Specialist equipment services for disabled people
The need for change

A Discussion Document

September 2004

Royal College of Physicians

Institute of Physics and Engineering in Medicine
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Technology offers many disabled people enhanced ability, greater independence and a lesser dependence upon others. Much is readily and cheaply available, but whilst the numbers of people able to gain advantage from it increase, equipment services often lack both the coordination and the expertise to deliver it effectively. This is especially so when there is need to configure and integrate electronic and computer-based systems and technologies.

This report focuses on the provision of these technologies, identifying good practice and highlighting deficiencies. It is intended as a basis for discussion and as a catalyst for effecting change. Its recommendations seek to stimulate debate and to encourage everyone involved with the commissioning, staffing and usage of equipment services to work positively to refine and further develop them.

September 2004

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Executive summary and recommendations

Assistive technology enables disabled people to achieve and maintain independent lifestyles.

Specialist equipment services for disabled people: the need for change focuses on complex provision in four modalities of that technology: communication aids, computer access, environmental control systems and telecare. For many people these promote greater independence and a lesser dependence on others, yet nationwide their provision is patchy and inequitable. Now, as implementation of the NHS Plan and the modernisation of social services gain momentum, there is opportunity to improve and rationalise that provision.

This document recommends improved access to specialist equipment provision, a wider deployment of specialist expertise and the identification of dedicated funding streams. It complements the inter-institutional activity of the Assistive Technology Forum and is especially relevant to Specialist Commissioners and the NHS Workforce Development Confederation as they prepare to meet the requirements of the National Service Framework for Long Term Conditions.

Recommendations

Access and assessment

1. Specialist equipment services for disabled people should be widely and equitably available.

2. Complex need and the integration of disparate technologies should be overseen by specialist equipment services.

Delivery of services

3. Evolving equipment services should build upon established provision so as to harness and best deploy experienced specialist personnel.

4. Specialist services require substantial investment in expertise and infrastructure and should serve catchments in excess of one million people.

Clinical governance and competence

5. Clinical governance offers a framework within which specialist professionals should facilitate and oversee a coordinated provision.

6. Supernumerary training posts should be established to facilitate training, promote innovation and support professionals seeking to further develop their expertise.
Allocation of resources

7  Budgetary provision for specialist equipment services should be sourced jointly from local authorities and Specialist Commissioners.

8  Services should highlight any financial shortfall rather than tolerating inappropriate and delayed provision.
I Introduction

The scope and purpose of the report

Good health and the ability to live life to the full are often taken for granted. Medical intervention can increase longevity and improve the quality of life, yet for many disabled people assistive technology, environmental improvements and carer support can be equally important.1,2,3,4

This report focuses on four modalities of assistive technology: communication aids, computer access, environmental control systems and telecare, and identifies issues that determine their effective and timely provision. Much of the technology is available in the home and workplace and is already offering disabled people a greater independence, but there remain some individuals with needs so complex that they require specialist assessment and provision.

Whilst equipment may be commonplace and mass-produced, the ability to customise it, to design individual bespoke solutions and to safely integrate disparate technologies one with another, requires considerable specialist expertise. The availability of this expertise is critical: much of the equipment can be readily and cheaply accessed, but many disabled people require coordinated patterns of professional input if they are to use it effectively and safely.

This report specifically excludes consideration of the provision of orthoses, prostheses, the technologies used to compensate for sensory impairment, wheelchair services and specialist services for children, since these are presently under review by others. Nevertheless, its recommendations are relevant and applicable to these services since they also need to offer a coordinated, effective, equitable and safe provision. This is especially relevant where technologies may interact one with another, or where their integration is required.

The working party, its membership and operation

The working party was set up in 2002 by the Royal College of Physicians and the Institute of Physics and Engineering in Medicine. Both recognised the importance of equipment services and were keen that they be developed and promoted in partnership with the Integrating Community Equipment Services project [ICES].5,6 They were also keen for the body of expertise built up within specialist services to be developed and more widely deployed so as to further the implementation of the NHS Plan and the Modernisation of Social Services.7,8,9
Membership included representatives of ICES and the Department of Health, clinical scientists, physicians, service users and therapists.

The Working Party reviewed the published literature and confirmed that little is evidence-based. This is due in part to problems inherent in data collection throughout rehabilitation services\(^{10}\) and in part to the rapidity of technological change.

