations with possible emotional stress.	RE
3.2.13	Teaching and educating through demonstration and verbal clarity to all prescribers and carers, expressing technical terminology in lay terms.	RE
3.2.14	Making clinical assessments of the user's EAT requirements either as a member of a multidisciplinary team to contribute in clinical assessments and working independently where appropriate.	RE
3.2.15	Communicating the technical aspects of a case to all participants, to a level and in a manner appropriate to each.	RE
3.2.16	Being appreciative of when to adopt a team approach and when to act individually.	RE
3.2.17	Concluding an outcome via consensus or otherwise and be able to explain the reasoning for this.	RE
3.2.18	Getting involved in Research and Development.	RE
3.2.19	Leading Research and Development.	CE
3.2.20	Developing safe and effective technical solutions to match a user's EAT needs including integration with existing equipment such as a user's postural management system, powered wheelchair, AAC, EC etc.	CE
3.2.21	Negotiation at all levels.	CE

3.2.22	Identifying the risks involved in using/not using EAT and agree a risk management strategy with the user / provider. [8]	CE
3.2.23	Controlling contract costs.	CE
3.2.24	Taking a lead role in the team when required.	CE
3.2.25	Encouraging participation of all stakeholders, to seek views of all and be able to balance potentially conflicting opinions or proposals, in team or case lead role.	CE
3.2.26	Obtaining and utilising assessment information and selecting choice of equipment provision.	CE

3.3 Attitudes and Attributes

Rehabilitation engineering staff can form an integral part of the clinical assessment team for EAT. The competencies below apply to all staff at all levels.

Equality and Diversity

3.3.1 Recognise and respond appropriately to the needs of users and carers. Appreciate that their views, situation and background may influence their approach and communication.

3.3.2 Respect all requirements of equality and diversity legislation and NHS procedures in interacting with service users, carers and other healthcare professionals. To treat all individuals (users and staff) with dignity and respect, recognising the user's and their family's right to make choices according to their beliefs and preferences.

3.3.3 Maintain respect and dignity for all service users. Be mindful and sympathetic to the physiological wellbeing and status of individuals who may have progressing medical condition and potentially in terminal phase. Show similar respect and approach for carers, family and friends of users and their respective situations.

3.3.4 Be adaptable in approach to situations and communication, especially with service users, carers and family; be able to accommodate rapidly and appropriately views expressed and information relating to user's circumstances.

3.3.5 Display a positive attitude and patient centred practice, commensurate with NHS objectives of caring for users, aiming to contribute to their wellbeing, function and quality of life.

Personal Qualities

3.3.6 Personal management skills e.g. managing one's diary and appointments

3.3.7 Ability and willingness to reflect on own practice and judgement to improve on own and team practice.

3.3.8 To seek and actively engage in professional supervision.

3.3.9 Be proactive in approach to development of self, colleagues and the service, including demonstrating effective service performance.

3.3.10 Be responsible and trustworthy in dealing with financial matters, confidential information and safe use of equipment issued to users.

3.3.11 Have a positive team attitude with practical commitment

4 PRACTICAL COMPETENCIES

4.1 Professional Practice

Responsibility and Conduct:

		Minimum Level
4.1.1	Maintain awareness of quality management of medical devices, and relevant safety standards and understand their implication in practice (Appendix 1).	HCSA
4.1.2	Be aware of the risk issues relevant to EAT equipment in their individual practice and the impact of inappropriate postural management in provision of EAT. These would include (but are not limited to) current advice, hazard and safety notices, device alerts, electrical safety requirements, private and public transport safety, clinical risks such as Asymmetrical Tonic Neck Reflex (ATNR) related to person's practice.	RE
4.1.3	Monitor Field Safety Notices and Medical Device Alerts reported by the MHRA, Manufacturers and other contacts e.g. RESMaG and REBSIG.	CE
	Law	
4.1.4	Have a working knowledge of current legislation relevant to person's practice e.g. Consumer Protection Act, Health and Safety at Work Act, Medical Devices Regulations, fire safety regulations, Manual Handling Regulations.	HSCA
	Communication	
4.1.5	Be able to produce training materials and train others when appropriate.	HCSA
4.1.6	Be able to communicate the technical, clinical and scientific aspects of a case as appropriate to all participants and to be flexible and respect others' opinions.	RE
4.1.7	Know when to liaise with other professionals and be pro-active in communicating as necessary. This will include taking a holistic approach to meeting patients' complex needs by working in collaboration with existing EAT organisations where possible (e.g. integrated access for AAC, Specialist Controls and ECS).	RE
4.1.8	Be capable of compiling informative reports to communicate clinical and technical requirements.	RE

