

REHABILITATION ENGINEERING SERVICES FOR PROSTHETICS AND ORTHOTICS

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 2.1

March 2012

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(The Rehabilitation Engineering Services Management Group)

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This interim update of the RESMaG 2004 (Issue 1.2) competencies document has been produced by 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). A fully revised version will be issued once MSC has been fully implemented.

1. INTRODUCTION

This document has been produced by the Prosthetics & Orthotics Interest group of RESMaG to identify guidelines that can be used as a benchmark for rehabilitation engineering services involved in the prescription, provision and repair of prosthetic and orthotic devices. It is to be used in conjunction with *Rehabilitation Engineering Services: Functions, Competencies, and Resources* [1].

Many NHS providers and commissioners are unclear of the service provided by Rehabilitation Engineers 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 mobility and postural management needs. Rehabilitation Engineers 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 in conjunction with the DoH Technician Training Programmes, both Basic and Advanced [2, 3] and the IPEM Policy Statement on Rehabilitation Engineering Services [4]. These are used to define a minimum acceptance standard of personal competence of rehabilitation engineering staff but will also be of use to fellow professionals involved in the assessment, provision and repair of prosthetic and orthotic devices.

The guidelines follow the structure of the overall recommendations in *Rehabilitation Engineering Services: Functions, Competencies, and Resources* [1], which should be read in conjunction with this document.

2 PROFESSIONAL COMPETENCIES

2.1 Knowledge

In addition to having a qualified and sound engineering background, a high degree of expertise is essential in knowledge of manufacturers' specifications for the various prosthetic and orthotic devices. Rehabilitation engineering staff working in this area should, according to the minimum level of competence indicated:

		Minimum Level
2.1.1	Be aware of the various roles within the clinic team and respect their views.	HCSA
2.1.2	Have a working knowledge of all common types of prosthetic hardware and orthotic devices, their construction and assembly, including maintenance and repair procedures.	HCSA
2.1.3	Understand the environmental requirements, mobility and safety in respect of prosthetic and orthotic devices.	HCSA
2.1.4	Be familiar with the various upper extremity control systems including body and externally powered systems.	HCSA
2.1.5	Have an understanding and knowledge of mechanics, biomechanics, gait and skeletal alignment requirements in the relevant pathologies.	RE
2.1.6	Have knowledge of the causes of tissue breakdown and the need for pressure measurement and the management of socket interface and alignment.	RE
2.1.7	Have knowledge of the limitations of prescription and consequences on anatomy, physiology and pathology.	RE
2.1.8	Have knowledge and understanding of the principles of cost management.	RE
2.1.9	Have a working knowledge of the procedures and instructions contained within the manufacturers Quality Manuals, repair contracts and their negotiations where relevant.	RE
2.1.10	Have an understanding and knowledge of the policy, resources and equipment that are available within the district service with which they have contractual obligations.	RE
2.1.11	Have a working knowledge of ISO 9000 & EN 46000 Quality Management Systems and the Medical Devices Regulations in relation to prosthetic and orthotic devices.	RE
2.1.12	Have knowledge on the use of Information Technology (IT) in the management and operation of prosthetic and orthotic services.	RE

2.2 Skills

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

	Minimum Level
2.2.1 Assessing a patient's referral for prosthesis and/or orthosis management in association with the Consultant in Rehabilitation Medicine and Prosthetists/Orthotists, regarding the technical selection/prescription of the appropriate device. The outcome to be effective and safe taking cognisance of the manufacturers' specifications.	RE
2.2.2 Making a biomechanical assessment of gait, either as a member of a multidisciplinary team or working independently.	CE
2.2.3 Teaching through demonstration and with verbal clarity to all service users, healthcare professionals and others, expressing technical terminology in lay terms.	RE
2.2.4 Making or supervising technical adjustments or adaptations to prosthetic or orthotic devices as specified by the clinical team.	RE
2.2.5 Making sound decisions and producing informative reports that clearly communicate any technical requirements.	RE
2.2.6 Have personnel management skills and be capable of negotiating at all levels.	RE
2.2.7 Controlling contract costs.	RE

2.3 Attitudes and Attributes

Rehabilitation engineering staff can form an integral part of the clinical assessment team for prosthetics and orthotics and, according to their minimum level of competence: –

	Minimum Level
2.3.1 Recognise and respond appropriately to the needs of the users.	HCSA
2.3.2 Have the ability to communicate the technical aspects of a case to all participants, whilst being flexible and respecting the opinions of others.	RE
2.3.3 Have a team attitude with practical commitment and be capable of acting independently as appropriate.	RE

3 SERVICE OBJECTIVES

- 3.1 Adopt appropriate quality standards in the delivery of rehabilitation engineering services.
- 3.2 Provide information and advice to healthcare professionals, users and others on the technical aspects of use and maintenance of available prosthetic and orthotic devices.
- 3.3 Contribute to the multidisciplinary assessment of users for prosthetic and orthotic devices.
- 3.4 Provide information and advice on repairs and modifications.
- 3.5 Monitor and assist in the management of a quality repair service to prosthetic and orthotic users.
- 3.6 Manage refurbishment programme/s for prosthetic & orthotic components and monitor quality standards.
- 3.7 Ensure that technical and safety standards of the service are satisfactory.
- 3.8 Advise on procurement of prosthetic and orthotic devices.
- 3.9 To develop the rehabilitation engineering services to meet the needs of the NHS.
- 3.10 Ensure implementation of a risk management protocol.

4 PRACTICAL COMPETENCIES

Note: the numbering corresponds to the numbering in Section 4 of Rehabilitation Engineering Services: Function, Competencies, and Resources [1].

