Environmental Control Systems (ECS)

Graeme Marsh IEng, RSCi, MIIE, MIPEM.

Regional ECS Service/Clinical Lead
(also Service Lead/ Clinical Manager for Regional Communication Aid Service) and North East Drive Mobility (NEDM).

ECS - Introduction

- The ability to have control over the immediate environment for those with a physical disability due to a long term medical condition has been recognised as a health provision for approximately 40 years.

- Environmental Control (EC) has been funded by the NHS since 1995 and prior to that by the Department of Health.

- Level of service provision nationally was identified as highly variable between areas, and included differences in funding for specialist equipment and staffing.

ECS - Introduction

- In 2012 EC along with other specialist services was transferred to NHS England Specialised Commissioning, as part of the 2012 Health & Social Care Act.

- Driven in many senses by the development of Clinical Reference Groups, Services Nationally were awarded funding based upon an initial National Service Specification.

- Achieving equitable services nationally, being a major goal.

Environmental Controls

NICE has not issued specific guidance on EAT.

The National Service Framework for long term conditions has clearly identified the need to provide Equipment in Quality Requirement (QR) 7. QR 7 has recognised the role of EAT in enhancing independence, improving quality of life and in selected cases improve the opportunities for employment.
(http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digital asset/dh_4105369.pdf)

Specialist Services National Definitions Set (SSNDS) (3rdEdition 2010) has recognised that Specialised Commissioning Groups (SCG) should be commissioning EAT services.

(http://www.specialisedservices.nhs.uk/library/26/Assessment_and_Provision_of _Equipment_for_People_with_Complex_Physical_Disability_all_ages.pdf)

British Society of Rehabilitation Medicine (BSRM) (2000)-'Electronic assistive technology' and 'Specialist equipment services for disabled people –the need for change' Royal College of Physicians of London & Institute of Physics and Engineering in Medicine 2004-ISBN 1 86106 234 7 provide further information.

Environmental Controls

2.1 NHS Outcomes Framework Domains & Indicators

Domain 1	**Preventing people from dying prematurely**	
Domain 2	Enhancing quality of life for people with long-term conditions	**X**
Domain 3	Helping people to recover from episodes of ill-health or following injury	
Domain 4	Ensuring people have a positive experience of care	**X**
Domain 5	Treating and caring for people in safe environment and protecting them from avoidable harm	

National Service Specification, Environmental Control Equipment for Patients with Complex Disability D01/S/c NHS England.

Acceptance and Exclusion Criteria and Thresholds

An individual requiring access to the EC service will have significant physical disability, predominately with upper limb impairments that result in them being unable to use standard controls, for example remote-control handsets or telephones or computer mice, keyboards or touch screens.

Many of these individuals have neurological conditions resulting in tetra-paresis, often with a progressive component varying from moderate to rapid and may also be combined with fatigue. In addition, many individuals will also have impaired cognition and / or communication function. The commonest diagnoses are as follows; Multiple sclerosis, Spinal Cord Injury (level C5 / 6 & above), Motor neurone disease, Cerebral palsy, Muscular dystrophy, Severe arthritis, Acquired Brain injury and severe stroke.

Environmental Controls Provision will be for People who Meet the Following Criteria:
- Profound and potentially complex physical disability, such that they are unable to operate standard controls for functioning independently in the home.
- Cognitively and physically able to operate EC equipment consistently.
- Able to demonstrate sustained motivation to use the EC equipment.
- Individuals requiring multiple control functions integrated into a single means of access and for whom multiple devices, each with separate function are inappropriate.
- Where individuals have a variable condition (e.g.: a progressive neurological condition), the above criteria can be applied with regard to the person's anticipated needs and abilities within a clinically appropriate time period. Referrals can be accepted on this basis.

Exclusion Criteria (for equipment provision by the service); National Service Specification, Environmental Control Equipment for Patients with Complex Disability D01/S/c NHS England.

- Where non-specialist solutions to the identified needs of the patient are available and appropriate for the individual.

- The individual patient does not have the cognitive ability or motivation to learn to operate the EC equipment. This shall normally be established though a period of trial of some sample solution of equipment.

- Provision of equipment is inappropriate due to social, environmental or other circumstances.