Members, consultees and established service providers made presentations and written submissions to the Working Party. These have been collated and collectively underpin the recommendations of this Report. They are available at www.rcplondon.ac.uk/pubs/books/sesdp/

**The target audience**

The working party’s terms of reference centred on the relationship of specialist equipment services to their users, to other specialist services and to community equipment services evolving under the guidance of the ICES project. (See Appendix A2).\(^{5,6}\)

This document includes a distillation of its findings, coupled with a series of recommendations to evolving community equipment services, to specialist commissioners advising Primary Care Trusts and Strategic Health Authorities and to the NHS Workforce Development Confederation. It is published at a propitious time: the National Service Framework for Long-term Conditions is scheduled for publication and the ICES project expects to deliver a better coordination of equipment services.

**Evidence to support the recommendations**

Audit Commission, clinicians and service users have recognised that electronic assistive technology [EAT] can transform the lives and lifestyles of disabled people\(^{4,11}\). EAT promotes greater independence and thereby a lesser dependence upon others, but specialist services capable of safely configuring it are often seriously under-resourced.

There is wide disparity of both organisation and provision and this, coupled with a paucity of clinical, scientific and technical expertise, means that no one service model can be universally applicable. The Working Party recognises the paucity of published material offering an evidence base for the efficacy of EAT. It has had to rely heavily upon the operational data provided by clinical colleagues – some well resourced and some not. All acknowledge that, although the usage of computer systems and electronic technology by disabled people has increased in recent years, there has been inadequate documentation of outcomes. This is a problem which can be resolved only by improving audit procedures, promoting research and development and increasing the number of trained and committed professional personnel.\(^{10}\)
A user perspective

Electronic assistive technology (EAT) offers real opportunity for improving the lives and lifestyles of disabled people and for reducing the cost of care. Disabled people should be actively involved in assessment of need and in the determination of optimal outcomes, so it is appropriate that service users should have the opportunity to offer their view.

**Box 1 The need for and availability of EAT**

- For many disabled people, assistive technology is crucial to their ability to choose how they want to live and to whether they can live independently. Independent living can be achieved in a number of ways: – by employing personal assistants, by direct benefit payments, or by assistive technology, whether simple such as a tap turner, or complex such as an environmental control system. Most people will use a mixture of the three to optimise independence.

- Without the ability to live independently and to control life autonomously, the quality of life deteriorates. It is lack of choice and autonomy that leads people – even some disabled people – to believe that their lives are not worth living.

- Key to providing assistive technology as a facilitator of independent living has to be respect for the rights of disabled people and recognition of their ability to select options and make decisions. At all stages they should be actively involved in assessment of need and in the determination of optimal outcomes.

- Of course funding is an issue, but its availability should not be the unstated, underlying determinant of an assessment – and information with regard to entitlement should be more freely available. It is particularly demeaning to realise that a funding option is unavailable only when yet another total stranger has been given access to personal financial data. Even if funding is not available, professionals should offer advice and assessment, so as to enable disabled people to identify appropriate modalities of technology.

- Finding out what is available is extremely difficult, but specialist knowledge and support can help disabled people to make choices and to live independently.

The working party recognises and acknowledges that there is much to be done. Its report sets out a framework within which specialist commissioners can develop services with the potential to:

- improve provision
- increase the competences of professional personnel
- better document outcomes.
2 The development of service structures

There is nothing new in having technology compensate for functional impairment. Walking sticks have been used since ancient times, wheelchairs for hundreds of years and simple environmental control systems for nearly half a century.

Sequential reports have highlighted the relevance of assistive technology (Box 2), electronic and computer-based systems have increased its efficacy and yet still it remains under-resourced and under-utilised.

The recommendations of the Royal Commission on Long Term Care [1999] and of ‘Fully Equipped’ [2002] include much that relates to the provision of assistive technology:

- Personal independence can promote social inclusion and relieve pressure on acute health care facilities
- More opportunities should be available for [disabled] people to stay at home and more support should be offered to carers
- Services should be easier to access and there should be more consistency in assessment and eligibility
- Adequately funded and integrated equipment services should be part of a coordinated NHS and social service provision.

The NHS Plan specifically recognises the relevance of equipment services in maintaining the health and independence of disabled people and in promoting their timely discharge from hospital to community based care.

It proposes the amalgamation of the equipment services provided by local authorities and the NHS and a better and more effective liaison of these services with:

- specialist providers of environmental control systems, communication aids and hearing aids, orthotics and prosthetics, wheelchairs and special seating
- the employment division of the Department of Work and Pensions
- charities and voluntary organisations.

