

Executive Summary

The increasing availability of electronic technology in the home, school and workplace has enhanced popular awareness of its potential for countering impairment, be it congenital or following on from illness or injury. People with disabilities can be enabled to realise a greater potential, to develop greater independence and to become less dependent on others.

The rapidity of technological progress has outpaced the ability of the National Health Service to safely deliver an effective, integrated provision. This Report highlights current difficulties and makes recommendations to healthcare commissioners which offer real opportunity to promote and develop efficient, cost effective and equitable services nationwide. It builds upon and complements the Audit Commission's Report on the Provision of Equipment to Older or Disabled People by the NHS and Social Services in England and Wales. ⁽¹⁾

Key Recommendations

- 1** Electronic Assistive Technology (EAT) should be available equitably, appropriately and in a manner which is both efficient and cost-effective. Its provision should follow on from total disability assessment and should be considered a specialist component of Rehabilitation Medicine.
- 2** Comprehensive holistic assessment necessitates that a potential user's problems are properly identified and delineated. Whilst this may often be possible at a local level, complex problems demand that dedicated medical, scientific and technological, and therapy expertise should be available at a network of specialist centres. These centres should relate to local services on a "hub and spoke" basis.
- 3** Service delivery should be timely and appropriate. It should be overseen from each hub by specialist personnel who should adopt responsibility for equipment procurement, provision and maintenance. Working closely with locally based professional colleagues they should promote the effective, efficient and safe usage of EAT.
- 4** Technological advances necessitate that professional organisations such as the British Society of Rehabilitation Medicine, the Institute of Physics & Engineering in Medicine, the College of Occupational Therapists and the Royal College of Speech & Language Therapists work together and with healthcare commissioners to refine strategic objectives, to develop common integrated patterns of service delivery and to actively promote research and professional training.
- 5** There is need to define and establish national standards for the provision of EAT with accredited regional centres collaborating one with another to develop evidence based practice and oversee service delivery.

Introduction

- 1.1 Since the publication of the 1994 BSRM report "Prescription for Independence" (2), distinctions between the elemental components of electronic assistive technology (EAT) have become blurred by advancing technology.
- 1.2 The term '**Assistive Technology**' encompasses any item or piece of equipment used to maintain or increase the functional abilities of people with disabilities.
The term '**Electronic Assistive Technology**' is defined for the purposes of this Report as a sub-set of Assistive Technology. This sub-set comprises communication devices, environmental control systems, personal computers and the interfaces which permit their integration with information technology and with wheelchair control systems.
- 1.3 Whilst there has been some improvement in the provision of environmental control systems (ECS) since 1995 when services were devolved from the Department of Health to Health Authorities, communication aid provision continues to be unsatisfactory. In some areas there is active collaboration between Health Authorities and the education and social service departments of Local Authorities, but in general the provision of communication aids remains patchy and somewhat of a lottery. Equipment and expertise is often unavailable to the people who could be expected to benefit from it (3).
- 1.4 The need to integrate and better co-ordinate provision for individual service users has become increasingly clear. In some localities effective services exist and continue to evolve, but in many parts of the country the provision of EAT fails to address clinical need.
- 1.5 This Report addresses the underlying issues of equipment provision, service organisation and the harnessing of specialist skills. It describes the potential benefits of EAT, analyses current difficulties and sets out recommendations which will prove invaluable to those responsible for commissioning, managing or developing clinical services.
- 1.6 This report is published by the British Society of Rehabilitation Medicine working closely together with the Institute of Physics and Engineering in Medicine. It highlights the opportunities that novel and evolving patterns of electronic technology can offer to people with serious disabilities and identifies current problems. Its recommendations emphasise the need to develop comprehensive and properly evaluated patterns of service delivery equitably nationwide.