- Where the referred need is for equipment primarily for educational ICT or, employment 'access to work' requirement, then the referral will normally be referred to the relevant agencies for assessment and provision. Collaboration with these agencies may still be appropriate.

- Given the nature of the medical conditions, compliance with the criteria may not be apparent from the referral information, and therefore are to be applied following the assessment.

Patients with Complex Disability D01/S/c: NHS England Funding outside the remit of The NHS Specialist Services (i.e. sourced from alternative means, e.g. Social Care consideration/DFG, Housing Association, Private, etc)

Certain aspects of the potential provision are outside the funding remit of the specialist service and require referral for funding and provision by other agencies. If these are not available, then this may or may not preclude the benefit of provision of:

1. EC equipment affecting the fabric of the building and typically funded through application to other funding sources such as Disabled Facilities Grant (DFG) or minor adaptation, including;

   a. door openers, window openers, curtain openers, replacement door locking mechanisms

   b. building adaptations

   c. electrical, joinery, carpentry or other minor adaptation.

2. Equipment for monitoring and health needs;

   a. telecare equipment

   b. tele-health equipment

   c. tele-rehab equipment.

3. Other equipment;

   a. page turner.

ECS - Introduction

- Part of '**Electronic Assistive Technology**' - includes communication aids and computer access equipment.

- **Purpose** - to enable people with physical disabilities to live more independently and maintain a level of independence. Meet long term clinical needs.

- **Method** - by enabling people to remotely control a wide range of appliances in their environment.

What is an ECS?

- Consists of a number of products – central controller, appliances & input device.

- Generally 'modular' – easy to adapt to meet changing needs.

- Originally hard wired - now wireless using infra red (IR), radio frequency (RF) and Bluetooth technology.

What is an ECS? (contd)

- **Appliances**
  - Receive command signals from the central controller.
  - Some incorporate the ability to receive remote commands (eg TV's).
  - Others need adapting (eg doors, windows and curtains).
  - Some are specially manufactured (e.g. IR controlled, 'hands free' telephones).

"Capturing available controllable function is essential to the process in introducing such technology."

Access Methods

- Direct access – for individuals who retain finger dexterity and hand function.

Switch Access

- ## Input Devices

  – Includes switches, joysticks, keypads and voice activation
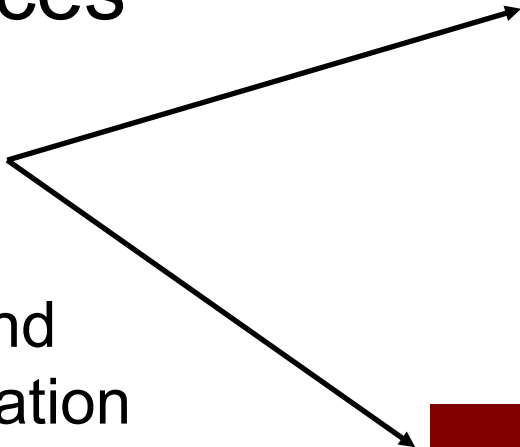
Input Switches

◎ **Plate/Guarded Switch**   ◎ **Squeeze**

◎ **Jellybean**   ◎ **Neck Switch**

◎ **Click Switch**   ◎ **Suck/blow**

◎ **Any commercial/specially made switch with a Japanese standard 3.5mm mono jack termination can be used**

Switch Access (cont'd)

Switch Access

Switch access – For individuals who can demonstrate some function/movement in a part of the body.
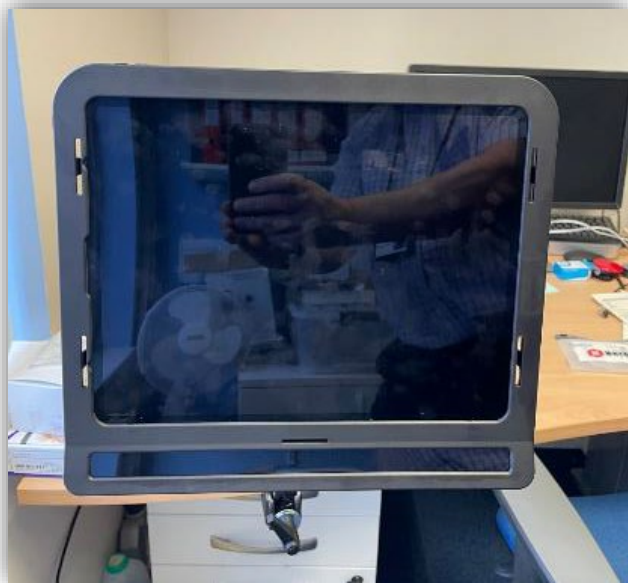
Switch Mounting