Integrating community equipment services

The ICES project was set up to facilitate change without the imposition of a rigid, universal provision. It has sought to build upon local strengths and to develop links with smaller and more specialised providers. It aspires to:

1. A single operational manager of community equipment services in each locality, advised by a board comprising representatives of all stakeholder groups.
**Box 2 Reports that have highlighted the relevance of assistive technology**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>1968</td>
<td>Aids for the Disabled [BMA] identified problems which were still evident in the Audit Commission reports of 2000 and 2002.</td>
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<td>1970</td>
<td>Simple environmental control systems became available.</td>
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<td>1983</td>
<td>The first communication aid centres were established.</td>
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<td>1986</td>
<td>The McColl Report recommended that Artificial Limb and Appliance Centres should be integrated into the NHS.</td>
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<td>1986</td>
<td>‘Physical Disability in 1986 and Beyond’ [RCP] set out standards for equipment services and for training clinical personnel.</td>
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<td>1986</td>
<td>Artificial Limb and Appliance Centres were integrated into the NHS by the Disablement Services Authority with the security of guaranteed budgetary provision for a two year term.</td>
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<td>1986</td>
<td>‘Prescription for Independence’ [BSRM] highlighted the benefits of environmental control systems [ECS], the potential of smart house technology and the importance of comprehensive inter-disciplinary assessment.</td>
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<td>1990</td>
<td>Devolution of ECS provision from the Department of Health led to the emergence of a range of service models.</td>
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<td>1994</td>
<td>The need to safely integrate systems and technologies was identified and reported.</td>
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<td>1995</td>
<td>A number of projects reported experience with computer access and smart house technologies.</td>
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<tr>
<td>1999</td>
<td>‘With Respect to Old Age’ was published by The Royal Commission on Long Term Care. It recommended that whenever possible disabled people should be cared for in their own homes with a unified budgetary provision for aids and adaptations.</td>
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<td>2000</td>
<td>‘Fully Equipped’ [Audit Commission] highlighted the need to better coordinate services.</td>
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<td>2000</td>
<td>‘Electronic Assistive Technology’ [BSRM] developed the concept of hub and spoke provision for specialist equipment services.</td>
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<td>2000</td>
<td>The NHS Plan strongly supported independent living and complemented guidance on the Modernisation of Social Services.</td>
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<td>2001</td>
<td>Definitions for specialist equipment services were drawn up by the Department of Health.</td>
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<td>2001</td>
<td>The Integrating Community Equipment Services project [ICES] was set up to ensure that disparate providers collaborate better with each other and with service users.</td>
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<td>2002</td>
<td>The Assistive Technology Forum was established to better promote, develop and coordinate provision.</td>
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<td>2002</td>
<td>‘Fully Equipped 2002’ [Audit Commission] expanded upon problems identified two years earlier.</td>
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<td>2002</td>
<td>Bridge – assistive technology against social exclusion – promoted the provision of assistive technology as a basic right for disabled people throughout the European Union.</td>
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<td>2004</td>
<td>The Audit Commission reported that ‘New assistive technology has the potential to modernise the way in which many aspects of health and social care are currently delivered to the benefit of users, carers, service providers and the taxpayer.’</td>
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</table>
2. A common, unified equipment stock (Box 3) with funding by local authorities and the NHS from a pooled budget.\textsuperscript{5,6}

**Box 3 Provision by community equipment services**

Community equipment services can currently provide:

- Equipment for home nursing and daily living
  - Beds, commodes, hoists, pressure relief mattresses, raised toilet seats and shower chairs
- Equipment for people with sensory impairments
  - Assistive listening devices, flashing doorbells, low vision aids and textphones
- Communication aids for people with speech and writing impairment
  - Voice output and word processing systems
- Simple smart house and telecare equipment
  - Pendant alarms linked to a remote call station
- Fall and gas escape alarms, together with devices to monitor wandering by vulnerable individuals
- Minor adaptations
  - Contrasting colour schemes, grab rails, lever taps and lighting enhancement

ICES suggests that community equipment services should:

- Establish a readily accessible contact for the dissemination of information, the provision of advice and the onward direction of those with complex need.
- Offer integrated provision following a single assessment – unless there is need to call upon specialist expertise.
- Provide users with authoritative advice on both statutory and self-purchase provision and develop self-assessment computer software for them.
- Determine the scope and the breadth of provision by complexity of need – not by adherence to traditional patterns of working and existing equipment schedules.
- Complement personnel training, equipment performance monitoring and service management with user consultation procedures.