The Scope of Electronic Assistive Technology

- 2.1** EAT enables people limited by impairment due to congenital problems, injury or illness to improve their functional ability. It can be used advantageously by all age groups - from the pre-school child to the centenarian - to enhance independence, communication, comfort and safety, be it at home, school, work, or leisure.
- 2.2** Technological advances are presently following one another with such rapidity that it is often impossible to reliably anticipate novel applications. There may however remain situations where the sophistication of EAT may be inappropriate, or where it may need to be complemented by the usage of simpler systems. This is especially so with regard to communication devices, since even the most accomplished user may need to supplement EAT with charts, notebooks, mime or gesture.
- 2.3** The great variety of pressing individual need arising from their different circumstances necessitates that people with disabilities require a flexible and responsive service which offers timely intervention to those with rapidly progressive disorders and on-going support to those whose conditions are clinically stable.

2.4 Environmental Control Systems (ECS)

ECS enable people whose physical impairment precludes their operating standard remote control handsets to maintain a degree of independence, an enhanced quality of life and a lesser dependence on others. Within home, school and workplace, they offer users the ability to safely operate door entry systems, telecoms, computers, intercoms and pagers and to operate appliances such as television sets and video-recorders.

Carers are offered a degree of freedom too. ECS enable users to be left safely in a secure environment, yet able to make contact or summon assistance if the need should arise.

ECS enable severely disabled people to continue living in their own homes, significantly enhancing their quality of life and reducing their dependence upon others. Even those who require nursing home care can benefit from simple systems capable of improving their abilities and enhancing their self-esteem.

2.5 Communication Aids

Electronic communication devices, together with simpler non-electrical systems, offer augmentative and alternative communication (AAC) to people with impairment of speech or language. By generating artificial speech, text or symbols, they enable users to communicate with people both within and beyond their immediate environment.

They range from simple devices speaking recorded messages, to complex aids with vocabularies extending to thousands of words and sophisticated computer based systems optimising text generation through the use of specialised software.

They can dramatically improve the quality of life, playing a significant role in the development of the child with impairment of speech and language and in managing the communication needs of the adult with severe neurological impairment.^{(4) (5)}

2.6 Access to Information Technology

Personal computers are widely available both in the workplace and in the domestic environment. They can be readily connected to telecommunication services offering e-mail and Internet access. New technologies such as digital television and the Internet offer people ever increasing opportunity to access the wider world.

EAT can facilitate access to information technology for people with cognitive or learning difficulties. For some it can be a part of a structured learning environment, whilst for others it can offer access to the information and opportunity available through the Internet.

2.7 Aids to Reading and Writing

EAT can facilitate access to the written word for people with physical, cognitive, or learning difficulties. Specialist software programmes can encourage the development of writing and spelling in the speech and language impaired child and in the brain injured adult. ^{(6) (7)}

2.8 Accessing Electronic Assistive Technology

Switching and scanning mechanisms can be customised to individual need with configuration governed by a user's functional ability, consistency of strength and co-ordination at control sites. Residual limb movement is commonly utilised, but any controllable body function can be harnessed - eye blink, head movement, suck-blow or voice.

2.9 Integrating the Technology

Delineating the established components of EAT is increasingly difficult. Communication aids are being developed which incorporate ECS and computer access technology, whilst ECS offer computer access and enhanced opportunity for communication.

The safe and reliable integration of systems can offer real advantage to single switch users. It can enable such people to operate electric wheelchairs, communication aids, ECS and computer access technology from a single residual movement - using for example a multi-purpose joystick.

2.10 The Freedom to Choose

The following passage is extracted from Nikki Barker's prize winning essay "The Freedom to Choose" ⁽⁵⁾

'Despite the fact that I have a progressive muscle wasting disease which leaves me virtually paralysed from the neck down, with very limited movement of my head and right hand, an innovative range of devices enables me to truly live life as opposed to merely existing.'

'As a teenager, growing up with a severe disability, I was frustrated by the limited range of aids available. Fortunately as my physical deterioration progressed, so too did the sophistication of aids. Today I rely upon a wide variety of aids, which combine to give me an acceptable level of independence, whilst giving my carers much needed respite which ultimately lessens the intensity of their responsibilities.'

'My electric wheelchair combines mobility with comfort and has been specifically adapted to cater for my needs. Since acquiring it I am now able to sit upright all day, a luxury denied me for many years. The ability to move whenever I choose gives me a terrific feeling of freedom and control. This exhilarating feeling can only be appreciated by someone who has been completely immobilised for many years.'

