Increasing the IMPACT of assistive technology

Introduction

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INTRODUCTION

Elena

Elena O'Keefe is a 65-year-old woman who lives alone. She has been struggling with arthritis since she was in her thirties. As her arthritis got worse, she had to take early retirement back in 1982. Since then her condition slightly improved following the replacement of several joints.
Despite this, Elena is one of a minority of arthritis patients who needs or uses a wheelchair. Her brother convinced her it might be a good idea to use one, and when Elena saw a powered wheelchair once, she thought 'this could be fun'. Her decision to actually start using a wheelchair has been positively liberating. Now, she is much more independent. She can move around and actually do her shopping in the neighbourhood.

Nicole

Nicole is an 82-year-old woman, living in Eindhoven, a medium-sized city in the southern part of the Netherlands. As a former college lecturer, she has always had an active life with a good network of friends and a substantial involvement with local associations.

Since the last couple of years she has had difficulties with walking. However, she refuses to give in and has acquired a rollator: “With this tool, I am able to do many things I couldn't do otherwise, like shopping or attending the performances of the local theatre group, ... I couldn't manage without my rollator any more”.

Nicole refuses to move to a service flat or residential care. She has been living in her own flat for a great many years and it is still full of memories of her husband, who died four years ago. Nicole still likes to go out and enjoy the company of her friends over a cup of coffee on a nice spring afternoon. At home, she likes to watch television or do some embroidery. Most of all, she enjoys reading a good novel.

Mary

Mary Sommers is 91 and has been living since 1925 in her own house in a small town. She has a daughter living nearby, within 300 metres. Mary doesn't think 'going to a nursing home' is a necessary or a good option: 'I'm so happy living here - I wouldn't dream of leaving. This place has many good memories of Will, my husband, who died 15 years ago. And all our children were born in this house.'
Since the death of her husband, Mary has become very independent. Different kinds of assistive technology help her to cope with the problems she is experiencing as she gets older. She is open to tools that make life easier - an attitude that she developed within the past ten years. It all started with the problems she experienced due to her hearing impairment, although at the time she didn't recognise the cause of the problems and didn't know the problems could be improved by assistive technology.

Anna

Anna is a 65-year-old woman living in a small town in Finland. Prior to her stroke she worked in different office situations and has experience of using PCs. Anna had a stroke a few years ago, resulting in hemiparesis in her right hand, and aphasia. Immediately following the stroke, Anna had severe difficulties in understanding speech and her speech therapist observed that she was not able to follow discussions or to answer simple yes/no questions. Visually she was able to combine similar pictures, but she was not able to combine conceptual groups (e.g. fruit, furniture etc.). She had marked aphasia, with some strong stereotypical expressions and was not able to initiate communication.

This set of learning materials is concerned with ‘assistive technologies’. These are the technological systems and devices that assist people who have difficulties, due to age or disability, in carrying out everyday activities. The focus is on how you, as a health or social service professional, can help to ensure that your older or disabled clients are in a position to benefit from the assistive technologies that they need.

The aim is to provide you with an overview of:

- the challenges that can be posed by ageing and disability;
- the role that assistive technology can play in supporting independence and well-being for older people and disabled people; and

- the critical role that each of the various health and social service professions can play in making sure that the appropriate assistive technology is made available to those who need it.

This module provides a first introduction to the topics that are addressed in more detail in later modules. These later modules focus on specific areas - physical functioning, vision, hearing and communication.

The learning goals of this and the subsequent modules are that you will:

- know enough about ageing and disability to appreciate the importance of assistive technology;
- know the main forms of assistive technology and appreciate the wide range of products, devices and applications;
- recognise that the current situation regarding availability and take-up of assistive technology for those who need it is often very unsatisfactory;
- understand the crucial role and responsibility of all branches of the health and social services, and all of their respective caring personnel, in remedying this situation; and
- know the main elements of the role of 'assistive technology intermediary' that you can and should play as a health/social service professional.

1 ASSISTIVE TECHNOLOGY, AGEING AND DISABILITY

This course is primarily intended to do two things - develop your awareness of assistive technology and teach some practical things that you can do as a practitioner in this area. This section gives an initial introduction to assistive technology, ageing and disability.

1.1 Assistive technology

✍ **Context activity - assistive technology**

Think about persons in your environment who use assistive technology and try to answer the following questions:

- What kind of assistive technology do they use?
- Why do they use it?
- Where did they get it?
- What health professional(s) were involved in this process?

The term 'assistive technology' (AT) refers to those products, devices and applications of technology that can provide support to disabled people and older people in their daily lives. It is now coming to be the preferred term for describing such technologies and is increasingly used in place of older terms such as 'rehabilitation technology' or 'technical aids'. However, as you will see, bodies like the International Standards Organisation still use the term technical aids, as do the public services in many countries.

The International Standards Organisation defines technical aids as:

"*any product, instrument, equipment or technical system used by a disabled person, especially produced or generally available, preventing, compensating, relieving or neutralising the impairment, disability or handicap*."

In fact, assistive technologies need not be restricted to those that are used directly by the disabled (or older) person themselves, but also include those that are used by carers, such as lifting aids, or that are

used to deliver services by a care service provider, such as tele-alarms.

Following from this definition, assistive technologies may be of two kinds - aids specifically designed to meet the needs of disabled people and older people, and more general-purpose technologies that are nonetheless of particular benefit to disabled people and older people.

In the general-purpose category are a variety of consumer products, household amenities and utilities, including labour-saving devices (e.g. washing machines), amenities (e.g. inside toilet) and utilities (e.g. the telephone) that can be particularly important for people with disabilities. Such everyday technologies have a significant role to play in supporting independence and self-care. However, even in a Europe approaching the end of the millennium, a small but unacceptable number of disabled people and older people still live without access to such basic facilities as a private indoor toilet or telephone.

Assistive technologies range from simple low-tech items like walking sticks to the most sophisticated in powered transport, computers, telecommunications and robotics.

The main classes of technical aids listed in the European Glossary on Technical Aids (based on the ISO's classification system) indicate the very wide range of equipment, devices, and adaptations, which are included within the scope of assistive technology.

European Glossary on Technical Aids

Here are some of the main categories listed in the Glossary:

- Personal care and protection (e.g. aids for using the toilet and for washing/bathing; adapted clothing, shoes, etc.)
- Personal mobility (e.g. wheelchairs; turning and lifting aids; orientation aids; etc.)
- Housekeeping (e.g. aids for preparing meals, dish washing, eating/drinking, and cleaning, etc.)
- Home adaptation (e.g. adapted furniture; aids for opening/closing doors, windows, curtains; lifts, safety equipment; etc.)
- Communication, information, signalling (e.g. optical aids, hearing aids, writing aids, computers and software, alarm systems, telephones, face-to-face systems, etc.)

- Handling (e.g. aids for operating things; environmental control systems; hand, finger or reach aids; aids for carrying or transporting; robots; etc.)
- Environment improvement (e.g. climate control)
- Recreation (e.g. suitable toys or games, exercise and sports facilities, gardening equipment, etc.)
- Therapy and training (e.g. dialysis, medicine dosing, testing/analysis, stimulation, sore prevention; aids for therapy and training in a wide variety of areas, such as vocational training, arts, communication skills)
- Orthoses/prostheses (e.g. for spine or limbs; orthopaedic footwear; etc.).

The full classification can be found in 'The European Glossary on Technical Aids', EU DGV, Helios-Handynet, 1996. Further information on the ISO classification system upon which this is based can be found at http://www.iso.ch/

In this course, the scope will cover all of these technologies with the exception of orthoses/prostheses and some of the more medically-oriented therapeutic technologies such as dialysis.

1.2 Disability

This course is about the role of assistive technology in meeting some of the important needs of disabled people and older people. At the outset, therefore, it is important to gain an understanding of what disability and ageing involve for those directly concerned - disabled people and older people themselves. This section looks at disability and how various parties have conceived it over the years. The subsequent section looks at the meaning and experience of ageing.

One of the main reasons why disabled people have problems in today's society and do not enjoy equality of opportunity is because of the way disability is defined and understood. Disability is a difficult concept to define, and the way it is understood largely determines the health and social policies that are adopted and, ultimately, the impact of disability at all levels, from the individual to society.

Tom

Tom is suffering from arthritis. He has difficulties with walking and uses a walking frame with wheels. He lives in an apartment on the third floor of the building. Fortunately there is an elevator in this building. He always uses this elevator to go to or leave his apartment when going shopping nearby. Then the small shop where he always gets his groceries closes, leaving only a large supermarket about two kilometres away from his apartment. He is not able to walk to the shop to buy his groceries.

