

# THE VALUE OF TREATMENT: EARLY INTERVENTION TO REDUCE THE BURDEN OF BRAIN DISORDERS

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**Summary:** Direct health care and the non-medical costs of brain disorders make up 60% of the total costs associated with brain disorders, and are estimated at €800 billion per year in Europe. As prevalence and incidence are increasing for most mental and neurological disorders, we will need to manage several important challenges to achieve more value-based and patient-centred research and care. The health care sector in Europe is currently characterised by fragmented services for these conditions. The European Brain Council's recent report highlights the need for early, if possible prodromal, diagnosis and intervention; integrated, seamless care underpinning timely care pathways; and access to the best treatments available.

**Keywords:** Brain Disorders, Treatment Gaps, Value-based Care, Patient-centred Care, Early Intervention

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## Introduction

According to various large-scale studies conducted by the World Health Organization, about a third of the population worldwide have a mental disorder. Taken together with neurological disorders, these “disorders of the brain” account for 23% of the global disease burden. This surpasses both cardiovascular diseases (5%) and cancer (10%).<sup>1 2</sup>

Such statistics may be surprising as there is a general lack of awareness regarding the pervasiveness of brain disorders. However, global data, and particularly those on the European Union (EU), can serve as a wake-up call. Brain disorders are major contributors to morbidity,

disability and premature mortality in Europe. Highly prevalent, they currently affect 179 million people (an estimated 38.2% of the EU population) annually, with a peak in early adulthood (between 20 and 30 years) for mental and substance abuse disorders compared to neurological disorders, where DALYs (Disability-Adjusted Life Years) are more constant across age groups.<sup>3 4</sup>

The prevalence of brain disorders is growing due to the so-called epidemiological transition from acute to chronic diseases and the increase in life expectancy, but also because of a number of socio-economic, environmental and behavioural health determinants,

some of which are still not entirely understood. The causes of brain disorders are heterogeneous, ranging from neurodegeneration or dysregulation of the immune process to developmental and functional abnormalities, and frequently implicate a complex interplay between genetic and environmental factors. Better understanding of these causes is a necessity to improve treatment and primary or secondary prevention. Major depression together with stroke, dementia and alcohol use are among the top four causes of the burden of disability in the European region.<sup>1 2</sup>

“ brain disorders cost in excess of €800 billion per year in Europe

The consequences extend well beyond the health care system: high costs of technological progress, loss of healthy life years\* and quality of life, burdens on the social welfare systems, implications for labour markets with prolonged impairment, great physical dependency requiring care by informal caregivers and significant reduced productivity. The European Brain Council (EBC)'s *The Value of Treatment* project builds on its earlier reports on the economic costs of brain disorders in Europe, which gave robust estimates on brain disorders costing in excess of €800 billion per year in Europe (of which 60% are related to direct health care and non-medical costs).<sup>3 4</sup>

Effective implementation of early diagnosis and treatment varies widely across health systems and many European countries are still lagging a long way behind, with wide clinical practice variations even within countries. There is a considerable gap in terms of diagnosis and treatment, which is true for all brain disorders ranging from schizophrenia to

Alzheimer's disease, Epilepsy, Headaches, Normal Pressure Hydrocephalus, Parkinson's disease, Multiple Sclerosis, Restless Legs Syndrome and Stroke (see Box 1). The *Value of Treatment* study covers these disorders and addresses major obstacles to optimal treatment through case study analysis while providing evidence-based and cost-effective solutions. The two-year research project highlights necessary public health policy implications for prevention, patient-oriented and sustainable care models as well as the need for more basic and applied research.

### Addressing the treatment gap: a value-based and patient-centred care approach

Numerous needs of patients and individuals at risk are unmet. Up to eight out of ten people living with a brain disorder remain untreated, or inadequately treated, although pharmacological and psychosocial treatments exist.<sup>7 8</sup> There are unmet needs not only within the provision of medicines and medical devices, but also within medical research, health care systems and services. Analysing the treatment gap and its underlying causes has been a central focus in the *Value of Treatment* study. The treatment gap is defined as any time the care offered to a patient does not correspond to his or her needs and to the stage of the disease, or the lack of any treatment. It is used as an outcome measure in health care.