'The environmental control unit is a system which gives me the greatest sense of empowerment. By activating a remote infra-red remote control unit and selecting pre-programmed functions displayed on a monitor, I have independent control over my home environment. This system enables me to use the telephone, contact carers via a range of intercoms and control doors, allowing me to leave and enter my home at will. For the first time in my life I can decide whom I let into my home and when I am alone I no longer fear being trapped within a blazing inferno.'

'I can operate a vast range of electrical appliances ranging from electric blankets, powered curtain rails, adjustable beds, lights and much more, in fact anything which is powered by a conventional socket. My television, video and hi-fi have all been programmed into my system. To my relief, I am no longer forced to endure 'Algebra Can Be Fun', because of my inability to control the television set. To be able to turn on a heater when I am cold or a fan when I am hot are simple pleasures, but have them denied and you soon realise their importance.'

'When I found using the computer keyboard impossible and became unable to write, I felt devoid of purpose. However I now have a voice-activated computer system which has not only restored my ability to write, but introduced other activities which have improved the quality of my life. A CD ROM has reintroduced me to the joys of reading books, solving crosswords, drawing and playing Scrabble, whilst a scanner has enabled me to read newspapers and I hope shortly to enjoy the many benefits enjoyed by users of the Internet.'

'Occasionally I get the impression that some people regard my environment as a sophisticated amusement arcade full of executive toys and fancy pieces of gadgetry - they're wrong! These items of assistive technology have restored my independence, control and the power to choose. I have dignity, enthusiasm and a life. Before I had these aids I felt like a disabled person; now I'm a person with a disability.'

Service Delivery - Problems and Recommendations

Problems

- 3.1 Accessing EAT can be difficult for professional personnel and for the potential user. There is considerable variation in the arrangements for referral, assessment, funding and service provision. ⁽⁸⁾
- 3.2 There is often confusion as to the agency which is responsible for provision. This is a particular problem for the individual with complex needs. All too frequently the potential user must liaise with a range of health, education and social service professionals all working to their own agendas, budgets and priorities. ⁽⁹⁾
- 3.3 Equipment is often provided without adequate assessment and without a satisfactory programme of user support. This is especially so for communication aids where access to trial equipment and to specialist tuition can greatly enhance equipment acceptance and user achievement. Trial equipment and specialist support services are in short supply. ⁽¹⁰⁾
- 3.4 Arrangements to regularly review the on-going usage and effectiveness of EAT are less than satisfactory. Changing clinical requirements necessitate reassessment and system reconfiguration, yet there is a paucity of specialist expertise. Without planned schedules for review and equipment maintenance, minor problems lead to malfunction, to mal-usage and to rejection by the user. ⁽¹¹⁾
- 3.5 EAT purchasing often lacks consistency and shows little regard for system compatibility ⁽⁹⁾. It is unusual for Health and Local Authorities to work together or to maintain a common equipment inventory.
- 3.6 Lack of compatibility between specific items of equipment can cause major problems for the user with complex requirements :- and even when equipment is compatible, a manufacturer may refuse to permit its optimal configuration for the user's greater benefit.
- 3.7 The devolution of funding from the Department of Health in 1994 has enabled Health Authorities to maintain ECS provision. In general, well structured larger services are able to offer a more equitable and comprehensive pattern of service delivery, but limited resources and increasing demand is leading inevitably to clinical prioritisation. ⁽¹²⁾

Funding for the provision of communication aids, computer access and switch technology is inconsistent and unsatisfactory. Individual need is determined with a minimum of inter-agency co-operation and with scant regard for the totality of care. It is not uncommon for example that the communication aid supplied for use in the classroom is re-claimed when a child leaves school.

Some Health and Local Authorities collaborate with one another to agree a common budgetary provision, but they are the exception rather than the rule:- most Local Authorities continue to recharge the cost of preparatory work to service users.

- 3.8 There is inequitable provision of EAT for people in residential care. Wide variation in its availability is compounded by inconsistent application and usage.

Recommendations

- 3.9** For EAT to be used effectively and safely, easier access should be provided to specialist interdisciplinary assessment, on-going user training and regular review both of the equipment and its relevance to clinical need.