✍ **Context activity - disability**

Try to explain the concept of 'disability' in Tom's case.

Over the years a variety of perspectives on disability have been developed. At opposite poles are perspectives embracing the 'medical' model and the 'social' model, respectively.

Traditionally, much of the health and social policy on disability was based on a medical model that viewed disability as a 'personal' problem, directly caused by disease, trauma or health conditions, and one that primarily required medical care provided in the form of individual treatment by professionals.

The social model of disability, on the other hand, sees the issue mainly as a societal challenge to ensure the integration of disabled people into society. From this viewpoint, disability is not an attribute of a person, but a set of (potentially) restrictive conditions that arise, not as the result of impairment per se, but of society's failure to accommodate the needs of those with disabilities and to allow them to exercise their abilities.

Apart from requiring practical actions (such as making assistive technology available and designing products and the environment to be accessible to all), the social model requires a change in traditional attitudes and the recognition, at the political level, that the challenge of disability is a question of human rights.

Nowadays, the social model has come to predominate and, as will be seen in the next section, the World Health Organisation has been endeavouring to incorporate these emerging perspectives into its classification systems for disabilities.

✍ **Context activity - disability**

Will your description of the disability of Tom change when you follow the social model? And if it changes, in which way?

The classifications of disability by the World Health Organisation

In 1980, the World Health Organisation (WHO) published the first version of the ICIDH (International Classification of Impairments, Disabilities, and Handicaps). This was developed as a supplement to an older WHO classification, the International Classification of Diseases (ICD), when the medical profession recognised that disability went beyond the diseases or accidents that cause impairments and that, in order to prescribe treatment and rehabilitation, a classification was needed that would describe the consequences of the medical conditions.

The central constructs of this ICIDH-1980 classification are impairment, disability and handicap, and these terms are used in a precisely defined way.
An *impairment* is any loss or abnormality of a psychological, physiological or anatomical structure or function. A *disability* is any restriction or lack of ability, resulting from an impairment, to perform an activity in a manner considered normal for people. A *handicap* is a disadvantage, resulting from an impairment or disability that limits the fulfilment of individual goals.

After two decades of use, it was accepted that this classification system needed to be revised in the light of changes in health care provision and the new social understanding of disability. Work on the new ICHID-2 is already underway and is scheduled to be completed by the year 2000 when it will be adopted by the WHO assembly.

What Disabled Peoples' International says...

Disabled Peoples' International (DPI) has stated the requirement of disabled people from the new WHO proposals very clearly.

"*In a perfect world we would prefer to have no classification at all. We are the only oppressed group that has to be put through the mill in order to identify who we are.*
However, for the purpose of statistics, assessment for services and programs and above all for non-discrimination legislation, we do need to have a definition of who we are and of our situation and we reluctantly accept that this means some sort of classification or analysis of disablement. But the crucial point for us all is that any classification of us or our situation must be made in the social context and not in the individual context".

The WHO's first step has been to change the names of some of the categories in order to eliminate their negative character. Disability has become activity and, by extension, limitations to activity. Handicap has become participation and, by extension, limitations to participation.

Definitions of proposed dimensions in ICIDH-2:

Impairment is a loss or abnormality of body structure or of a physiological or psychological function, e.g. loss of a limb, loss of vision....

An **activity** is the nature and extent of functioning at the level of the person. Activities may be limited in nature, duration and quality, e.g. taking care of oneself, maintaining a job...

Participation is the nature and extent of a person's involvement in life situations in relationship to impairments, activities, health conditions and other contextual factors. Participation may be restricted in nature, duration and quality, e.g. participation in community activities, obtaining a driving licence...

You can follow the progress of work on ICIDH-2 at:

- http://www.who.int/msa/mnh/ems/icidh/

Functional emphasis

The emphasis on activity and participation will enable national and European statistics to give more attention to the functional difficulties being experienced by disabled people. This will be more helpful in giving information about the number of people who are actually facing problems in achieving what they would like to do, such as watch television, bathe and wash easily, lift a telephone handset or have a telephone conversation.

✍ **Context activity**

Remember the example of Tom and try to describe his impairment, a limitation in his activity, his participation and a contextual factor that influences these descriptions.

The functional approach is especially useful when considering disability in older age. There is a link between ageing and disability in the sense that a high proportion - about 70% - of disabled people are over 65 years of age. However whilst all older people undergo mental and physical changes, it would be wrong to consider all older people as mostly frail or disabled. The majority of older people are in fact living in quite good health.

In particular, it is functional status rather than medical or disability classification or age that will determine whether a person can live an independent life in the community. Functional status will also determine the levels and types of assistance, including requirements for assistive technologies that are needed to carry out activities of daily living. The classification of activities in the ICIDH-2 system (see the factsheet on this for details) gives an indication of the wide range of functional capabilities that are important for everyday life.

✍ **Research activity - activities from the WHO ICIDH-2**

Look at the list of activities in the factsheet and select those activities in which you think Tom is limited. Then compare this description of limited activities with the descriptions of disability you gave earlier and try to combine these descriptions with the type of assistance and assistive technologies Tom could benefit from. Which description will give you the most valuable hints to define the type of assistance and/or assistive technologies Tom could benefit from?

Prevalence of disability

These positive developments in the conceptualisation and classification of disabilities have yet to find their way into national and European statistics, however. In fact, there is not yet an adequate data set that would allow us to make a really accurate quantification of disability in the EU nor is there anything to provide a comparative picture of the situation across the European countries.

The most recent prevalence data for various categories of disability are reported in the Eurostat publication Disabled Persons Statistical Data (Eurostat, 1995). The data is based on various national definitions of disability and gives estimates of the number of disabled people in the EU countries as varying between 9.3% and 15.2% of the population, with most member states apparently having a percentage close to 12% of the population. The variation may be a result of the different age structures of the population in the different countries, the different methods used to define and identify persons with disability or a combination of these and other factors.

Whilst this data tells us that disability is a significant issue for the health and social services in Europe, the fact that it does not give a breakdown into different disability categories means that it is not very useful, on its own, for identifying the extent of potential need for assistive technology. For this type of data it is necessary to look for good quality national statistics and then extrapolate these to the EU level in order to get reasonable estimates of the numbers of people with different types of disability.

Table 1 provides estimates based on a UK survey that used the WHO ICIDH 1980 classifications. From this we can give an approximate indication of the numbers of people with different disabilities in the European Union population of about 375 million people. (cf. Eurostat, 1995, Table 9, p.192)

We can see from the Table that large numbers of Europeans experience disabilities in the four areas targeted in this course - physical functioning, hearing, vision and communication. It is also clear that many people experience multiple disabilities (the numbers

in each category, when added, give a much higher figure than the total with at least one disability).

TABLE 1.
Estimates of numbers of disabled people in the EU
(based on extrapolation of UK data)

Disability type	**%**	**N (millions)**
Physical functioning:		
Personal care	7.3 %	27.4
Locomotion/Mobility	7.8 %	29.3
Body disposition/Use of body	2.2 %	8.3
Dexterity/Clumsiness	3.1 %	11.6
Visual	3.0 %	11.3
Hearing	4.7 %	17.6
Communication (verbal)	2.3 %	8.6
Total (with a least one disability)	**11.6 %**	**43.6**

1.3 Ageing

As the European Union approaches the new millennium, a major demographic challenge is unfolding. The number of children and young people in the Union is decreasing whilst the number of older people continues to rise. Since the European Union was formed over thirty years ago its population has been ageing. This 'greying' of the population is occurring in all EU countries, with some variation in timing in the different countries.

A number of factors are responsible for this, including a decline in fertility rates and the increasing longevity or life expectancy of the older population. As a consequence, the traditional pyramid-shaped age structure of the population, with its wide base and narrow top, has been replaced by a more column shape. That is, there is a more even distribution of people among different age groups. These trends are expected to continue, accelerated by the ageing of the post-war ‘baby boomers’, further flattening the pyramid structure of the population (Figure 2).

Growing numbers of older people
There are more than 75 million people aged 60 years and over in the European Union at present, representing about one in five of the total population. This figure is expected to rise rapidly in the coming decades so that by the year 2020 more than one quarter of the Union's population will have reached their sixtieth birthday (Figure 3).