The Working Party endorses the proposals for developing equipment services set out within Modernising Social Services and the NHS Plan\textsuperscript{7,9} and welcomes the thrust of the principles and guidelines that have underpinned the ICES project. It agrees that effective service delivery requires community equipment services to liaise with other providers: particularly with wheelchair services, community alarm providers and any others relevant to specific user need.
Additionally, the Working Party supports the concept of ‘Trusted Assessors’ working with community equipment services to advise potential users and their carers on equipment need and availability.\(^6\)

The trialing of self-assessment programmes, the training of ‘Trusted Assessors’ and the oversight of equipment provision should be facilitated and strengthened by wider deployment of the expertise available within specialist equipment services and by the further development of clinical governance.

The working party recognises that even in a single locality, equipment such as EAT, home nursing aids, smart house systems, wheelchairs and special seating may be supplied by different agencies and that multiple funding streams may be involved.

Optimal outcomes are achieved when services can offer the specialist expertise of clinical scientists and technologists, physicians and therapists and can enable them to collaborate confidently and easily with each other, with other services and with service users. However, all too frequently, poor coordination and outdated patterns of funding perpetuate confusion and delay provision.\(^27,28\)

### Service standards

It is suggested that specialist equipment services should be evaluated against a number of criteria. They should be:

- **Accessible** responding to professionals and service users
- **Accountable** reporting to commissioners and service users
- **Competent** employing accredited specialist personnel
- **Efficient** offering cost-effective, timely provision
- **Equitable** providing equipment fairly across a catchment area
- **Holistic** delivering inter-disciplinary assessment and a seamless provision
- **Innovative** researching and developing new concepts and service models
- **Proactive** promoting educational and training opportunity

At present few services meet these criteria, but the working party considers that they should be developed as an audit tool, so that services could be evaluated against them on a regular cycle.
### User experience:

**TOO MANY OPEN DOORS**

Eight elderly schizophrenic men spent decades in institutional care prior to being allocated individual bed-sitting rooms within a community house. All are now psychologically stable and able to take themselves out as and when they please; however on entering and leaving the house they often fail to close the door. Security has been much improved by installing sensors at each of the four external doorways. Prolonged opening times are identified and the resident carer is alerted by radio-pager when there is need to close a specific door.
3 Access and assessment

Recommendation 1

Specialist equipment services for disabled people should be widely and equitably available.

Recommendation 2

Complex need and the integration of disparate technologies should be overseen by specialist equipment services.

All too often, specialist equipment services are little known and little understood by professionals, by disabled people and by the wider community. Their availability varies widely and there are those that remain difficult to access – adhering to rigid patterns of eligibility and requiring guaranteed funding prior to undertaking clinical assessment. Nevertheless it is encouraging to recognise that the majority of services providing data to the working party accept referral from professionals, potential users and carers and can offer assessment within two to three weeks.

Whilst services recognise the need to minimise user exposure to a range of professional personnel, requests for assessment and for the provision of equipment are often incomplete: there is commonly need to clarify medical management and to resolve environmental issues in addition to considering the need for assistive technology.

It is important that clinical assessment should be entrusted to professionals with the knowledge and skills that are likely to be relevant, but additionally that they should work in an interdisciplinary setting within which they can readily access expertise complementary to their own.

User experience:

A REQUEST FOR A COMMUNICATION AID

Norman was sixty-six years of age and had extensive cerebrovascular disease. Wheelchair-bound, dysarthric and severely incoordinate, his wife cared for him in the one room to which he was confined by narrow doorways and steep steps. It had been suggested that he would benefit from using a voice output communication aid – but communication was not the problem. Norman’s wife could understand him and he kept in touch with family and friends by textphone.

Their quality of life improved dramatically when they were re-housed in a wheelchair accessible property.
All services providing information to the working party aspire to holistic assessment and coordinated interdisciplinary working, but some lack the clinical, organisational and technical expertise to ensure that it can happen. A number of larger services empower locality-based clinicians to deliver near-user assessment and support. Their experience suggests that a centralised specialist service enabling and supporting locality-based professionals can be practical and effective. It also offers better opportunity to disseminate information and to promote professional training.\textsuperscript{29,30}

\textbf{User experience:}

\textit{TOO MANY COOKS}

Marie was fifteen when she developed transverse myelitis complete below C2. She was ventilated for months in an intensive care unit with her plight attracting enormous media interest and public sympathy.