There is at present such a shortage of specialist therapists, scientific and technical expertise that it is not possible to realise the opportunities offered by the emergent electronic technologies.

- 3.10** EAT should be provided by a hub and spoke model of service delivery with a central hub offering advice and specialist support to local service providers within each NHS Region.
- 3.11** The hub should offer dedicated input from a Consultant in Rehabilitation Medicine, a Consultant Clinical Scientist, a Specialist Occupational Therapist and a Specialist Speech and Language Therapist. It should co-ordinate and oversee service delivery, coupling clinical assessment and the provision of EAT with on-going administrative and technical support. This complements the recommendation of the Audit Commission that specialist rehabilitation centres should spearhead service delivery. ⁽¹⁾
- 3.12** The spokes should be the health, education and social service professionals working with the users or potential users of EAT. All should be enabled and encouraged to work within their capabilities for the benefit of service users, referring on as necessary to the hub's specialist expertise.
- 3.13** The hub should adopt responsibility for the procurement, provision and regular servicing of EAT, maintaining equipment inventories and ensuring that spokes can use resources to best advantage.
- 3.14** The hub should develop and resource training programmes for health, education and social service professionals, increasing their awareness and knowledge of EAT and thereby enabling them to better support service users.
- 3.15** The hub should offer comprehensive specialist EAT assessment:- sharing its recommendations appropriately with other agencies.
- 3.16** Sole provider responsibility for the funding of EAT should be adopted by Health Authorities, with budgetary management vested in each hub.
- 3.17** The National Strategic Group for Electronic Assistive Technology should work closely with professional organisations to develop evidence based guidelines for service delivery.
It should then be possible to encourage healthcare commissioners to promote and support effective and equitable service provision.

Education, Training and Research - Problems and Recommendations

Problems

- 4.1 The scope, potential benefit and availability of EAT is poorly understood by the public and by health and social service professionals. This leads to delayed provision, to the further dependence of those who could expect to benefit and to a prolongation of the burden on those providing care. ^{(13) (17)}

Delayed provision is especially disadvantageous to the child with cerebral palsy for whom EAT can offer the opportunity to overcome developmental and educational barriers and for the adult with aggressively progressive neurological disease for whom timely provision is of paramount importance.

- 4.2 EAT is recognised as an integral component of the formal training schedules for Consultants in Rehabilitation Medicine ⁽¹⁴⁾ and Consultant Clinical Scientists ⁽¹⁵⁾, but awareness of its potential and training in its usage amongst Occupational Therapists, Speech & Language Therapists and other healthcare professionals remains patchy and inconsistent.
- 4.3 A shortage of skilled and experienced therapists ensures that patterns of user tuition are often less than satisfactory. Inadequate patterns of on-going support and training are associated with a high incidence of equipment rejection by the EAT user. ⁽⁶⁾
- 4.4 Specialist courses are few in number, there is little clinical research and opportunity for the post-graduate study of EAT is limited.
- 4.5 There is no clear pattern of career progression within EAT services for the Clinical Scientists and Specialist Therapists whose involvement is essential if provision is to be safe, effective and innovative.

Recommendations

- 4.6 Information as to how EAT can enhance the quality of life for people with disabilities and reduce their dependence on others should be readily available to everyone through leaflets, video-recordings and Internet web sites.
- 4.7 Formal tuition with regard to EAT should be incorporated into training programmes for all health, education and social service personnel involved in the care of people with disabilities. Specialist post-graduate programmes and career structures should be developed for professionals involved with the provision of EAT. ⁽¹⁵⁾
- 4.8 Collaboration between discrete hub and spoke systems, identifying deficiencies in knowledge and service provision and promoting evidence based practice, should be encouraged as an integral component of clinical governance. Opportunities for innovation and research should be identified and submitted for support within the NHS Research & Development Programme.
- 4.9 A collaborative body should be established by the British Society of Rehabilitation Medicine, the College of Occupational Therapists, the Institute for Physics and Engineering in Medicine and the Royal College of Speech and Language Therapists to assess and monitor training schedules and service development.