Figure 1. Age pyramid: EU estimates for 2020
Source: reproduced from Eurostat/ILO data

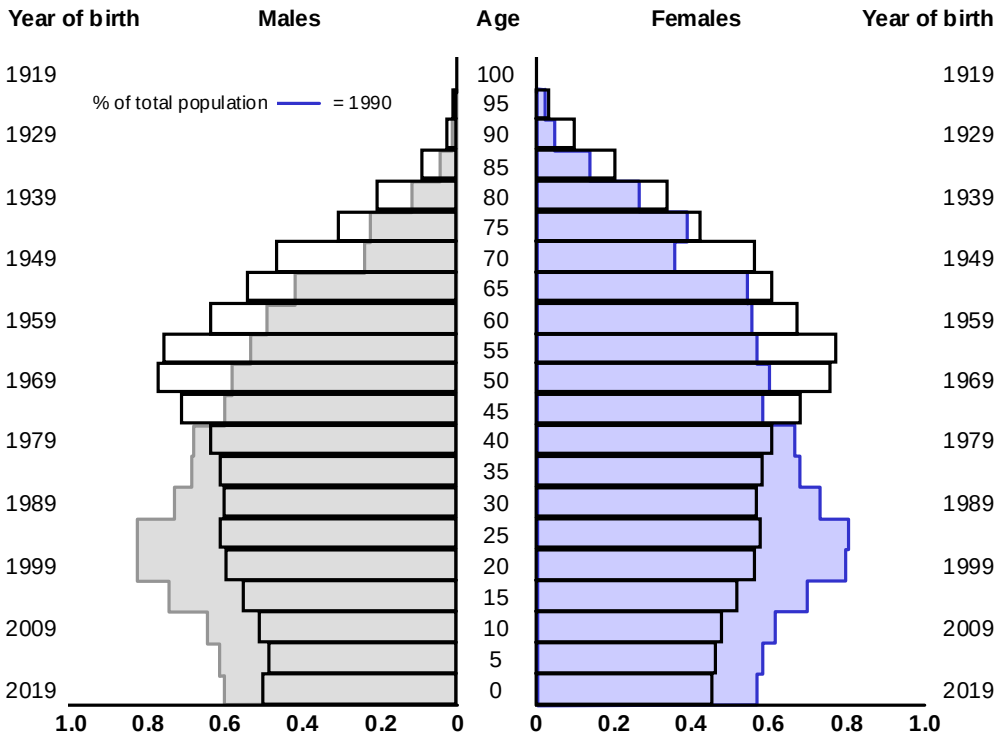


Figure 2. People aged 60+ years and 80+ years as a % of the total population of the EU 1990-2020

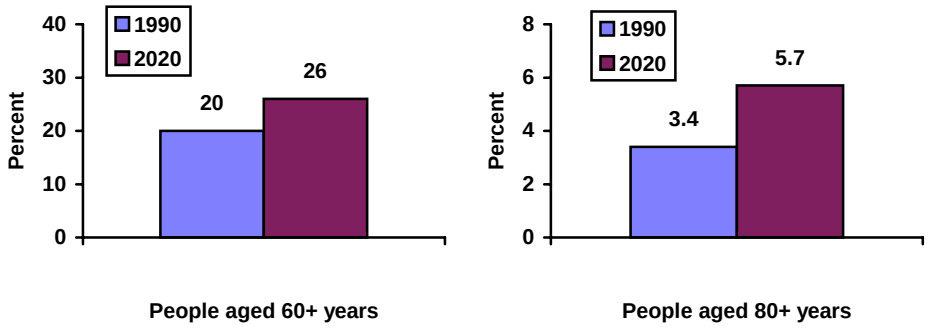
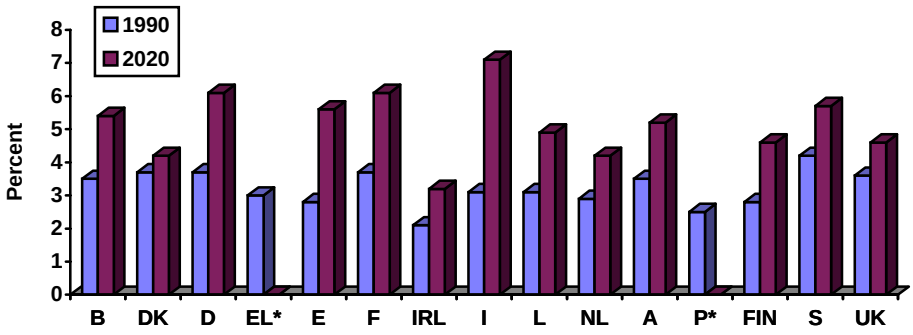


Figure 3. People aged 80 and over as a % of total population in each EU country.



*(Source: Eurostat Demographic Statistics, 1997; *national forecasts not given)*

Because of different fertility, mortality and migration rates in member states, the rate of population ageing varies across the EU. Nevertheless, all member states are expecting a significant increase in their older populations in the next twenty years.

What's in a name

People aged 60 and over were recently asked in an opinion poll what they preferred to be called. Although there was no consensus across the whole Community, with the majority being split between 'older people' and 'senior citizens', they overwhelmingly came down against being called 'elderly' - the term most commonly used by the media and policy makers.
(Cronin & McGlone, 1993).

Very old people

Even more significant than the growth in the proportion of older people in the EU is the ageing of the older population itself. The very old - aged 80 years and over - are the fastest growing section of the older population and will number 20 million people by 2020 (Figures 3 and 4). This represents an increase of about 60% on average between 1990 and 2020.

More older women than older men

Whilst more Europeans than ever before are reaching old age and very old age, this does not apply equally to both sexes. Women outlive men by an average of 6 years. The longer life expectancy of women results in an imbalance between the sexes in old age. Nearly three in five older people aged 60-79 in the EU are women, as are seven in ten aged 80 and over.

Falling birth rates and dependency ratios

As noted earlier, falling birth rates are an important factor contributing to the ageing of the population overall. The average number of children per woman in the EU has been falling since the

mid 1960's, from 2.63 in 1960 to 1.58 in 1990, and is now below the population replacement level of 2.1 children per woman. Because people are having fewer children there will be fewer family members to provide care for older people in the future. This reduction in the availability of informal carers is likely to be compounded by pressure from the labour market to encourage 'typical' family carers (usually women in their middle years) to take-up paid employment. These trends will increase the importance of assistive technology that can help self-care and independent living.

Disability amongst older people in Europe

At age 60, the average life expectancy in the EU is 20 years and, for most people, many of these years will be spent in fairly good health. There is of course enormous variation between people in the extent to which ageing is accompanied by problems in daily living and very little is known about the complex processes involved. Research into protecting and maintaining health and independence amongst healthy older people is in its infancy but is receiving increasing support.

Whilst it is true that the majority of older people are in good health and remain capable of caring for themselves - in fact many are carers themselves - nevertheless a sizeable minority do have health problems that affect their functional abilities and require some assistance in carrying out activities of daily living. Between one quarter and one third of those aged 70 and older need some level of assistance and it is estimated that over 40% of those aged 80 or older are severely incapacitated.