4.1 Professional Practice

	Minimum Level
4.1.1 Responsibility and conduct: Maintain awareness of safety standards. Be aware of the safety issues connected with prosthetic and orthotic devices (e.g. current Hazard and Safety Notices, Bulletins and Risk Assessment). Monitor defects of prosthetic and orthotic equipment reported to and by the MHRA 'Adverse Incident Centre' and through other contacts (e.g., RESMaG).	HCSA
4.1.2 Law: Have a working knowledge of relevant current legislation e.g. Consumer Protection Act, Health and Safety at Work Act, Medical Devices Regulations, Fire Safety Regulations, Manual Handling regulations and Human Rights Act.	HCSA
4.1.3 Communication: Be able to communicate the technical aspects of a case to all participants and be flexible and respect other's opinions. Know when to liaise with other professionals and be proactive in communicating as necessary. Be capable of compiling informative reports, which clearly communicate technical requirements. Be able to train others when appropriate.	HCSA / RE
4.1.4 Professional development: As part of a planned programme of continuing professional development (CPD), keeping up to date with technical developments in the fields of prosthetics and orthotics through reading, education and training.	RE
4.1.5 Public awareness: Maintain awareness of the holistic needs of users. Keep aware of relevant social issues that affect the national and local services or that are of special concern to users.	RE

4.2 Practical Competencies – in the Clinic (in addition to Section 4.1)

4.2.1 Assist Prosthetists and/or Orthotists, to commission new or repaired prosthetic and orthotic devices in accordance with the manufactures technical specifications.	RE
4.2.2 In conjunction with Prosthetists and/or Orthotists, assist technically in the quantitative assessment of the user, for the provision of prosthetic and/or orthotic devices.	RE
4.2.3 In conjunction with Prosthetists and/or Orthotists, instruct users and carers on the use and care of prosthetic and orthotic devices.	HCSA
4.2.4 Record details of assessment and equipment specified, including follow-up reviews and risk assessment.	HCSA
4.2.5 Attend and contribute to clinics to advise on hardware, including the supply, quality and ranges of devices available.	RE
4.2.6 Provide engineering and technical support for prosthetic and orthotic services.	RE
4.2.7 Advise and or carry out scientific/clinical measurements, and report on the biomechanics of function.	RE/CE

4.4 Practical Competencies – Workplace (in addition to Section 4.1 and 4.2)

		Minimum Level
4.4.1	Inspect, in accordance with the manufacture’s specifications, any new or repaired prosthetic and orthotic devices prior to delivery.	HCSA
4.4.2	Investigate defects in prosthetic and orthotic components reported to MHRA and undertake any recommended corrective actions, facilitate warranty claims.	HCSA
4.4.3	Monitor adverse incidences in accordance with the national adverse incident reporting system.	HCSA
4.4.4	Monitor and report performance of the service; check that repairs, maintenance, and quality of work comply with current service contract specifications.	HCSA
4.4.5	Audit clinical provision for cost efficiency, including the refurbishment of components, and progress solutions accordingly.	RE
4.4.6	Participate in case conferences and clinical audits. Advise on any technical problems raised by medical, paramedical, administrative staff, and users.	RE
4.4.7	Participate in technical evaluation of new prosthetic and orthotic devices. Ensure current safety standards of equipment and materials are complied with. Monitor the performance against the contract specifications.	RE
4.4.8	Assist in negotiations for the management of Commissioners/provider service contracts.	RE/CE
4.4.9	Provide and maintain Quality Assurance Management Systems.	RE/CE
4.4.10	Participate in training courses on appropriate aspects of prosthetic and orthotic services, including lectures and demonstrations to administrative, clerical, and engineering staff.	RE/CE

REFERENCES

1. *Rehabilitation Engineering Services: Functions, Competencies, and Resources*. Published by RESMaG. Coventry: Health Design & Technology Institute, Coventry University, 2012.
2. *DoH Technician Training Programme in Rehabilitation Engineering*. King’s College London, 1996. (First-Stage Technician) Department of Health, 1996.
3. *DoH Technician Training Programme in Rehabilitation Engineering (Advanced)*. Department of Health, 1996.
4. *IPEM Policy Statement on Rehabilitation Engineering Services*: June 1999 (Version 3). York: Institute of Physics and Engineering in Medicine, 1999.

THE PROSTHETIC & ORTHOTIC INTEREST GROUP OF *RESMAG*

Members of this group are actively involved in the day-to-day management of prosthetic and orthotic service contracts with representatives from England, Scotland, Wales and Northern Ireland. The group meets quarterly and aims to:

- Provide a representative body for Rehabilitation Engineering Services to statutory, voluntary, educational, service, and professional groups at a national level;
- Provide advice on rehabilitation engineering in relation to prosthetics and orthotics;
- Initiate and continue to promote and support quality management systems within the field of Rehabilitation Engineering;
- Co-ordinate and exchange information between Rehabilitation Engineering Services at regional and national levels;
- to promote and develop education, training and continuing professional development for rehabilitation engineering service professionals;
- Act as a co-ordinating body for collection and dissemination of information from related organisations such as

MHRA	Medicines and Healthcare Products Regulatory Agency
HDTI	Health Design & Technology Institute
IPEM	Institute of Physics & Engineering in Medicine
APLLG	Associate Parliamentary Limb Loss Group
BAPO	British Association of Prosthetists and Orthotists
ISPO	International Society for Prosthetics and Orthotics
BACPAR	British Association of Chartered Physiotherapists in Amputee Rehabilitation
ULPOT	Upper Limb Prosthetics for Occupational Therapists
SIGAM	Special Interest Group in Amputee Medicine of the BSRM
BHTA	British Healthcare Trades Association

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

For further information and contacts see: www.resmag.org.uk