APPENDIX ONE

Definitions and Terminology

Carer – an individual regularly providing personal care to a person with a disability, who may also be responsible for taking decisions on behalf of that person.

Clinical Scientist – a qualified and registered practitioner with clinical and technological skills, able to advise on the provision of specialised equipment and to oversee its safe and effective usage.

Communication Aid – any mechanism, be it sign language, display charts, the word processor, or the speech synthesiser, able to enhance the abilities of people with communication difficulties.

Electronic Assistive Technology (EAT) – any electronically based system or technology whose usage enables people with disabilities to achieve a greater independence or a lesser dependence on others.

Environmental Control System (ECS) – a switching system available to people unable to manage standard remote control technology who wish to maintain some control over their domestic environment.

Occupational Therapist – a qualified and registered member of the College of Occupational Therapists specialising in the optimisation of physical and psychological ability following on from congenital problems, illness or injury.

Rehabilitation

- In concept – a process whereby people with disabilities acquire the knowledge and skills needed for optimal physical, psychological and social function.
- In service – the use of all means to minimise the effects of disability and to enable people with disabilities to participate in society and attain an optimal degree of autonomy.

Rehabilitation Medicine – a specialised branch of medical practice concerned especially with the diagnosis, assessment, treatment and rehabilitation of people with profound or complex disabilities within an inter-disciplinary setting.

Speech & Language Therapist – a qualified and registered member of the Royal College of Speech and Language Therapists specialising in the assessment and treatment of disorders affecting language, literacy, communication and swallowing.

User – the individual for whom electronic assistive technology is provided.

APPENDIX TWO
Clinical Information

Clinical information from disparate sources in a consistent and comparable format is not readily available. The Working Party has collated data from the referenced sources.

**The provision of Environmental Control Systems - 1999
in two large and well structured regional services**

Region	Population	ECS users	Provision
North Thames	6,812,000	482	71/million
North West England	6,603,000	656	99/million

Medical diagnoses of ECS users

	North Thames	North West England
	100% represents 482 users in a population of 5,260,000	100% represents 656 users in a population of 6,603,000
	%	%
Multiple sclerosis	34	30
Cerebral palsy	17	16
Traumatic tetraplegia	14	11
Motor neurone disease	8	9
Neuromuscular disease	8	11
Cervical myelopathy	4	10
Cerebro-vascular disease	4	4
Traumatic brain injury	2	1
Other (each less than 1%)	9	8

Prescription of Voice Output Communication Aids by the Communication Aid Centre at Frenchay Hospital, Bristol

The Frenchay Communication Aid Centre provides a supra-regional assessment and support service for communication aid users and local health professionals.

During 1998 a total of 267 individuals referred to the Centre were considered capable of benefiting from the provision of voice output communication aids. This was not a population based sample of potential users and must therefore be interpreted with caution.

It is included to demonstrate that those who require communication aids are commonly those who can be expected to benefit from the provision of ECS.

MEDICAL DIAGNOSES	%
Cerebro-vascular disease	23
Cerebral palsy	12
Cerebral tumour	12
Parkinson's disease	11
Motor neurone disease	10
Traumatic brain injury	10
Multiple sclerosis	5
Laryngeal & pharyngeal tumour	2
Other neurological disorders	15
TOTAL	100

It has been estimated (NHS Supplies 1999) that there is an annual expenditure of around £8.4 million nationwide on the provision of new communication aids with some 60% of costs being met by Health Authorities, 25% by Local Authorities and the residual 15% by charities and private individuals.

APPENDIX THREE

The National Strategic Group for Electronic Assistive Technology

Set up in 1998, the National Strategic Group, under the chairmanship of the NHS Purchasing and Supply Agency, aims to bring together NHS personnel involved with EAT to enable them to share and compare experiences, to delineate good practice and to develop a common strategic vision.

It was necessary that the Group's initial membership be appointed, but from 2000 onwards, organisations will be invited to nominate representatives.

At present there is a possible membership of twenty three, but with a number of members adopting dual roles, the current membership is seventeen.