All too often, discussions on health care focus on the substantial increase in per person health care spending, rather than the benefits and the value that patients and society derive from improved health. While costs are undoubtedly an important part of the health care debate, they should be considered in the context of the benefits achieved. Together, these emphasise the need for more value-based and patient-centred care for brain disorders, and for the scaling-up of an integrated, care model. Such a model encompasses the whole care process from prodromal, early diagnosis to disease management and patient empowerment. In many current health care reforms, new organisational arrangements for better health outcomes are being analysed, focusing on more

### Box 1: Case studies objectives

#### CASE STUDIES (9):

- **Mental health:** Schizophrenia.
- **Neurology (\*):** Alzheimer's disease, Epilepsy, Headaches, Parkinson's disease, Multiple Sclerosis, Restless Legs Syndrome, Stroke.
- **Neurosurgery/Neurology (\*):** Normal Pressure Hydrocephalus.

#### OBJECTIVES:

- Identify treatment gaps and causing factors along the care pathway, and propose solutions to address them.
- Evaluate the socio-economic impact of these solutions.

Source:<sup>9</sup>

coordinated and integrated forms of care provision or care pathways, with the support of multidisciplinary care teams and care provided in more than one setting.

“ need more value-based and patient-centred care for brain disorders

The *Value of Treatment* study tested this model and developed a series of qualitative and quantitative benchmarks to: 1) identify treatment gaps and causal factors along the care pathway (patient care pathway analysis) and 2) assess the socio-economic impact and health gains from best practice health care interventions (economic evaluation). Case studies were developed in collaboration with hundreds of EBC Experts across Europe

\* The Healthy Life Years (HLY) indicator measures the number of remaining years that a person can expect to live without disability at different ages.

to support the research framework with analysis based on datasets from different WHO European Region countries (United Kingdom, France, Germany, Italy, Spain, Luxembourg, Czech Republic, Sweden, Switzerland and Russia).

### Matching data to policy: main findings and conclusions

The conclusions of the study case studies highlight the value of prevention, early diagnosis and intervention as a solution to improve patient quality of life, to sustain health and social care systems and to significantly rationalise costs. Research links early intervention to measurable health gains such as improved survival rates, reduced risks, complications and disability, better quality of life and lower treatment costs. The study findings also emphasise the need for integrated, underlying seamless care, as this is intrinsic to timely care pathways as well as the importance of using the best treatments available (see Box 2).

There is still no cure for many brain disorders. This often reflects the challenge to fully understand brain functioning and to efficiently translate knowledge

### Box 2: Policy recommendations for brain disorders

#### Across the case studies the key findings highlighted:

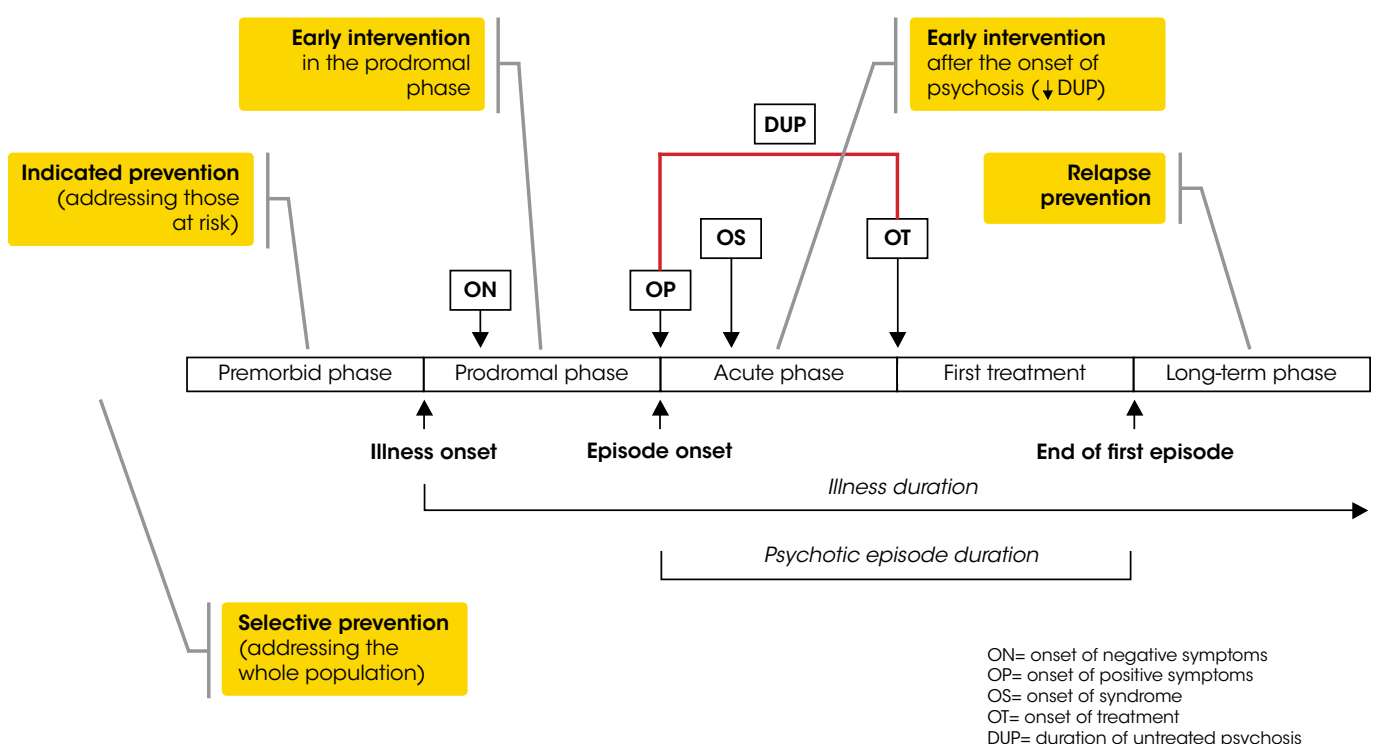
- Low understanding of the disease aetiology, risk and preventive factors
- Lack of disease awareness among the general public and lack of training for health care providers
- Lack of primary and secondary prevention programmes
- Lack of timely and adequate diagnosis and treatment
- Fragmentation of health care services and lack of coordination between health and social services