Prevalence of functional limitations amongst older people

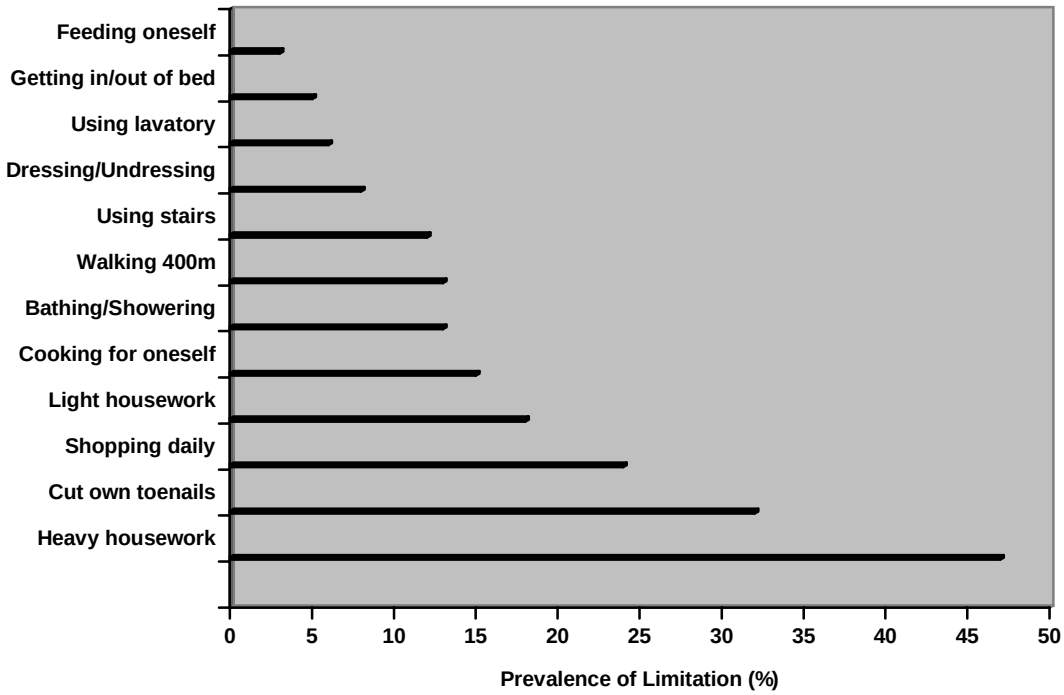
As noted earlier, in the case of older people, functional limitations rather than disabilities tend to be the focus, although these are obviously largely overlapping. Functional limitations relating to activities of daily living are traditionally divided into those affecting basic activities (ADLs) and instrumental activities (IADLs), respectively. ADL activities are those that provide directly for the primary needs of personal care and maintenance (e.g. for nourishment, keeping warm, looking well-groomed). IADLs are the secondary activities that are instrumental to sustaining these basic needs in independent community living (e.g. shopping and cooking). Basic and instrumental activities cover various areas such as the examples given in the following box (based on Guralnik et. al., 1996).

Activities of daily living

Basic	Instrumental
Eating	Meal preparation
Transferring (bed to chair)	Walking outside
Toileting	Housework
Dressing	Shopping
Grooming (e.g. toenails)	Handling money
Bathing	Phone use
Walking (400 metres)	Self-medication
Using steps and stairs	Using public transport

The ability to perform these different activities unaided typically does not decline at the same rate with increasing age. This is shown in Figure 1, which is based on data from a Finnish study of over 1,000 older people aged from 60 years of age upwards (Ferrucci et al., 1998). Figure 1 shows that whereas nearly 50% of people aged over 60 reported not being able to do heavy housework, only 3% reported not being able to feed themselves.

Figure 4. Prevalence of functional limitation by activity



Ageing - a triumph, a crisis, a challenge?

Population ageing represents a triumph of social development and public health. It should therefore be viewed as a positive development, not a problem or a crisis. The focus of the health and social services should be on prolonging independence, participation

and quality of life, and on helping to unlock the enormous resource of experience, wisdom and skills that the older population provides.

Assistive technology has an important role to play in this approach. It can help older people to do things that would otherwise be difficult and can enhance the dignity and reciprocity of caring relationships.

✍ **Review and context activity - summary of ageing section**

Summarise the core message of this section. Discuss the implications from different perspectives, e.g. the ageing person, your profession, social policy, ...

1.4 Challenges of disability and ageing

Although the experiences of ageing and disability are to a large extent determined by the nature of the society that we live in, they nevertheless do pose practical challenges at a number of levels:

- for disabled people and older people themselves
- for family carers
- for health and social services
- for society as a whole.

Implications for disabled people and older people themselves

Given the preceding discussions it should be evident that, at least in an ideal world, having a disability or an age-related functional limitation should not necessarily cause restrictions in daily life. To put it simply, the impact will be minimised if the environment, in the broadest meaning of the word, is conducive to the needs of disabled people and older people. This includes:

- design (buildings, transport, equipment, etc.)
- attitudes (of employers, service providers, and indeed everyone in society)
- availability of help and support (from formal or informal sources of care) and
- availability of assistive technology.

In practice, of course, things are seldom as perfect as this. Indeed, in many European countries various aspects of the environment (apart from informal care and support) are often very poorly developed. This means that having a disability or a functional limitation can result in significant negative impacts.

One area of impact is on the capacity to live independently in the community. This is the desired situation for the vast majority of people, including older people and younger people with disabilities. However, without a supportive environment (including necessary assistive technology) disabled people and older people may lose their independence even to the extent of ending up in residential care. At a minimum, many will experience difficulties in carrying out the everyday activities of daily living. Other impacts include the difficulties that disabled people of working age often have in gaining employment (unemployment rates of up to 80% can be found in some of the European countries) and restricted opportunities in many other areas of life, including access to education and social life more generally.

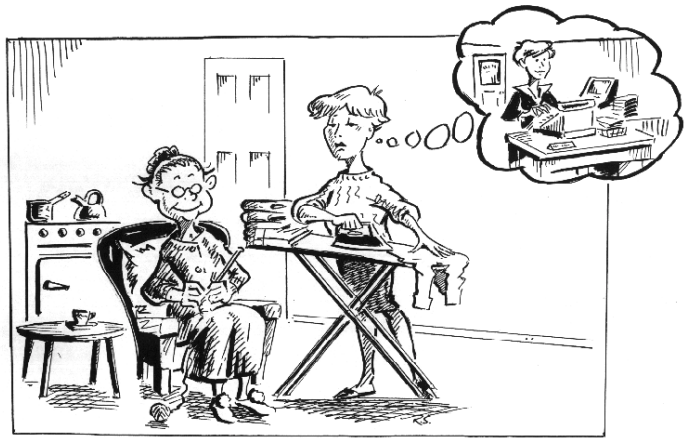
Assistive technologies that support activities of everyday life have enormous potential to minimise functional limitations and other impacts of disability for the individuals concerned.

Challenges for family carers

Although the health and social services play a crucial role, it is recognised that family members provide the bulk of care and support for disabled people and older people. In the case of younger people and children, parents are the usual providers of care. In the case of older people, a spouse or adult child (usually a daughter) are the typical primary carers.

Although family care is given in the context of the ties and reciprocities that are at the core of family relationships, it must also be recognised that provision of care can be very demanding and can have significant costs for the care providers. At a practical level, care can be physically demanding and can result in physical strains and even injury (back injury caused by inappropriate lifting being the most common). Perhaps even more important are the psychological and emotional strains that can result, especially where care is provided 24-hours per day and opportunities for respite are limited or non-existent. Caring for people with dementia (for example, Alzheimer's disease) can be particularly stressful.

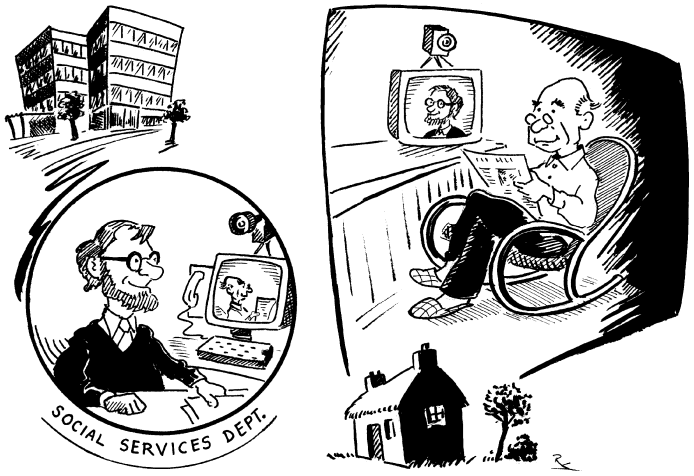
Opportunity costs must also be taken into account. In particular, care responsibilities can reduce or eliminate the employment opportunities of carers.



Again, assistive technologies offer enormous potential to minimise these strains and restrictions. They can support the provision of care in a practical sense (e.g. hoists to assist with lifting) and can also, of course, enable more self-care. In this way they can be very liberating for both carer and cared-for.

Challenges for the health and social services

Disability and age-related functional limitations pose a variety of challenges for the health and social services as well. These include the question of how best to provide quality care and support within the context of the cost containment pressures being experienced in most countries.



Again we will see that assistive technology can play a major role in both the practical aspects of care delivery and in meeting strategic cost-benefit goals. With regard to quality issues, assistive technology can often be a prime contributor to meeting the goals of independence, participation and quality of life.

With regard to cost-containment, it has been demonstrated that assistive technologies can be very cost-effective solutions in many areas of service delivery (e.g. tele-alarm services can save costs in terms of acute and long-term hospital or other forms of residential care).

Challenges for society as a whole

Overall, these practical aspects of ageing and disability, alongside the need to ensure that older people and disabled people are afforded full respect, dignity and rights, pose fundamental challenges for society as a whole. In fact, it has been suggested that the level of development and civilisation of a society can be measured by the quality of its treatment of its disabled and older citizens.