Two charitable bodies competed to be involved. One wanted to provide a page turner and the other voice activated computer access. The local EAT service advised that computer and Internet access be facilitated by a head switch.

The page turner was provided, but the nurses found it interfered with Marie’s ventilator – so it wasn’t used. A computer with voice control was provided, but her voice was drowned out by ambient noise – so it wasn’t used. She passed her sixteenth birthday with no-one making application for special educational support. The local authority then refused to accept responsibility for her on-going educational needs.

On her return home from hospital, the EAT service provided access to environmental controls, computer and Internet through a head controlled electronic wand.
4 The delivery of services

**Recommendation 3**

Evolving equipment services should build upon established provision so as to harness and best deploy experienced specialist personnel.

**Recommendation 4**

Specialist services require substantial investment in expertise and infrastructure and should serve catchments in excess of one million people.

No single model offers a template for service development for most have developed piecemeal as expertise and facilities have become available. All EAT services use modern remote controlled equipment because it is cheaper, more effective and more reliable than older hardwired systems. Most offer a timely emergency provision, but all too frequently routine provision can take many months. Whilst this may be consequent upon extraneous factors such as delay in the completion of building works, it should be recognised that many services experience significant financial constraints.

Implementation of the ICES project offers opportunity for specialist services to collaborate more effectively with community equipment services and to better target provision to user need. It also offers opportunity to promote inter-agency and inter-disciplinary cooperation, to recognise the important contributions of charitable and voluntary bodies and to better network services through a sharing of expertise and clinical governance.

Provision overseen by community equipment services should offer:-

- local or ‘near user’ availability of simple stock items
- smart house technology, safety monitoring and telecare (in partnership with community alarm providers)$^{31,32}$
- access to specialist services able to safely meet and integrate the requirements of users with complex need.

Specialist services require catchment populations sufficiently large to justify the cost of facilities and of professional personnel. They also require a body of users large enough to enable their professionals to practise efficiently and to maintain and develop their skills.

The presentations and submissions to the Working Party vary considerably. [www.rcplondon.ac.uk/pubs/books/sesdp]. Some serve populations in excess of five
Specialist equipment services

Box 4 A scheme for service delivery

- LOCALITY based services overseen by accredited personnel and working with trusted assessors from high street shops, disability living centres, family doctor surgeries, social service departments and community clinics to provide ‘off the shelf’ stock items.

- COMMUNITY equipment services overseen by professional personnel, probably coordinating provision for a population of between 250,000 and 500,000 people. These would usually build upon established services at district hospitals, Disability Service Centres and social service departments and would develop links to community alarm providers.

- SPECIALIST equipment services staffed by experienced professionals capable of safely tailoring provision to complex need. Maintaining the caseloads and expertise of specialist personnel would necessitate catchments in excess of one million people.

million, whilst others serve populations a tenth of that size. All actively promote and deliver EAT in specific geographical localities – but between them they provide a service for only 62% of the population. In other localities provision is seriously less than satisfactory.

In view of the shortage of specialist professional expertise and an urgent need to increase opportunities for training, research and development, the working party is keen to promote services of such a size, standard and critical mass as to justify the necessary investment.

It therefore recommends that specialist equipment services should normally deliver provision for a population in excess of one million people.

User experience:

COORDINATING DISPARATE TECHNOLOGY

Claire has arthrogryphosis of all four limbs. She is ten years old, intelligent and very dependent.

Last year she used a head operated switch to control her powered wheelchair and her computer – but not both at the same time. Her schoolwork suffered because carers had to change her switching system and because her computer software was laboriously slow.

Now with a customised joystick, her right hand controls both wheelchair and computer and the head switch allows her to choose the one that she wishes to operate. Her computer is loaded with word prediction software and accessed from an infra-red wheelchair mounted transmitter.

Her mobility, morale and schoolwork have improved dramatically.
5 Clinical governance and competence

Recommendation 5

Clinical governance offers a framework within which specialist professionals should facilitate and oversee a coordinated provision.

Recommendation 6

Supernumerary training posts should be established to facilitate training, promote innovation and support professionals seeking to further develop their expertise.