Access Methods

• Eye Gaze Technology

It is an electronic device that allows a person to control a computer or tablet by looking at words or commands on a video screen. A very low intensity light shines into one of the user's eyes. A television camera picks up reflections from the cornea and retina. As the direction of the person's gaze moves, the relative position of the two reflections changes, and the computer uses this information to determine the area at which the person is looking. The computer then executes the selected command.
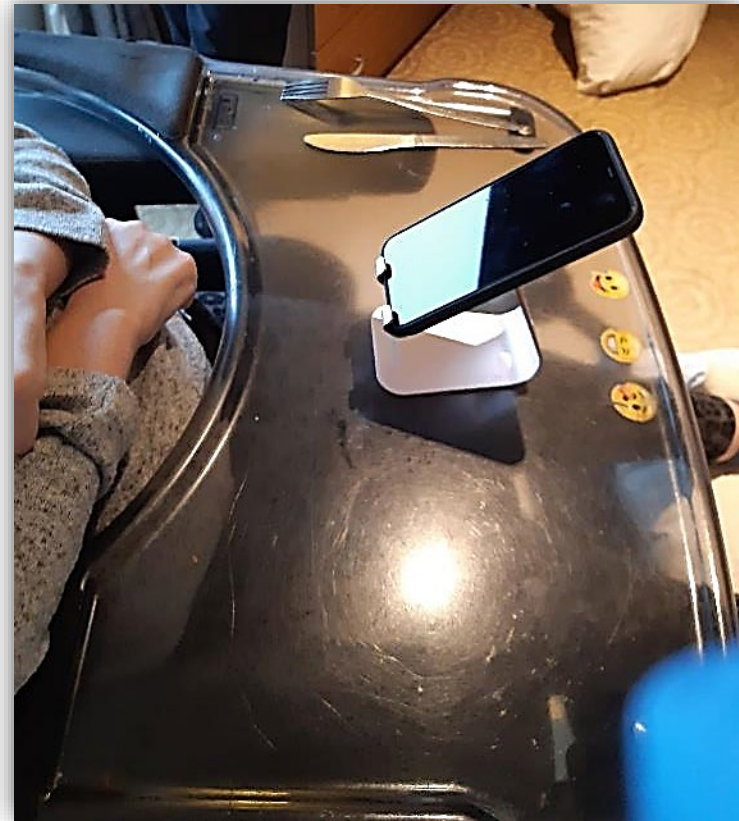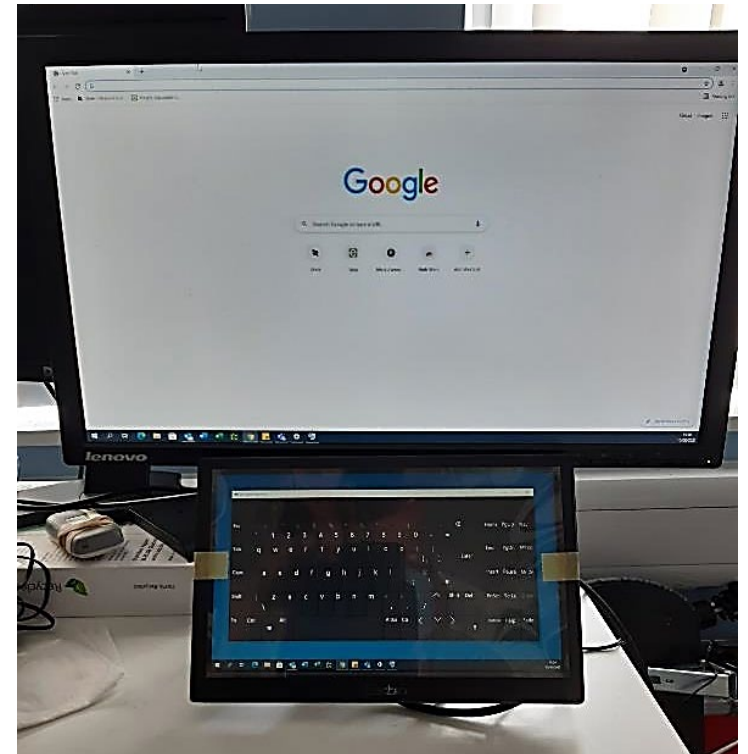
Computer Access examples
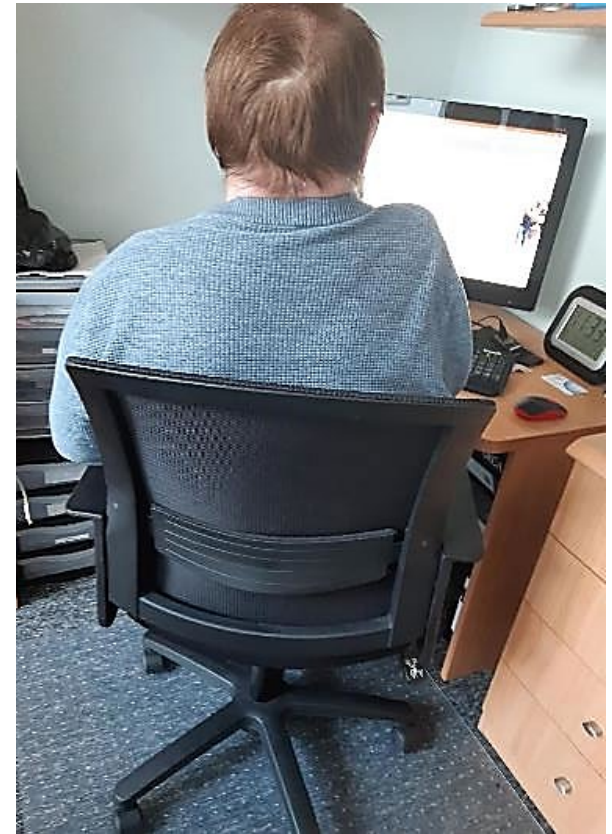