Assistive technology is often a pre-requisite for equality of opportunities for full participation and for a good quality of life for disabled people and older people, so society has a duty to make sure that appropriate technologies are available and affordable.

In the future these issues are going to become even more critical. On the one hand, the ageing of the population will mean that older people and disabled people make up an increasing proportion of the population. On the other hand, there will be labour market pressures that encourage the participation of disabled people, later retirement of older people, and more participation by the traditional providers of care for older people and disabled people - women in their middle years.

Again, assistive technology can play a significant role. Wide availability of assistive technology options would be greatly liberating for all of us.

2 A GLIMPSE OF ASSISTIVE TECHNOLOGY

This section provides an initial introductory overview of assistive technology. The aim is to give the student an appreciation of the variety of types of technology and their uses. More in-depth treatment of particular technologies will be provided in later modules.

2.1 A wide variety - high-tech and low-tech, dedicated and general-purpose

There are literally thousands of assistive technology products and services available. They range from simple low-tech devices to the latest in high-tech computers, smart homes and robotics. Included are both general-purpose items that are of particular benefit to older people and disabled people and dedicated devices that have been specifically designed with the needs of disabled people and older people in mind.

✍ **Context activity - scope of assistive technology**

Explore the scope of assistive technology.

You can find overviews of assistive technology:

1. In databases and catalogues held by the agency or agencies providing assistive technology services in your country or region (find out who they are and see what information they provide);
2. By acquiring catalogues from commercial retailers of assistive technology (you may get information on these from the national agencies mentioned above or in the classified telephone directory);
3. By visiting web-based sites such as http://www.rehadat.de/ or http://www.abledata.com/

General-purpose items can be very useful

Many assistive technology products serve both people with functional restrictions and those without. These products make activities easier and more efficient for everyone. Examples include the electric toothbrush, electric tin opener, long-handled shoe horn, fruit peeling machine and palm, foot or armrests (supporting

wrists/arms/legs whilst using a keyboard or other activities). Such products are usually available in ordinary retail outlets.

Specifically-designed products from specialist outlets

Other assistive technologies (such as the majority of those described in later sections) are specifically designed with the needs of disabled people or older people in mind. These products tend to be made available through specialist outlets, provided either by private sector retailers or public sector assistive technology services.

The 'assistive technology' can be in the design

Some assistive technology comes not in the form of special products but rather in the way they are designed. For example, a water tap that has a turning knob is harder to use for those with frail hands than one with a lever handle; a tap with one handle for more/less and hot/cold water by be even easier to use. Such a product may initially have been designed as, and still be considered as, a luxury but also can make daily activities easier and support independent living.

The terms 'design for all' or 'universal design' are used to describe design approaches where there is an explicit aim to design products and services so that they meet the needs and circumstances of the widest possible range of users, including disabled people and older people. Further information on 'design for all' can be found at http://www.stakes.fi/include/

Wide price range

Whilst it may be commonly thought that assistive technology is primarily 'high-tech, expensive equipment', many assistive technology products are in fact low-tech and cost less than 100 ECU. Products like a flashing doorbell, memory telephone or magnifying ruler cost no more than a book. Of course, there are also more expensive items, such as powered wheelchairs costing as much as a small car or television loops costing in the region of 2500 ECU's.

'Medical' assistive technologies

Although as noted earlier, medical technologies are generally outside the scope of this course, nevertheless some of the products commonly included in a broad definition of assistive technology have a medical dimension.

Many of these products are becoming more common in home care as citizens aim to stay in their familiar environment as long as possible and social policy makers across Europe try to reduce the length of hospital stays.

Such technology goes beyond the standard medical thermometer that is present in every household and includes items such as medication organisers, glucose monitors (also available in low vision design for people with diabetes-related vision problems), blood pressure monitors, high-low beds and aerosol equipment.

2.2 Assistive technology for different problem areas

One way to begin to appreciate the range of technologies that are involved is to consider the types of assistance and support that might be needed for some of the more commonly experienced problems of disabled people or older people.

> ✍ **Research activity - Assistive Technology**
>
> Write down 10 examples of assistive technology. Then write down 10 examples of assistive technology in the room that you are sitting in. Look at the answers and describe the difference between them.

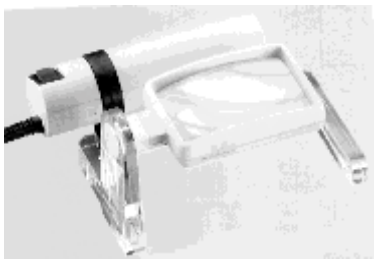
Physical functioning

In the area of physical functioning the types of assistive technology of relevance cover a wide range. Examples include walking aids, wheelchairs, aids for reaching and lifting, aids for manipulation of objects and lifting aids.

Hearing

For hearing problems there are two main categories - devices to augment residual hearing (hearing aids) and the wide variety of devices that can substitute visual or vibrating signals for auditory signals. The latter include text telephones, vibrating or flashing alarms, text captioning facilities in video cassette recorders and many other devices and adaptations.

Vision



For visual problems, again there are two main categories - in this case devices to augment residual vision (e.g. magnifiers) and devices to substitute auditory or tactile signals for visual signals, for example speech output and Braille.

Communication
Finally, for communication problems there are devices to support both physical production of speech (e.g. voice synthesisers) and the cognitive aspects of production and comprehension (e.g. computer-generated symbolic languages).

2.3 Types of application

Assistive technologies can also be grouped according to form they take and the way they are applied. There are many ways in which this can be done. For our purposes we can make a useful distinction between the following categories:

- Personal assistive devices
- Adapted everyday objects
- Environmental adaptation
- Teleservices

Personal assistive devices
Personal assistive devices are items of equipment that are used directly by older people or disabled people themselves, or by their carers. They cover a wide range, for example hearing aids, walking aids, reading aids, wheelchairs, hoists, magnifiers and buttoning aids.

Adapted everyday objects
There are also many adapted everyday objects that can be helpful. Examples include adapted taps, kitchen utensils, chairs, baths, toilets, beds and medicine dispensers.

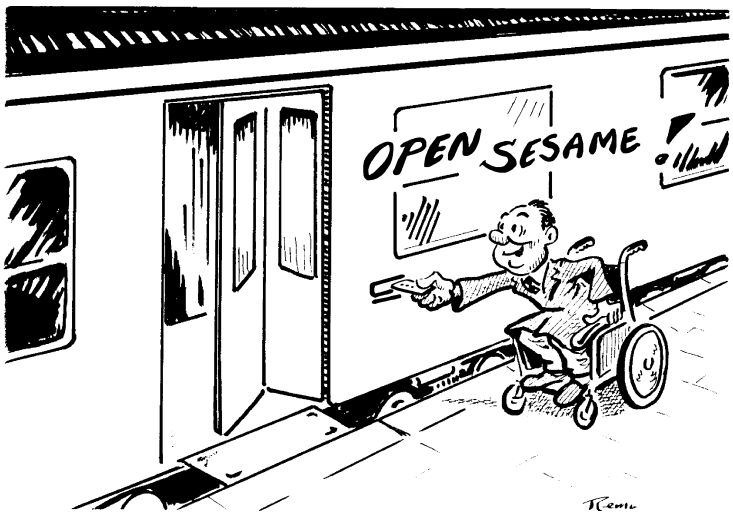
Environmental adaptations
Structural adaptations to the home environment can also be of great benefit. Examples include lifts, accessible bathrooms and toilets, and a variety of smart home adaptations such as remote control of curtains, windows and doors.

Teleservices

Telecommunications play an increasingly important role in all aspects of life today and have allowed a range of 'teleservices' to be added to the repertoire of assistive technologies for older people and disabled people. These are services based on telecommunications that allow things to be done from a distance.

Teleshopping, for example, can be very helpful for people who have difficulties leaving home. Videotelephones can enable people who are deaf to communicate by sign language or lip-reading. Health and social services can also be delivered remotely nowadays. A familiar example would be the tele-alarm systems that are now quite commonly used by vulnerable older people in many countries. Other examples are telemedicine and the delivery of various social services by videotelephony.

2.4 Contexts of use



For purposes of this course our primary interest is in assistive technologies for use for daily living purposes, whether at home or abroad in the wider community. There are also a wide variety of applications of technology oriented towards employment, education and transportation. These are of great

importance in enabling full participation in all aspects of social and economic life in today's society.