The working party is keen to emphasise that equipment services require the coordinated input of medical, technical and therapy personnel working within common patterns of quality assurance and clinical governance (Box 5). Recognised training programmes are overseen by the Medical Royal Colleges and the Institute of Physics and Engineering in Medicine, but there is need to expand the pool of professional specialist expertise, especially from within the therapy professions.

Experienced clinical scientists, technologists and therapists are critical to the effective and safe deployment of assistive technology, yet they remain a very limited resource. It is they who understand the properties and limitations of the equipment and are most aware of the problems that can follow on from its inappropriate usage. There is real need to develop training opportunities so as to stabilise service structures and career pathways so that these key professionals remain in post, recognising that they have opportunity for increased responsibility and remuneration.

The working party recommends that clinical scientists with a comprehensive training and experience in equipment management should oversee the development and operation of these services. There is need too for technologists and therapists to develop their expertise, to participate in on-going patterns of clinical governance and continuing professional development and to have opportunity to further develop their competences. Such development would be greatly facilitated by the creation of supernumerary posts within active, established services and should be recommended to the NHS Workforce Development Confederation.

All services providing data to the working party recognise the importance of developing and supporting specialist expertise within a coordinated inter-disciplinary setting. They acknowledge the need for formal schedules of continuing professional development and clinical governance and that they work within parameters set out by MRHA and their professional bodies to deliver a reliable and safe provision.33
Well resourced services with experienced personnel and large user bases are best able to develop and promote the assistive technology agenda envisaged within the NHS Plan. They are increasingly collaborating and networking with one another and with academic institutions so as to develop an evidence based provision and to investigate novel technologies.

<table>
<thead>
<tr>
<th>Box 5 Recommendation for coordinated service provision</th>
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<tbody>
<tr>
<td>The introduction of clinical governance with equipment purchase, issue, maintenance and decommissioning properly overseen and documented should offer a safer and more effective provision.</td>
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<tr>
<td><strong>Purchase</strong></td>
</tr>
<tr>
<td>Bulk procurement, with commitment to manufacturers, leads to lower prices, better service and a reduction in spare part requirements.</td>
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<tr>
<td>Specialist expertise is invaluable when there is need to consider the purchase of novel or especially expensive equipment.</td>
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<tr>
<td><strong>Issue</strong></td>
</tr>
<tr>
<td>Abuse and non-usage can be reduced by having accredited personnel issue equipment, log it to maintain traceability and then ensure that users are aware of its properties and capabilities.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
</tr>
<tr>
<td>Equipment should be properly and regularly serviced in accordance with its manufacturer’s recommendations.</td>
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<tr>
<td><strong>Decommissioning</strong></td>
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<tr>
<td>Equipment refurbishment and disposal should be pre-planned, so as to minimise user risk and facilitate budgeting.</td>
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**User experience:**

**TOO HEAVY A HAND**

Eric is forty-eight years of age and bedfast consequent upon relentlessly aggressive multiple sclerosis. He changes the position of his electric bed with his environmental control system, but on one occasion his clumsiness led to the switch being depressed for too long and he was thrown on to the floor.

There was no serious injury, but after discussion with the bed manufacturer and the MHRA, incremental movement to switch pressure was reduced so that he could control the bed more safely.

The EAT service reviewed similar users and alerted colleagues nationwide of the potential problem and of the action it had taken.
Historically, specialist expertise in EAT has been linked with high cost-low volume provision, yet much electronic and computer based technology is now available on a low cost-high volume basis. Whilst this may have the flexibility to meet the needs of many disabled people, there will always be those for whom it will be inappropriate. For this group specialist expertise and competence is needed to ensure that disparate technologies operate safely together and in proximity one to another and that manufacturers’ warranties are not invalidated.

Specialist equipment services can design and manufacture software, electronic and mechanical components and devices to meet an individual user’s specific needs. They should be managed by Consultant Clinical Scientists within inter-disciplinary rehabilitation settings and should offer:

- Specialist skills and facilities for the modification, design and manufacture of equipment to meet needs that cannot be met by commercially available technology.

- An in-depth understanding of regulatory frameworks and the ability to comply with them. [These frameworks include legislation concerning technical specifications, consumer protection and the production and supply of equipment to disabled people.]

- Expertise across the spectrum of assistive technology, so that equipment sourced, customised and integrated to user advantage represents good value – and often significant budgetary savings.

- Equipment management expertise to ensure that proprietary products are properly maintained.