Representation on National Strategic Group for Electronic Assistive Technology

NHS Regions in England	8
NHS Purchasing and Supplies Agency	3
British Society of Rehabilitation Medicine	2
NHS Commissioners & Purchasers	2
College of Occupational Therapists	1
Institute of Physics & Engineering in Medicine	1
Medical Devices Agency	1
Department of Health	1
NHS in Scotland	1
NHS in Wales	1
Rehabilitation Engineers Managers Group	1
Royal College of Speech & Language Therapists	1

The agreed objectives of the Group are:

- the establishment of a forum to improve contact between clinicians and management and to better develop evidence based patterns of clinical practice
- the development and management of supplier contracts and the appropriate and considered introduction of new technology
- the better integration and oversight of clinical services to the greater benefit of service users
- the evolution of a vision which will better enable and empower service users

APPENDIX FOUR

The National Contract Framework

A three year National Contract for the supply of ECS was negotiated in 1996. This established a framework within which equipment could be evaluated prior to consideration for clinical usage and within which manufacturers could provide a structured pattern of supply, installation and maintenance.

By 1998 clinical service development and technological innovation necessitated a broader perspective. In collaboration with the National Strategic Group for EAT, a new National Contract was developed, a contract embracing ECS and electronic communication aids as well as other evolving and innovative technologies. ⁽¹⁶⁾

The new National Contract came into force in April 1999 for a two year term: a term renewable by its signatories on a yearly basis until 2004. It encourages manufacturers and suppliers to offer a wider range of equipment and services thereby strengthening their position in an increasingly crowded market place. It encompasses equipment supply, commissioning, maintenance and decommissioning – encouraging suppliers to form strategic alliances with each other, to develop a better co-ordinated provision and to offer provider units a wider range of contractual options.

Equipment supply

Equipment on Contract has been subjected to formal evaluation by the Commodity Advisory Committee of the National Strategic Group and conforms to the requirements of the Medical Devices Agency. As new equipment becomes available, it too is subjected to independent technical evaluation before being considered suitable for inclusion on Contract.

Equipment commissioning

Equipment should be installed and set up by skilled and experienced personnel. Many will be specialist technicians employed by suppliers and manufacturers, but in some localities trained and accredited NHS technical staff are able to set up equipment and oversee its installation.

Equipment maintenance

Equipment faults should be remedied within forty eight hours of notification with especially dependent users being afforded a priority response. The usage of equipment should be subject to formal review and to regular servicing. Manufacturers and suppliers may offer fault rectification and equipment maintenance or may seek permission to contract out these services.

Equipment decommissioning

Equipment no longer required by its user should be withdrawn: that suitable for further usage being identified and then refurbished according to manufacturers' guidelines.

The introduction of the 1999 National Contract Framework for EAT has led to:

- An enhanced technical and organisational co-operation between suppliers and manufacturers.
- A greater awareness of the need for specialist technical personnel within the NHS.
- A closer working between manufacturers and NHS scientific and technological personnel
- An increasingly formalised commitment to suppliers and manufacturers from provider units within the NHS.

APPENDIX FIVE

Two Established Models of Service

Clinical services continue to develop: their evolution largely dependent on the availability and expertise of key personnel and on their being able to oversee a critical mass of service users.

Two established services already offering comprehensive patterns of EAT provision are described:

- An all inclusive regional rehabilitation service in the West Midlands.
- An area based service in rural Lincolnshire.

The West Midlands

In the West Midlands, EAT is delivered primarily from the Regional Rehabilitation Centre at Selly Oak, Birmingham. The Centre offers a comprehensive service to fifteen Health Authorities and a population of some five million people. EAT is delivered by the Access to Communication and Technology (ACT) department led by a Consultant Clinical Scientist who reports to the Director of the Regional Rehabilitation Centre.

ACT provides assessment for environmental control systems, communication aids and computer access technology as well as co-ordinating integrated and complex provision in collaboration with the specialist wheelchair services available on site. An on-going programme of post-graduate education is designed to heighten awareness of EAT amongst health, education and social service professionals.

The Centre is funded to provide ECS throughout the West Midlands, but communication aids are provided only for people specifically referred for assessment of their communication needs.