Alternative Mouse

Computer Access examples

Caring | Discovering | Growing | **Together**

Computer Access examples

Computer Access examples

Computer Access examples

Computer Access examples

What is an ECS? (contd)

If a client has some controllable movement/function,

*this can be used to operate an **input device**,*

*…and therefore the **central controller**,*

*…and therefore any **appliance**.*

What are ECS used for?

Main uses of ECS are to provide:

- Security – alarms, door locks, intercoms.
- Communication – telephones.
- Comfort – lights and heaters.
- Entertainment – TV, Video, Hi-fi, DVD.
- Home control – doors, windows.
- Computer Access (Recent development).

ECS benefits?

- Delivers the NHS priorities
  - Keeping people safe and independent at home
  - Reducing hospital admission
  - Facilitating early discharge
- Delivers the Government's policy objective
  - Enabling older and disabled people to live independently and safely in their own homes.
- Represents an investment in
  - Enabling people to live at home
  - Helping to improve quality of life

ECS benefits?

Findings of a study by Jenny Harmer involving 16 ECS users (BJOT, 6th September 1999)

- Improvements in all aspects of functions evaluated.
- Significant improvement in 7/17 functions.
- ECS provision had increased independence, feelings of self worth & control of their environment
  - 25% enabled to live alone
  - 38% given purpose in life
  - 25% avoided admission into institutional care
  - 82% reported less need of day care

Outcome Measure

Objective

Measure Improvement

Make improvement
in key priority areas ——————→ Therapy Outcome Measure (TOM's)