Professional Development

4.1.9	As part of a planned programme of continuing profession development (CPD), keep up to date with current best practice and technical, clinical and scientific developments in the field of EAT.	HCSA

Public Awareness

4.1.10	Maintain awareness of relevant social issues that affect the national and local services or that are of special concern to users and carers.	RE

4.2 Clinic/Domiciliary Visits

		Minimum Level
4.2.1	Procurement of EAT devices.	HCSA
4.2.2	Handover, setup, delivery EAT devices and systems.	HCSA
4.2.3	Setup equipment for assessment and loan taking into account reliability /positioning / repeatability and position of display units/feedback systems.	HCSA
4.2.4	To undertake PPM and/or PAT testing to ensure satisfactory status of equipment as per local guidelines.	HCSA
4.2.5	Modify / adjust EAT equipment stated in section 1 depending on the relevant discipline.	RE
4.2.6	Install integrated systems including some or all of EC, AAC, and computer access in conjunction with specialised powered wheelchair control systems.	RE
4.2.7	Provide specialist knowledge, advice and training regarding interfacing of EAT equipment onto wheelchairs/ other mobility devices/ static seating/ in bed.	RE
4.2.8	Instruct stakeholders in the use of the EAT systems, including safety aspects, charging, maintenance, repair and correct positioning through appropriate user instructions/ training.	RE
4.2.9	Record details of assessments and equipment specified, including design modifications and follow-up/ review plans. Clear objectives/ specifications required at clinical assessment stage.	RE
4.2.10	Assess for and make recommendations regarding control by EAT where third party products are used and there is a need to carry out risk assessment to satisfy the host Trusts' governance policy.	RE

4.3 Practical Competencies – Workplace

		Minimum Level
4.3.1	Keep accurate clinical notes for all contacts with or about the client, in accordance with local Information Governance guidelines.	HCSA
4.3.2	Keep accurate equipment records utilising a robust equipment management system, to include details such as location, repair history, service / maintenance schedule.	HCSA
4.3.3	Prepare equipment for the client to trial in accordance with the goals that have been identified for the client during the assessment process.	HCSA

4.3.4	Submit and monitor adverse occurrences in accordance with the national adverse incident reporting system.	HCSA
4.3.5	Provide technical support to clients, carers and professionals for equipment for which service is responsible.	HCSA
4.3.6	Make recommendations for appropriate equipment and configuration of the equipment for the client. Write assessment reports to convey this information to those responsible for purchasing the equipment.	RE
4.3.7	Prepare specifications for mechanical and electronic equipment that is required to be manufactured by other members of the team.	RE
4.3.8	Contribute to peer review discussions concerning the most appropriate interventions for the client.	RE
4.3.9	Maintain knowledge of the scientific, clinical and technical evidence base that underpins the provision of EAT, and incorporate the knowledge into practice.	RE
4.3.10	Monitor contractor's repairs, modifications, and quality of work in line with the current contract. Monitor progress of outstanding work through contractors.	RE
4.3.11	Evaluate new environmental controllers, communication aids, computer access solutions, special controls and associated equipment. Ensure current safety standards of equipment and materials are complied with.	RE
4.3.12	Prepare and present training courses on EAT, including lectures and demonstrations both to in-house staff and non-engineers.	CE
4.3.13	Plan and manage service bidding and funding for the EAT service.	CE