Referral and Assessment

Referrals are accepted from health, education or social service professionals, from carers or from potential service users. A comprehensive pre-assessment report from those providing clinical care is required before formal consideration of the referral by ACT's inter-disciplinary professional team.

Thereafter appropriate assessment teams are identified. These may include Speech and Language Therapists, Occupational Therapists, Clinical Scientists and technicians with computer, electronic or mechanical expertise.

ACT liaises closely with Rehabilitation Medicine and Speech and Language services throughout the Region, involving them whenever possible in the assessment process.

Having determined the likely pattern of need, the team arranges for assessment in the domiciliary environment, at a peripheral unit or at the Regional Centre. Initial assessment is undertaken by the team members whose skills are likely to be most relevant, with further evaluation by other team members, clinical colleagues or other units at the Regional Centre as required.

A formal written report is made available to all relevant professional personnel and forms the basis for EAT provision.

The Procurement and Commissioning of Electronic Assistive Technology

The Regional Centre has electronic and mechanical workshop facilities and the expertise to maintain equipment, to customise it for the individual user and to design and manufacture specific bespoke solutions. A range of equipment is available for short and long term loan, but where need is likely to be prolonged, it is specifically purchased for each individual. Whilst the Centre's engineering personnel ensure that all equipment purchased conforms to the standards laid down by the Medical Devices Agency, most equipment is maintained by manufacturers and suppliers on a contractual basis.

The Centre has plans to:

- regularly review users and their usage of EAT
- improve the monitoring of equipment installations contracted out to other agencies
- increase "in-house" servicing and equipment maintenance
- develop an equipment refurbishment facility
- set up a user help-line

Lincolnshire

The Electronic Assistive Technology service available to people with physical disabilities amongst Lincolnshire's population of some 670,000 provides:

- environmental control systems
- communication aids
- equipment and software to access personal computers
- simple switch systems for the training of potential users
- integrated and complex solutions in collaboration with specialist wheelchair services
- a programme of presentations to heighten awareness of EAT amongst health, education and social service professionals.

Referral and Assessment

Potential users may be referred to the service by health and social service professionals, by their families or by themselves.

Initial assessment is by a member of the core team – a Consultant in Rehabilitation Medicine, a Consultant Clinical Scientist, or a Specialist Speech and Language Therapist, but complex problems may necessitate the involvement of several team members and of other professional colleagues.

Assessment usually takes place in the home of the potential user.

Typically it involves:

- Evaluation of an individual's ability to benefit from EAT by the enjoyment of an improved quality of life or by the reduction of the burden on those providing care.

- Identification of the need for home security, communication and appliance control.
- Demonstration of suitable equipment and exploration of the most appropriate methods of accessing that equipment.
- Short-term equipment provision if this is necessary to further the assessment.
- Offering advice on equipment and sources of funding to those ineligible for statutory provision.

Each assessment is presented in written format to all relevant professional personnel.

The core team maintains contact with professional colleagues throughout the county through meetings of the Assistive Technology Team. This enables medical, nursing, technical and therapy professionals to meet together with Local Authority personnel and with staff from the wheelchair services on a regular two monthly cycle.

The Procurement and Commissioning of Electronic Assistive Technology

Whenever possible equipment is sourced from companies contracted as suppliers to the NHS. Equipment commonly used is held in stock and is available both for assessment and for long-term loan. Whenever possible it is compatible with other equipment and offers a range of functions capable of maximising the opportunities available to service users.

A wide range of EAT is commissioned and maintained "in-house" by rehabilitation engineering technicians working under the supervision of a Consultant Clinical Scientist. Each has attended manufacturers' training courses and by using a lap-top personal computer and specialised software is able to programme and reconfigure both communication aids and ECS.

The safety of equipment supplied to service users is properly documented as conforming to the standards laid down by the Medical Devices Agency.

User Support and Equipment Maintenance

Service users have access to a telephone help-line with operator support during office hours and an answering machine at other times. At weekends and public holidays, the answering machine is checked daily with users guaranteed a response within twenty four hours.

All equipment in clinical use is formally serviced in the user's domestic environment and in accordance with the manufacturer's recommendations on a yearly cycle. Minor adjustments such as switch alteration or the addition of new home entertainment modules can be made, but if equipment no longer meets user need, the core team undertakes formal review.