✍ **Classifying assistive technology**

While exploring the scope of assistive technology, highlight some of the ways to classify the many products and services.

Your answers should include whether they are:

- low-tech or high-tech
- low-cost or high-cost
- available across the counter or need to be personally adapted
- for personal use or for environmental adaptations, and
- the various other classificatory dimensions discussed above.

3 HOW DO PEOPLE ACQUIRE ASSISTIVE TECHNOLOGY?

This section provides an overview of the services (so-called 'assistive technology service delivery systems') that are provided in the European countries to help people to acquire the assistive technology that they need. You will see that there are a variety of approaches and levels of service in the different countries.

3.1 The different systems in different countries

A major European survey of assistive technology services was carried out in 1993 under the EU-funded HEART study (de Witte et al., 1994). This study found that there were a wide variety of approaches in the different countries. Each country has its own unique system. To simplify matters, the countries can be grouped into clusters sharing certain key features in common. Below, some examples of countries in four clusters - Scandinavian, Continental European, Mediterranean, and UK and Ireland - are provided.

The country descriptions provide a brief summary of the situation in the following areas:

- eligibility and financing
- the professionals who identify needs and make assessments, and
- decision making and supply of assistive technology

The material is based on the work of the HEART study and reflects the situation as it prevailed in 1993. One point to note is there is a lot more detail available for some countries than for others. This can sometimes be a little misleading, in that more problems may become apparent when we have more detailed information. Therefore, it should not be surmised that the fact that an issue is not mentioned for a given country indicates that everything is fine for that country!

Overall, however, although the situation may have changed and improved in some cases since 1993, the descriptions below give a useful illustration of the main types of system and their relative strengths and weaknesses.

Scandinavian countries

Under the 'socialised' systems of the Scandinavian countries, assistive technology services and policy are clearly stated and supported by legislated rights. Services are provided independent of the user's financial situation; they are free of charge and provision is based on need. However, even universal services such as these can be susceptible to the economic climate, and economic recession can lead to restrictions in the actual provision of technical aids.

Denmark

All citizens are eligible, independent of their financial situation, to the assistive technology they require. The costs are financed by taxes. Municipalities and counties have the primary financial responsibility for aids for persons living at home. For persons over 65 years the municipality pays the cost; for persons less than 65 years, counties and municipalities share the cost.

The person requiring assistive technology contacts their municipal social worker or the county TAC (technical aids centre) for advice and assessment. Assessment sometimes requires specialist expertise, e.g. from organisations representing blind or deaf persons. Decisions are made locally in the municipality, usually by the social worker. Aids are provided from local stocks or ordered from dealers free of charge.

Finland

Technical aids that are provided under health and welfare legislation are free of charge. The main responsibility for providing aids lies with municipal health care at local health centres. Costs are met at the municipality level from their own tax revenue or state grants. In the past, financial constraints have led to limitations in the actual provision of aids, with the most severely impaired persons having the strongest claim on funds.

Services are easily accessible but not always known. The person requiring technical aids is often first made aware of assistive technology services by home care personnel. An assessment is made by a welfare worker, physiotherapist or other professional, including an assessment of the person's home environment. Decisions are taken at a higher level by a physician or financial officer. Technical aid centres (TAC) may deliver aids from stock or order it from suppliers.

Continental European countries

Under the continental European 'pluralist' systems, there is often a problem with the complexity of the system and the divided responsibility of insurance schemes. Theoretically, everyone should receive the assistive technology they require, but sometimes it is hard to find out from whom. Another source of confusion is sometimes

the great selection and variety of aids available on the market. Health and social service professionals may find it difficult to get a clear picture of the appropriate range of aids, and people can end up being poorly and inadequately provided for.

The Netherlands
Technical aids are not universally provided or always free of charge. The system is complex and specific regulations cover specific situations. Persons under 65 years are covered by social insurance, implemented through care insurers. Provisions for disabled people are typically covered by social insurance and not by the health care system. People over 65 years are often not covered by social insurance and their needs may be covered by General Financial Assistance if they fall below a certain income level.

Generally, if aged less than 65 years, a person requiring assistive technology applies to their care insurers. They decide on the application following advice from its medical assessment unit. Part of the cost of the aid (the first ECU 65 in 1993) is paid by the applicant and many low-tech aids can cost less than this. Aids are classified as fixed or non-fixed, with non-fixed aids covered by the above procedure. For aids, which must be fixed to walls, application is made to the local community for assessment and funding. Again, part of the cost is paid by the applicant (the first ECU 220 in 1993) and costs over a certain level (ECU 7000 in 1993) are reimbursed in instalments.

Older people applying for technical aids will be covered by social insurance if the impairment occurred before 65 years of age. If the impairment is acquired after 65 years, the person is not covered and has to pay unless eligible for community financial support because of low income, or unless the aid is required for medical reasons. For example, a socially active 68-year-old man on an average pension who has recently become deaf will have to pay for a text telephone himself.

Germany
Assistive technology aids are financed under various statutory insurance schemes, typically health insurance or pension insurance. The cause of disability is very relevant in determining which sector is financially responsible, and sometimes there is difficulty in agreeing responsibility. Negotiation between insurance bodies is quite common and in complex cases the person may be sent from door to door because no one accepts responsibility. Funding in relation to home care for older people has involved both pension and health insurance but a new nursing and care insurance has been introduced. Persons outside the statutory insurance schemes, which are typically linked to employment, are considerably disadvantaged and must rely on benefits under social assistance.

The person requiring an aid or their family starts the process by asking for a medical prescription from a physician, e.g. a prescription for a computer peripheral for a blind person. A medical report giving the cause of impairment and a prescription (with a cost estimate for the technical aid) are necessary when applying for funding from the responsible insurance body. The medical service of the statutory insurance scheme then assesses the necessity for the aid, for example text telephones are often not accepted as necessary.
It is useful for the person and their family to inform themselves of the range of aids available before consulting the doctor as he or she may have only a limited familiarity with what is available. Choice of aids is restricted to a Catalogue of Aids, covering an extensive list of manufacturers and products. Insurance schemes only pay for aids prescribed from the list. Comprehensive technical aid centres do not yet exist, but large assistive technology exhibitions regularly take place.

Mediterranean countries

In general, although there are considerable variations across countries in the levels of service provided, services in the Mediterranean countries tend to be less well developed than in other countries.

Spain

Provision of technical supports is in principle universal but in practice lack of funds limits the supply of aids. The basic criterion for support is possession of a Certificate of Handicap, with a similar certificate required for older people.
The next distinction is whether applicants qualify for support from the National Health System, in which case listed aids are supplied by legal right. For those not eligible for free health care, support from the social services is discretionary and subject to financial availability. For blind people, there is a strong voluntary organisation, which supports funding of technical aids.

A person or their family looking for assistive technology will first have to find out where to get help. Unless being discharged from a hospital setting, the person is likely to have a difficult time seeking support. When approached, social services may have little knowledge of technical aids.
They may have some lists of products and distributors, but are unlikely to carry out a serious assessment of needs. The person or their family going to a private store will be in the hands of the salesperson. Upon presentation of the bill, part of the cost may be refunded depending on an investigation of financial circumstances. Even when coming out of hospital, there may be little knowledge and experience of technical aids, and normally the family must help until a rehabilitation period is over.

Italy
All persons registered as disabled have the right through the National Health System to receive assistive devices listed in the National Register. Other devices may be provided by Social Assistance through the municipalities, depending on the disabled person's needs and economic circumstances. Disabilities (other than those due to labour accidents) are assessed by a medical panel in the local health units and this can take from months to years. Eligibility for assistive devices requires 34% disability.

As in many other countries, the person in need of assistive technology will first have to come to the attention of the relevant services, of course, and there are no systematic procedures to ensure that this will always happen.

UK and Ireland

UK
There is no uniform policy on the provision of technical aids. Local Authority (or municipality) social service departments have primary responsibility for home care and daily living aids, with provision being non-statutory, and services are developed depending on the amount of finance available. Many authorities chose not to make charges until recently, but many have now begun to charge for previously free services. When provided free but where funds are not available, the person will be placed on a waiting list. Local housing departments provide grants for major home adaptations; these are means-tested or income related. Devices required for medical reasons are funded by the National Health Service. A separate wheelchair service exits for the free provision of wheelchairs.