REFERENCES

1. *Manual for prescribed specialised services.* NHS Commissioning Board, November 2012.
2. *Rehabilitation Engineering Services: Functions, Competencies, and Resources*. Published by RESMaG. Coventry: Health Design & Technology Institute, Coventry University, 2012.
3. *Rehabilitation Engineering Services for Wheelchairs and Special Seating* Published by RESMaG. Coventry: Health Design & Technology Institute, Coventry University, 2012.
4. *Rehabilitation Engineering Services for Prosthetics and Orthotics* Published by RESMaG. Coventry: Health Design & Technology Institute, Coventry University, 2012.
5. *DoH Technician Training Programme in Rehabilitation Engineering*. King's College London, 1996. (First-Stage Technician) Department of Health, 1996.
6. *DoH Technician Training Programme in Rehabilitation Engineering (Advanced)*. Department of Health, 1996.
7. *IPEM Policy Statement on Rehabilitation Engineering Services*: June 1999 (Version 3). York: Institute of Physics and Engineering in Medicine, 1999.
8. *Assistive Technology Workforce Development: Report Summary June 2007* Foundation for Assistive Technology 2007

APPENDIX 1

Relevant safety standards and guidelines:

- Medicines and healthcare products regulatory agency, February 2011. The Medical Devices regulations: Implications on healthcare and other related establishments. Directives bulletin 18. London: MHRA
- British Standards Institution (2009). BS EN ISO 14971:2009 Medical devices — Application of risk management to medical devices
- British Standards Institution (2008). EN ISO 9001:2008 Quality management System requirements
- British Standards Institution (2006). BS EN 60601-1:2006. Medical electrical equipment. Part 1: General requirements for basic safety and essential performance. London: BSI
- Medicines and Healthcare Products Regulatory Agency, January 2006. Guidance notes for manufacturers of custom made devices. MHRA Guidance Note 9. London: MHRA
- British Standards Institution (2005). PD CEN ISO/TR 14969:2005. Medical devices. Quality management systems. Guidance on the application of ISO 13485:2003. London: BSI
- British Standards Institution (2003). EN ISO 13485:2003. Medical devices. Quality management systems. Requirements for regulatory purposes. London: BSI

THE ELECTRONIC ASSISTIVE TECHNOLOGY GROUP OF *RESMAG*

Members of this group are actively involved in the day-to-day management of EAT service contracts with representatives from England, Scotland, Wales and Northern Ireland. The group meets three times a year and aims to:

- Provide a representative body for EAT healthcare scientists via RESMaG to statutory, voluntary, education, service and professional groups at national level.
- Provide a professional link for commissioning the services through Clinical Reference Groups (CRGs).
- Provide advice on EAT to EAT services.
- Initiate and continue to promote and support quality management systems within the field of EAT.
- Co-ordinate and exchange information between EAT services at regional and national level.
- Assist in the implementation and review of Continuing Professional Development and the relevant training systems for EAT
- Maintain the RESMaG EAT website and manage the RESMaG EAT Google group
- Act as co-coordinating body for the collection and dissemination of information from for example:

- **BHTA –** British Healthcare Trades Association (http://www.bhta.net/)
- **BSRM-** British Society of Rehabilitation Medicine (http://www.bsrm.co.uk/)
- **IPEM -** The Institute of Physics & Engineering in Medicine (http://www.ipem.ac.uk/)
- **LA –** Limbless Association (http://www.limbless-association.org/)
- **MHRA** – Medicines and Healthcare products Regulatory Agency (http://www.limbless-association.org/)
- **REACH –** The Association for Children with Upper Limb Deficiency (http://www.reach.org.uk/)
- **FAST-** Foundation for Assistive Technology (http://www.fastuk.org/)
- **REBSIG-** Rehabilitation Engineering and Biomechanics Special Interest Group
- **Communication Matters** (http://www.communicationmatters.org.uk/)

Representatives at *RESMaG* Council

Member	Representation
Council Chair and Deputy Chair,	2
SIG Chair and Deputy Chair,	6
National Group representation from England, Scotland, Wales and Northern Ireland	4
Regional representation from England	8
Regional representation from Scotland	1
Regional representation from Wales	1
Regional representation from Northern Ireland	1
Representation from Associates	3

Special Interest Groups (SIGs)
Wheelchairs and Special Seating
Prosthetics and Orthotics
Electronic Assistive Technology

Associates
Medicines and Healthcare products Regulatory Agency (MHRA)
Health Design & Technology Institute (HDTI)
Rehabilitation Engineering and Biomechanics SIG of the Institute of Physics and Engineering in Medicine

Contact

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