#### Conclusions and recommendations in alignment with economic analysis

- Invest in more basic, clinical and translational neuroscientific research to continue developing new treatments that can improve quality of life, functioning and reduce associated direct and indirect costs
- Increase brain disease awareness, patient empowerment and training for health care providers at all levels of care (education of primary care practitioners can play a key role in increasing diagnosis, proper treatment and appropriate referral to tertiary level care for the most complex cases)
- Address prevention and timely intervention as a priority based on needs
- Address health care service delivery and support clear patient pathways
- Foster seamless care through validated models of care and tools implementation, legislation and incentives

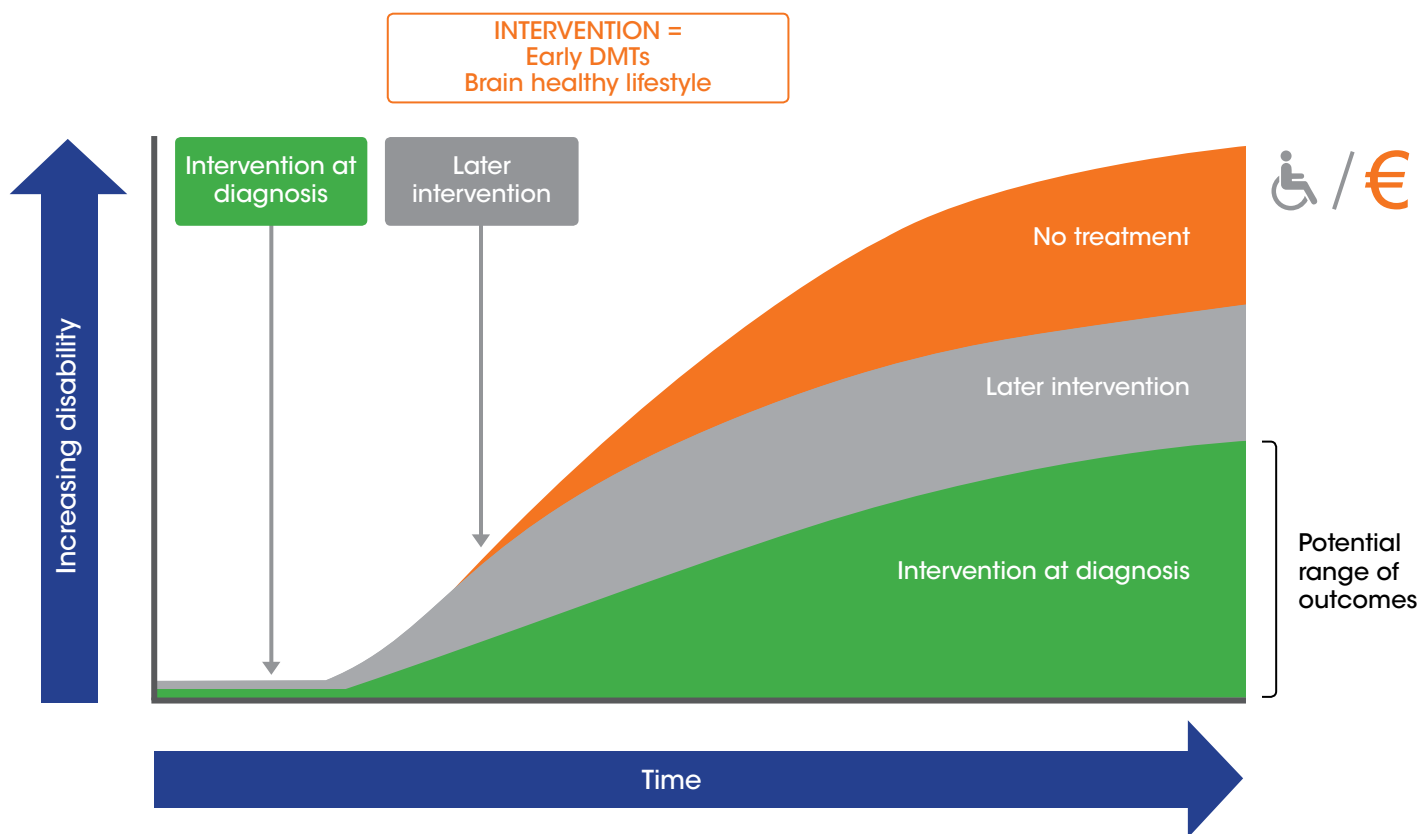
Source: <sup>9</sup>

Figure 1: Care pathway analysis – interventions strategies early in the course of schizophrenia



Source: <sup>12</sup>

**Figure 2:** Care pathway analysis – early intervention and new treatment paradigm in MS



Source: <sup>15</sup>

into cures. It is necessary to focus on risk reduction, preclinical and early detection and diagnosis, and timely intervention. Primary and secondary prevention remain essential (available diagnostic tools for neurological disorders, including biomarkers and routine mental health screening). More research is needed to understand the causes, but also the progression, of brain disorders and to develop new treatments that not only symptomatically improve the condition, but may modify, i.e. slow down, or even stop, their course.

Results from the case studies provide important new insights into recent progress in the areas of pharmacology and the biopsychosocial approach, as well as in relation to the delivery of health care services and integrated care. Here we look at two conditions: one related to a mental disorder, “schizophrenia”, and one related to a neurological disorder “multiple sclerosis”. Case study results (see Figures 1 and 2) highlight the need to implement evidence-based guidelines

that emphasise cost-effective, integrated health care interventions to develop better prevention and timely treatment.

