

POLICY BRIEF FOR REHABILITATION

Need for Innovation in Rehabilitation

Physical medicine and rehabilitation involves the management of disorders that alter the function and performance of the patient. Emphasis is placed on the optimization of function through the combined use of medications, physical modalities, physical training with therapeutic exercise, movement & activities modification, adaptive equipments and assistive device, orthotics (braces), prosthesis, and experiential training approaches. The ultimate goal is to enhance and/or restore functional ability and quality of life to those with physical impairments or disabilities. Thus, in terms of the health and well-being of individual patients and their families, the quality of rehabilitative services can be vitally important.

Technological innovations in rehabilitation, sometimes referred to as Technically Assisted Rehabilitation (TAR) offer promising therapeutic approaches for numerous applications in rehabilitation. A brief list of these include:

- **Musculoskeletal System** - Innovative assistive technologies such as prosthetics with functional electrical stimulation and innovative fluid actors to support patients suffering from neuroparalysis and rehabilitation robotics for stroke therapy.
- **Vision** - Recent years have seen impressive developments in this field such as retina implants.
- **Audition** - The number of people with a hearing impairment is growing - young people, for example, have increased risk of developing hearing disturbances due to their lifestyle. There are innovative technologies to treat patients suffering from hearing impairments, and implantable devices have been improved remarkably within the last few years.
- **Central Nervous System** - Functional magnetic stimulation of specific neuronal areas is in therapeutic use with patients with hemipareses; mechatronic implants improve liquor drainage in cases of hydrocephalus.
- **Tele-rehabilitation** Neurological rehabilitation – in particular after a stroke – often takes too long to keep patients in hospital until it is finished. On the other hand, effective neurological rehabilitation depends on regular exercises under qualified instruction. Tele-rehabilitation concepts are a very promising approach to close this gap and are shown to be effective with regard to patients' recovery and costs.

The need for rehabilitation in Europe is increasing as the age of the population increases. As a result of a simultaneous decline of birth and mortality rates, over 21 percent of Europeans are older than 60 years of age. By 2050, nearly 34 percent will be above 60. This fact has significant importance in nearly every aspect of European welfare and public policy, especially health care. People aged 65 years of age and over are more likely to be injured because of various medical problems and impairments of vision, gait and balance; their injuries are more likely to be severe because of osteoporosis and frailty, and once injured they are more susceptible to fatal complications and longer ill-health because of their diminished recovery capacity. Falls are a particular problem, and older people who experience them, as well as other injuries, have longer hospital stays and greater mortality.

As the group most likely to suffer from chronic diseases, disability and other impairments, the health needs of rehabilitation patients are high. The increasing demand places additional weight on an already overburdened health care sector, where shortages of doctors, nurses and

beds are commonplace in some areas. It also poses significant financial costs, as healthcare spending grew faster than gross domestic product in virtually all European countries from 1990 to 2004. Among the six partner countries for I4W, health care spending accounts for 7% to 11% of GDP. From a public policy perspective the costs of health care in Europe are even more important – among the six partners, between 66% (Netherlands) and 89% (Czech) of healthcare costs are paid from public funds. This has become even more apparent and significant during the recent financial crisis in which states have looked to reduce costs in nearly all spheres of activity.

EU Policy Approach Towards Rehabilitation

In response to these economic, systematic factors, and with the aid of advances in technology, the nature of rehabilitative services is changing dramatically. Traditionally, rehabilitative therapy had to be offered to a patient by a therapist (usually one on one) in healthcare facilities. When therapy becomes long or continuous over the years, travelling to a health centre will often be difficult, time consuming and expensive. As Europe's population continues to age, the number of home bound patients will inevitably increase as well, making transportation to facilities even more difficult. Thus it seems likely that the future of rehabilitation (like many health care services) will be to provide as much of it as possible in the home. Methods of enabling patients, especially the elderly to stay in their homes is often referred to as Ambient Assisted Living (AAL). Studies have found that health outcomes are often better when patients are able to stay in their homes and that if done properly, can be much less expensive than care within a facility.

In response to these challenges and opportunities, the European Commission has launched an Action Plan for Ageing Well in the Information Society in June 2007 which is in part designed to break down barriers that prevent older people from using Information and Communication Technology (ICT) products, services and applications. As a result, between now and 2013, the EU and Member States, and the private sector will invest more than €1 billion in research and innovation on ICT to stimulate developments in technologies designed to help older and special needs people to receive medical and social support services that enable them to continue to live at home.

Specific measures of the plan include efforts to:

- Raise awareness, and build consensus via the promotion of stakeholder cooperation and the establishment of an ICT and Aging best practice internet portal (<http://www.epractice.eu>).
- Reduce technical and regulatory barriers to market development, through market assessments, studies and benchmarking and by facilitating the exchange of best practice between Member States.
- Accelerate take-up through, for example, a set of pilot projects under the ICT Policy Support Programme and use of Structural Funds. To date, 10 large pilot projects related to ICT & ageing have been launched with involvement of more than 30 European regions.
- Boost research and innovation to foster the emergence of innovative, ICT-based products, services and systems for Europe's ageing population.

Through the 7th Framework Programme the European Commission, DG Information Society and Media have funded the Ambient Assisted Living Innovation Alliance to focus on Ambient Assisted Living (AAL) solutions based on advanced ICT technologies for the areas of ageing at work, ageing at home and ageing in the society. The purpose of AALIANCE is to:

- Provide a framework for stakeholders, led by the industry, for the definition of research and development priorities, timeframes and action plans on strategically important issues in the field of Ambient Assisted Living
- Play a key role in ensuring an adequate focus of research funding for AAL, in fostering effective public-private partnerships and in developing a European research policy, in particular in focusing on FP7 and on current activities launched by EU member states (AAL Joint Programme).
- Prepare and maintain the „Ambient Assisted Living Roadmap“ which lays out that the strategic research agenda for AAL with a mid to long perspective
- Support European and national entities in increasing the political awareness and in intensifying activities for the enhancement of new AAL technologies.