APPENDIX SIX

The Role of the Clinician Within a Specialist Electronic Assistive Technology Service

An EAT service requires the dedicated input of a Consultant in Rehabilitation Medicine, a Consultant Clinical Scientist, a Specialist Occupational Therapist, a Specialist Speech & Language Therapist and a Business Manager. Each has complementary skills and their working together in an inter-disciplinary setting is the bedrock upon which an effective clinical service can be founded, promoted and developed.

The Consultant in Rehabilitation Medicine

The Consultant in Rehabilitation Medicine undergoes specific post-graduate training before gaining accreditation in the speciality and becoming eligible to apply for a consultant appointment within the NHS. Training emphasises the need for inter-disciplinary co-operation as a pre-requisite for the effective delivery of care to people with complex disabilities. It includes a mandatory EAT module.

The Rehabilitation Medicine Consultant should

- establish a clinical diagnosis
- offer guidance on disease progression and prognosis
- formally review and monitor overall clinical management
- delineate an individual's optimal ability
- ensure that all identified needs are met and pursued.

The Consultant Clinical Scientist

The Consultant Clinical Scientist has a special knowledge of the relevance of medical technology to clinical need. Maintaining a clinical commitment, he/she leads and co-ordinates a team of engineering professionals, oversees service management and develops and promotes research based practice.

Individually or in collaboration with specialist colleagues, the Consultant Clinical Scientist should:

- assess the needs and functional abilities of the users and potential users of EAT.
- oversee purchasing procedures, detailing and documenting product specifications, contract progress and equipment acceptance testing
- procure and install commercially available equipment customised and integrated to user need
- design and develop novel and cost-effective solutions where commercial options are unavailable
- analyse risks associated with the development, provision and use of technology, identifying and reporting adverse incidents so as to enhance user safety and equipment reliability
- establish and develop service records and protocols, cataloguing all items of equipment and ensuring that maintenance and refurbishment is in accordance with manufacturers recommendations

- inform and update clinical colleagues regarding equipment specification, legislative change and technological innovation.

The Specialist Occupational Therapist

The Specialist Occupational Therapist has acquired post-graduate experience of the needs of people with complex patterns of physical disability. Experience with wheelchair services, with the care of neurologically impaired people and within Local Authority departments is especially valuable.

The Specialist Occupational Therapist should

- encourage and enable the service user to better maintain a realistic personal independence
- determine functional need and anticipate change in that need
- help and support carers by reducing the dependence of the EAT user
- offer advice and information on accessing assistance with grant aid, housing adaptations and respite care.

The Specialist Speech & Language Therapist

The Specialist Speech & Language Therapist has acquired post-graduate experience of the needs of people with communication difficulties in both hospital and community. There is need also for attachment to a supra-regional centre offering opportunity to carry out assessments, to prescribe augmentative and alternative patterns of communication (AAC) and to teach users, carers and therapists how best to use them.

The Specialist Speech & Language Therapist should

- identify the communication needs of the service user
- delineate optimal patterns and methods of communication for each individual
- oversee the tuition of users and carers

APPENDIX SEVEN Useful Addresses

PROFESSIONAL ORGANISATIONS

British Society of Rehabilitation Medicine

*C/o Royal College of Physicians
11 St Andrews Place, London NW1 4LE*

Tel/fax: 01992 638865
Website: <http://www.bsrm.co.uk>

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NHS Purchasing and Supplies Agency

*Premier House
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Tel: 0118 980 8600
Fax: 0118 980 8822
Website: <http://www.supplies.nhs.uk>

Medical Devices Agency

*Room 1011
Department of Health
Hannibal House
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Tel: 020 7972 8164
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Website: <http://www.medical-devices.gov.uk>

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Cambridge Adaptive Communication

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CB3 7RL*

Tel: 01223 264244
Fax: 01223 264254
Website: <http://www.camad.demon.co.uk>

Gewa UK Ltd

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Website: <http://www.gewab.se>

Intacall Ltd

*Archer House, Britland Estate
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