Improve Service User engagement

- Include process measures as well as TOM's.
- Measure includes Patient/carer voice/User centred.
- Measurement is owned, valued and shared.
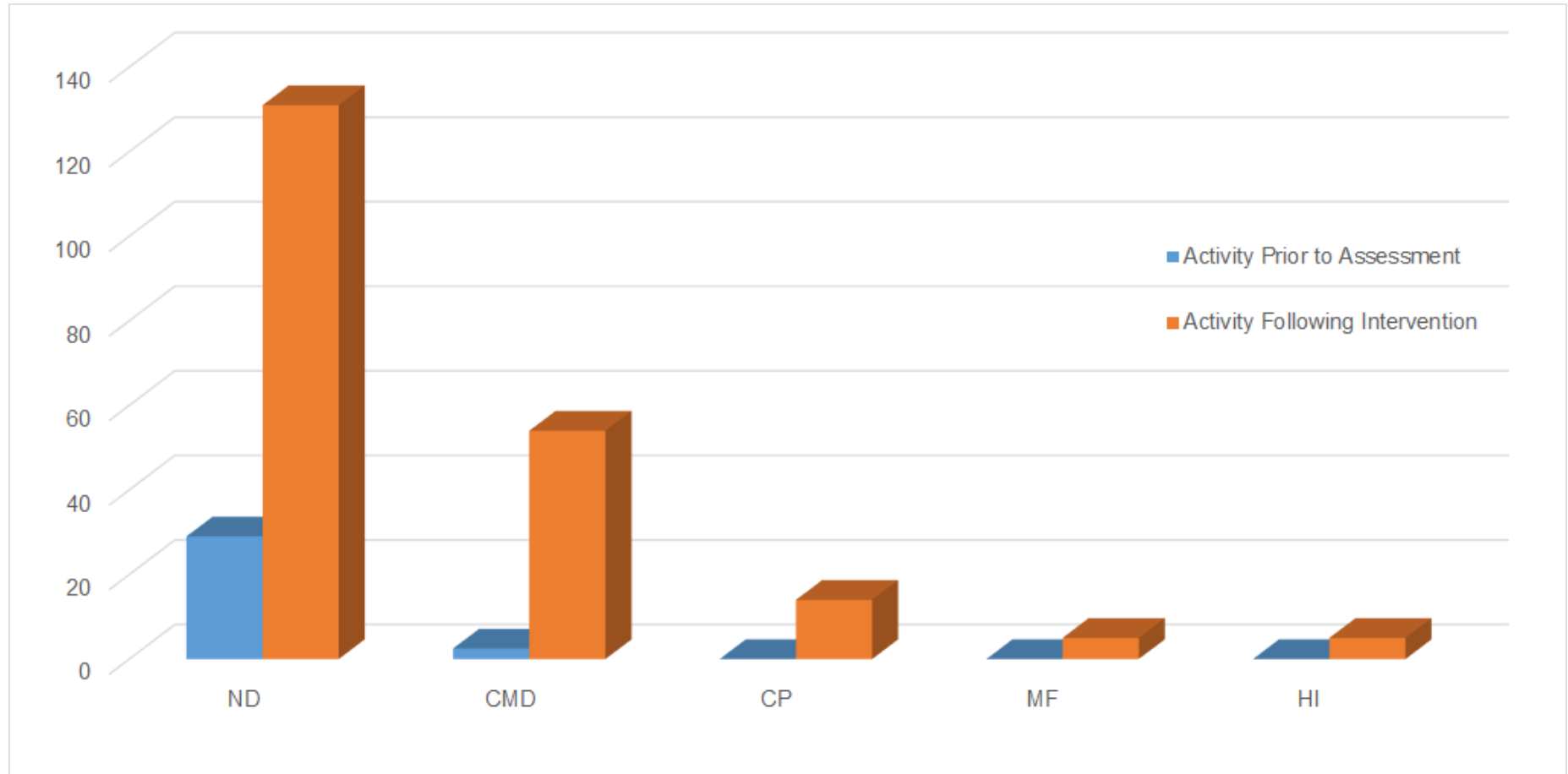- Simpler the better.

Outcome Measures

- Impairment

Then based upon agreed achievable goals

- Activity

- Participation

- Well Being/Distress

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Therapy Outcome Measures: April 2018 - March 2019

	ND	CMD	CP	MF	HI	MS	CVA/MS
Activity Prior to Assessment	29	2.5	0	0	0	1.5	0
Activity Following Intervention	131	54	14	5	5	4	5

Final Thoughts

A positive attitude towards the technology can help to make the system a real success.