**User experience:**

**A BESPOKE SOLUTION**

Tina is fifteen years old. She has such growth retardation and spinal deformity that it proved impractical to accommodate her within a standard powered wheelchair.

Professionals involved with her care in the community, hospital and school have worked closely with a children’s charity to modify a sophisticated indoor-outdoor wheelchair so that its height, tilt and controls are appropriate to her needs.

Now she can transfer independently, take herself out to shop and to socialise and looks forward to being that much more able and independent in the future.
6 Allocating resources

Recommendation 7

Budgetary provision for specialist equipment services should be sourced jointly from local authorities and Specialist Commissioners.

Recommendation 8

Services should highlight any financial shortfall rather than tolerating inappropriate and delayed provision.

The need for ECS, for communication aids, computer access technology and telecare systems is unknown. Most established services have identified a need for ECS that exceeds 100 systems per million population and the two largest demonstrate a steady increase in demand.²⁹,³⁰

With remote controls and electronic equipment firmly embedded into both home and workplace, it is inevitable that an ageing and more dependent population will increasingly expect technology to compensate for impairment and infirmity. Most equipment services already struggle to meet demand from historically limited and poorly coordinated budgetary allocations. Many meet financial targets by delaying provision, even though they recognise that thereby they are denying benefit to potential users.

The Working Party welcomes the pooling of local authority and NHS budgets as part of the ICES project, but considers it imperative that monies for specialist services should be specifically identified. It is critically important to maintain and further develop the expertise that can offer bespoke provision and competent professional supervision across the breadth of equipment services.

Additionally the Working Party endorses equipment provision on the basis of assessed need, rather than on the availability of dedicated funding. However, it recognises that there will be occasions when the provision of novel, customised, or especially expensive equipment is appropriate and that the funding of such a provision cannot be met solely by statutory services. In such a situation, experienced professionals should prepare cost-benefit analyses and services should be permitted to arrange joint funding with service users, manufacturers, voluntary agencies and voucher schemes.

Specialist Commissioners working with PCTs usually oversee specialist equipment services in accordance with the recommendations of National Specialist Definition Set No 5.²⁴,²⁹,³⁰ Nevertheless there is considerable variation in commissioning arrangements and widespread inequality of provision nationwide. This is usually consequent upon poor service organisation, a lack of specialist expertise and inadequate budgetary allocations.³⁴,³⁵
Figures 1 and 2 show a steady incremental increase in ECS provision reported by two large well-funded services. Within the totality of health and social service expenditure, the cost of specialist equipment services is very modest. Effective and timely provision can empower existing lifestyles, enhance independence, reduce dependence on others and lower the cost of care.

**Figure 1 ECS provision in North West England 1995–2003**

**Figure 2 ECS provision in North Thames 1995–2003**
User experience:

ANOTHER LAPTOP COMPUTER

Ashish sustained hypoxic brain injury from smoke inhalation in early childhood. He is now eighteen years of age and has normal speech and cognition. Although independent in personal care, he remains wheelchair dependent and unable to write.

During adolescence he had the use of a laptop computer, but it was withdrawn when he left school. At sixth form college he had use of another laptop computer, but this was reclaimed when he completed his General Certificate of Education Advanced Level courses.

Now that he has a place to read accountancy at university, he has been told that his local authority is statutorily obliged to provide him with a computer whilst he is in higher education.36
Technology can offer disabled people the opportunity to increase their independence and to reduce their dependence on others. Furthermore, when provision is appropriate a modest investment will substantially reduce the cost of providing care.

The working party considers that the key to empowerment is heightened awareness of the opportunities offered by EAT. Professionals, disabled people and the general public need to know how they can access the technology. However, opportunities often fail to be realised because specialist provision is delivered through a range of ill-coordinated and inadequately resourced services.

The concepts proposed by the ICES project are laudable:

- a single budgetary provision for equipment services in each locality
- increased ‘near user’ advice and information
- a better coordination of existing services.

But the potential of assistive technology will be achieved only if it is accurately matched to user need.

The number of specialist professionals – clinical scientists and technologists, physicians and therapists – needs to increase if their expertise is to be uniformly available nationwide. Such expertise is crucial to the delivery of a safe, efficient and cost-effective provision, as emphasised and illustrated in this document.

During the next few months, members of the working party will present their recommendations to professional bodies, service providers and user groups nationwide. They intend to stimulate debate, encourage wider consultation and promote better patterns of practice. They are keen that local services develop their recommendations further, that professional training should be better coordinated, and that measures should be set in place to properly evaluate the benefits of EAT.