A person requiring technical aids may approach the local Social Services Department. Assessment is usually carried out by an occupational therapist or sometimes by a relevant voluntary agency under contract. Factors taken into account are the degree of need, degree of impairment, degree of isolation and likely level of usage. Decisions are made by the assessor's senior manager. Depending on local conditions, the aid can be provided free of charge, or partially funded on a means-tested basis, or the request may be put on a waiting list. If the person is assessed as not yet being an urgent case, it can take three months to 18 months to receive the equipment.

Ireland
Technical aids are supplied free of charge only to fully eligible applicants, basically medical card and long-term illness cardholders. The process of delivering technical aids is the responsibility of the community care services of the eight regional Health Boards. However, in many cases specialised voluntary organisations provide the service for deaf, blind or speech impaired persons and are refunded by the health boards or from their own resources. The cost

of aids to applicants is dependent on financial status. Costs are fully covered for holders of general medical cards, for aids provided from a standard product list. Items of higher cost may require a contribution from the applicant. Non-card holders will be asked to pay part or all of the cost.

The person seeking a technical aid is referred to the health board community care service by their doctor, health nurse, social worker or other professional. A health board occupational therapist will assess the person and their claim for an aid. Claims for daily living and mobility aids are processed directly by community care services. Approval is made by a health board programme manager. Other requests may be referred on to voluntary organisations that provide services and sometimes financial support in this area.

3.2 Key themes and issues

A number of observations can be made about the services that are available in the European countries. First, it is clear that they vary significantly in their level of universality and in the range of products and services that are provided. Second, there is considerable variation in terms of the types of professionals that are involved and in the nature of their involvement. In some cases medical doctors play a key role, even to the extent of it being necessary to have a medical prescription for assistive technology before being eligible for public financing. In other cases, a variety of professionals may play a key role, including occupational therapists, social workers, community nurses and home helps. Third, there are wide differences in the extent to which there are systematic procedures in place to pick up unmet needs and also in the extent to which services are integrated and comprehensive follow-up is ensured once needs are initially identified.

✍ **Review activity**

Explore the assistive technology services further in your country.

- How do these operate for people with physical, vision, hearing and communication impairments?
- What are the advantages and disadvantages of the way these services operate in your country?
- What are the main problem areas?
- What are the key organisations?

4 MANY UNMET NEEDS FOR ASSISTIVE TECHNOLOGY

4.1 Introduction

Despite the wide range of useful technologies and the existence of public assistive technology services in every country, it is disappointing to have to note that very many older people and disabled people in Europe are currently not availing of the potential that is on offer. Although the extent of under-utilisation varies significantly across countries, there is no country in which it can be said that everyone who needs or could benefit from assistive technology is currently doing so. This section looks at the extent of unmet needs and at some of the main factors that have given rise to this very unsatisfactory situation.

Margaret

Margaret, a middle-aged Irish woman living in a rural area west of Dublin, has been caring for her elderly father for several years. For about 5 months she has been getting up every two hours at night to turn her father over, in order to prevent pressure sores. Then she discovered that special mattresses are available to reduce the likelihood of sores developing. Once one of these was provided, Margaret was able to sleep through the night and was much more capable of providing good quality care during the day.

Martin

Martin, an active 75-year-old citizen of Antwerp, is struggling with loss of hearing. Increasingly, he finds social contacts more tedious. Friends and family visit him less often because he talks very loudly, his young grandchildren have become a bit scared of this 'shouting' man and his spouse complains daily about the loudness of the TV. After a long time he eventually accepted the facts and agreed to the installation of a simple, homemade television amplification system. Now everyone is much happier in Martin's household.

4.2 The extent of unmet needs

There is extensive under-utilisation of assistive technology by those who could benefit from it. Levels of take-up are highest in the Nordic countries and lowest in the Mediterranean countries and Ireland, with the remaining countries somewhere in between. Although there has not yet been any comprehensive and systematic quantification of the situation across the various disability and older person groupings, there is much evidence to support this assessment of the current situation. For example:

- In many countries, the majority of older people with functional limitations use few if any assistive technologies, not even basic low-price adaptations and devices.

- There are wide variations across countries in the levels of availability and take-up of what are considered to be basic requirements and are universally provided in the more advanced countries; for example there are only small numbers of users of tele-alarm services in the Mediterranean countries compared with large numbers of users in the Nordic countries.

- There are also wide variations in the take-up of technologies that are essential for participation in the everyday life of society; for example, text telephones are essential for many deaf people if they are to be able to make and receive telephone calls but only a small proportion of deaf people have them in Ireland and in the southern countries, compared to much larger numbers in the Nordic countries.

4.3 Why are unmet needs so commonplace?

Poor quality of assistive technology services in many countries

One cause of this situation is the poor quality of the (public) assistive technology service delivery systems in many countries. These are the services described in the last section that are provided by state, regional and municipal agencies to identify needs for assistive technologies and make available the necessary technologies. As identified in the already-mentioned HEART study, there are significant problems with the existing services in many countries.

Under financing

One problem concerns lack of finance. Because disabled people tend to have lower than average incomes and older people, although on average being better off now than they have been previously, are at a relatively high risk of poverty in a number of countries, availability of public financing is an important determinant of the extent of take-

up of assistive technologies. In many countries the extent of public financing is very limited and provided under quite stringent circumstances.

Lack of co-ordination
Lack of co-ordination and unclear responsibilities are other common problems. Often, responsibilities for delivering assistive technology services are not formally specified for particular professions and/or branches of the health and social services. Also, responsibilities may be distributed, often arbitrarily, across sectors (including health, social services, education and employment). As a consequence many people fall through the net and do not get the assistive technology that they need.

Lack of comprehensiveness
Another problem concerns the range of technologies and/or the range of users that are covered within the scope of the assistive technology services in the different countries. As noted before, older people are often not explicitly catered for. Also, there is often a tendency to provide quite well for people who need assistive technology for educational or occupational purposes but less well or not at all for people who need them for everyday living. The services in the different countries also vary widely in the technologies that are made available. In some countries, for example, electric wheelchairs are not covered (only manual ones are financed), only some forms of housing adaptations are covered, and the more modern computer- or telecommunications-based systems are often not provided.

No one place to go
The fact that some assistive technologies are to be found in general-purpose outlets and some only in specialist ones can also pose problems. On the one hand, there are the difficulties caused by the lack of a 'one-stop-shop' where all necessary assistive technologies could be acquired. There is also the related concern about stigmatisation, whether real or perceived, when assistive technology is only available in special outlets for people who 'have problems'. This can be an important factor in reducing uptake amongst older people who could benefit significantly from assistive technology.

Needs not identified in the first place

Apart from these deficiencies in the publicly provided assistive technology services in many countries, there is also the problem of needs not being identified in the first place.

Lack of awareness
One important factor is lack of awareness of assistive technology on the part of disabled people and older people, and amongst family carers and the public more generally. Again, there are wide variations across the European countries in this regard, with levels of

awareness apparently a lot higher in the Nordic countries compared to some of the others.

Not enough attention from non-specialist professionals
Given this situation of lack of awareness and the often poor quality of formal systems of assistive technology service delivery, it would be very helpful if all branches of the health and social services gave a high priority to addressing unmet needs for assistive technology within the scope of their work and their services to clients. Unfortunately this does not tend to be the case, and typically the caring professions do not seem to give much attention, either organisationally or individually, to unmet needs for assistive technology.

This gap is the main target of this course and the aim is to provide all relevant health and social service personnel with the motivation and competencies to include assistive technology within the scope of their professional activities.

✍ **Research activity - how to increase the attention given to assistive technology**

As you know, this course is all about teaching health and social service professionals about the importance of assistive technology. What suggestions do you have for ways to increase the attention given by your profession to this topic?

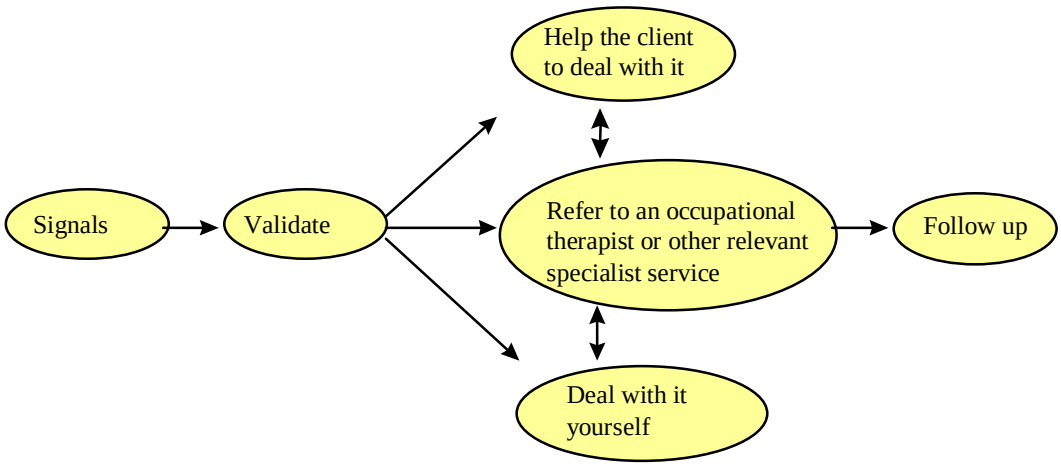
5 ABOUT THE REST OF THE COURSE - HOW TO BE AN ATI

This section outlines the structure and content of the remainder of the course. It also provides a first introduction to the concept of Assistive Technology Intermediary (ATI).

5.1 Assistive Technology Intermediaries

Teaching you how to become a so-called 'Assistive Technology Intermediary' (ATI) is what this course is all about. An ATI is a health and social service professional who, whilst not being a specialist in assistive technology, nevertheless helps to ensure that his or her clients acquire the assistive technology that they need. Being an ATI means watching out for unmet needs arising because of disability or because of age-related functional problems, and taking appropriate action when such needs are spotted.

The following figure provides a summary of the key features of the ATI role. You will come across this model in each of the other modules of the course.



In essence, the role of ATI is quite straightforward - you need to be alert to functional difficulties and to unmet needs for assistive technology solutions.

First, you need to be able to spot the signals that can indicate that someone has a physical, hearing, visual or communication problem. In some cases you may also wish to validate or confirm this by applying some simple checks or tests.

Once a need has been identified, there are various ways in which you can help your client. There are three basic options:

- help your client to deal with the situation themselves
- refer on to someone with more expertise and resources
- deal with the problem yourself.

And, of course, in all cases you need to ensure appropriate

- follow-up.

Which option or combination of options you choose will depend very much on a variety of contextual factors:

- the type of need and the circumstances of the client
- your familiarity with the particular functional difficulty in question
- the professional boundaries and competencies that apply in your situation
- the assistive technology solutions that are available and suitable
- the characteristics of the prevailing assistive technology service delivery system in your area.

In later modules you will find out more about how different types of needs can be spotted in the various client settings and what you can do as an ATI in the different situations.

5.2 Overview of the remaining modules

The rest of this course is organised into four core learning modules and a final module that looks again, but in more detail, at how you can act as an ATI. The four core modules cover:

- Physical functioning
- Vision
- Hearing
- Communication

These areas have been selected for a number of reasons. First, they are areas where functional difficulties commonly pose significant problems in daily life. Second, they are areas where older people are particularly likely to have unmet needs for assistive technologies.

Third, they are areas where there are many assistive technology solutions available, often simple devices that cost relatively little.

Older people who have acquired temporary or permanent disabilities later in life are the largest group who could benefit if all health and social service professionals were motivated to act effectively as ATIs. However, whilst the emphasis in this course is often on older people, attention must also be given to the needs of younger people as well because they too may slip through the net of existing assistive technology services.

Each of the modules addressing a specific problem area is organised into two parts:

- The main part introduces the problem area, the needs that it can give rise to and the assistive technologies that can provide solutions
- Setting-specific parts then look at how the particular problem may manifest itself in the different settings where health and social service professionals come into contact with older people or disabled people.

Three settings are addressed for each problem area:

- at home (visits by community nurses, home helps or social workers, for example);
- at the doctor (mainly family doctors, General Practitioners or other primary care physicians);
- in hospital (where various staff may be involved, including doctors, nurses or social workers).

At home
Various professionals may be in contact with clients in the home setting, especially home helps, community nurses and community social workers. People living in residential care and the health and social service personnel caring for them are also addressed in this setting. The home visit situation provides an ideal opportunity to watch out for unmet needs for assistive technology. You will be able to see for yourself how well the client is functioning in their daily life and whether there are unmet needs where assistive technology can make a contribution.

At the doctor
Common medical consultations such as visits to family doctors, local health clinics and hospital day clinics provide a crucial setting for spotting unmet needs for assistive technology. Because almost everyone uses their services on a reasonably regular basis, family doctors in particular can act as central gatekeepers to assistive technology services. In some countries this is already a formal part of their responsibilities but in others it is not an explicit aspect of the

professional role. It is important that medical practitioners take a broader view of their role and give as much attention to the functional requirements of everyday living as to the purely medical aspects of their clients' conditions.

In hospital

Hospitals are another very important setting for picking up and addressing unmet needs for assistive technology. On the one hand, the consequences of a specific condition and/or treatment may give rise to a need for assistive technology. On the other hand, a hospital stay gives a good opportunity to observe the more general functioning of older people and to identify needs for assistive technology that may be unrelated to the immediate reason for hospitalisation and treatment. In either case, it is important that needs for assistive technology are properly addressed in discharge planning and post-discharge follow-up.

6 REFERENCES

This module was designed to give you a brief overview of disability, ageing and assistive technology. If you are interested you can extend this information by looking in your college library or through the resources of local association's for disabled people.

Alternatively, you can browse the World Wide Web for further information. Although you can start by searching with words like 'disability', 'impairment' or 'assistive technology, we suggest you start at http://www.socialnet.lu/ where you will find a very extensive list of web sites under their ‘Handitel’ service.

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7 GLOSSARY

- *ADL*: activities of daily living - activities basic to personal care and maintenance (e.g. for nourishment, keeping warm, looking well-groomed)
- *Disability*: (the current term used in the WHO classification of disabilities; will be replaced by the term 'activity' in the future) any restriction or lack of ability, resulting from an impairment, to perform an activity in a manner considered normal for people
- *Handicap*: (the current term used in WHO classification of disabilities; will be replaced by the term 'participation' in the future) a disadvantage, resulting from an impairment or disability that limits the fulfilment of individual goals
- *IADL*: instrumental activities of daily living - secondary activities instrumental to sustaining the basic activities (ADLs) in independent community living (e.g. shopping cooking)
- *Impairment*: (the current term used in WHO classification of disabilities) any loss or abnormality of a psychological, physiological or anatomical structure or function

8 FURTHER INFORMATION

Activities from the WHO ICIDH-2 Classification of Activities

COMMUNICATION ACTIVITIES

Understanding messages
- Understanding messages in speech and formal sign language
- Understanding non-verbal messages (other than formal sign language)
- Understanding written language

Producing messages
- Producing messages in speech or formal sign language

Communicating messages
- Producing non-verbal messages other than formal sign language
- Producing written language

Using communication device
- Using communication devices / techniques
- Other

MOVEMENT ACTIVITIES

Maintaining and changing body position
- Maintaining a body position
- Shifting the weight of the body
- Changing a body position

Transferring oneself
- Walking and related activities
- Transferring oneself while sitting or lying

Manipulating and moving objects
- Activities involving fine hand use
- Activities involving arm and coarse hand use
- Activities aimed at making objects move

Other Unspecified

MOVING AROUND

Moving around without using transportation
- Moving around in the general environment
- Climbing
- Moving around in specified environments
- Moving around in traffic situations as a pedestrian

Moving around using transportation
- Using transportation

Moving around in traffic situations as a driver
Other

DAILY LIFE ACTIVITIES

Keeping self clean and appropriately groomed
Washing oneself
Care of body parts, teeth, nails and hair
Activities related to excretion
Dressing
Eating and drinking
Caring for own well-being
Dealing with everyday objects and appliances
Other

CARE OF NECESSITIES AND DOMESTIC ACTIVITIES

Procurement and care of necessities
Procuring and taking care of daily necessities (e.g. shopping and clothing)
Procuring and taking care of shelter
Domestic Activities
Taking care of meals
Laundry and caring for clothes and footwear
Taking care of dwelling
Caring for household members, animals and plant
Taking care of other household or family members
Looking after possessions, plants and animals
Other

RESPONDING TO AND DEALING WITH PARTICULAR SITUATIONS

Managing environmental demands and circumstances
Managing in specific climate or temperature
Managing in other environmental circumstances
Managing in a dangerous environment
Work- and school-related skills
Work- and school-related behaviours
Work acquisition and retention skills
Social activities and economic skills
Personal social activities
Economic skills
Other