Following these consultations, the Royal College of Physicians and the Institute of Physics & Engineering in Medicine plan to host a symposium aimed at delineating progress and identifying the issues and problems that continue to require attention.
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37 National Occupational Standards in Healthcare Science: rehabilitation engineering www.noshcs.co.uk
A1. Key definitions and abbreviations

Definitions

For the purpose of this document:

**Assistive technology**
Any equipment, other than an orthosis, prosthesis, or an aid to enhance auditory or visual function, which enables people with disabilities to achieve a greater independence, or a lesser dependence on others.

**Communication aid**
A speech synthesiser capable of enhancing the ability of people with communication difficulties.

**Electronic assistive technology**
Electronically based systems enabling disabled people to achieve a greater independence or a lesser dependence on others.

**Environmental control system**
A switching mechanism enabling people unable to use standard remote control technology to control electrical and electronic systems within the home or workplace.

**Smart house technology**
Information and communication technology providing a range of functions within the home or workplace.

**Telecare**
Information and communication technology providing care or monitoring from a distance.
Abbreviations

BSRM  British Society of Rehabilitation Medicine
BTEC  British Technical & Engineering Council
CPD   Continuing Professional Development
DHSS  Department of Health & Social Security
DLC   Disabled Living Centre
DoH   Department of Health
EAT   Electronic Assistive Technology
ECS   Environmental Control System
HMSO  Her Majesty's Stationery Office
HPC   Health Professionals’ Council
ICES  Integrating Community Equipment Services
IPEM  Institute of Physics and Engineering in Medicine
MHRA  Medical & Health Care Products Regulatory Agency
NHS   National Health Service
NHS PASA  NHS Purchasing & Supply Agency
RCP   Royal College of Physicians of London
VOCA  Voice output communication aid

A2. The terms of reference of the working party

- To consider the relationship of community equipment services to services offering a more complex and specialised provision
- To review the role of specialist equipment services and to make recommendations regarding their structure and development
- To identify equipment provision requiring specialist expertise
- To recommend service models capable of safely and equitably delivering a complex and integrated equipment provision
A3. Specialist training programmes

Two professional bodies oversee relevant training programmes.

Royal College of Physicians

- The Royal College of Physicians requires that doctors acquire a higher professional qualification and specialist accreditation before they can be considered for a Consultant appointment within the NHS.

- Accreditation within the specialty of Rehabilitation Medicine requires that trainees become familiar with electronic assistive technology and its potential to enhance independence and to foster a lesser dependence on others.

- Trainees carry out at least five EAT assessments under the supervision of an experienced clinician, then make and follow through their recommendations.

- They come to recognise that coordinated, inter-disciplinary assessment is an essential precursor to effective and integrated provision.

- In larger centres there is greater clinical and organisational involvement and commonly involves user audit and research based project activity.

- Practical experience is complemented by a programme of seminars and symposia organised and overseen by the British Society of Rehabilitation Medicine.

The Institute of Physics and Engineering in Medicine

- The Institute of Physics and Engineering in Medicine works closely with the Health Professions Council to promote the training and registration of clinical scientists and clinical technologists.

- Those accepted for training as clinical scientists already possess a university degree in a relevant scientific or technical discipline.

- They work alongside experienced senior colleagues, specialise in a specific sector of provision and develop their competence across the spectrum of equipment management. They are expected to obtain a higher qualification such as MSc or PhD prior to being appointed to oversee clinical services. They will be integral members of the inter-disciplinary team and will be expected to liaise with colleagues in other disciplines, with clinical technologists and with service users to drive forward a coordinated and effective provision.

- Those accepted for training as clinical technologists already possess a BTEC Higher National Certificate, a Higher National Diploma, or a relevant university degree. It is helpful if they have had earlier professional life experiences beyond medical engineering: – experiences that have endowed them with maturity and a range of inter-personal skills complementary to their technical expertise.
Accredited training posts offer practical experience alongside other accredited clinical technologists under the supervision of a clinical scientist. Trainees are encouraged to embark on a two year part-time course leading to the Certificate in Rehabilitation Engineering at Kings College London. Subject to their meeting course requirements, this combination of practical experience and formal tuition can be expected to lead to State Registration as a clinical technologist.

**A4. Examples of specialist service provision**

See www.rcplondon.ac.uk/pubs/books/SESdP/