**Schizophrenia** is one of the most severe and disabling mental illnesses (affecting an estimated five million Europeans). The treatment success rate can be high if patients at risk are identified, psychotic symptoms are detected early, and early intervention at the prodromal phase is activated. Depending on the stage of the disorder, antipsychotic medication, psychosocial interventions or both are needed.<sup>10 11</sup> A strong interaction between community mental health and hospital care is recommended (see Figure 1).

**Multiple sclerosis (MS)** is the first cause of non-traumatic disability in working young adults, with clinical onset in the prime of life (affecting an estimated six million Europeans). Quality of life is poor in relation to ‘invisible’ symptoms such as fatigue and cognitive impairment. In MS, the key paradigm is early diagnosis and early use of disease-modifying treatments (DMTs) through a personalised medical approach, and optimised target

treatment. DMTs at the early stage of relapsing-remitting multiple sclerosis (RRMS), including clinically isolated syndrome (CIS) with visible abnormalities on MRI scans, are available to slow down the progression rate and disability accumulation (see Figure 2). Not only early DMTs but also primary and secondary prevention of modifiable risk factors avert MS long term disability and its economic burden.<sup>13 14</sup>

### Concluding remarks

For urgent humanitarian, medical, scientific, political and economic reasons, it is imperative that there is a step-change in the prevention, treatment and management of brain disorders. The EBC *Value of Treatment* study sets out very clearly in its recommendations what needs to happen to address both treatment and research gaps.

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## In Memoriam: Uwe Reinhardt (1937–2017)

At Eurohealth we were deeply saddened to hear of the passing in November of Uwe Reinhardt, James Madison Professor of Political Economy and professor of economics and public affairs at Princeton University's Woodrow Wilson School of Public and International Affairs. Uwe was one of the giants and pioneers of health economics and a past



president of the International Health Economics Association. Many of the tributes written in the wake of his passing speak at length about his near 50 year career at Princeton, as well as his influence on US health policy and commitment to public service. He argued at length that a key failing in the US was the sheer complexity of the market, requiring costly administration that led to much higher health care costs than seen in other comparable countries.

Yet his influence stretched well beyond the US. He played a central role in the development of the health insurance system in Taiwan. He also maintained a great interest in European health policy and played a pivotal role in the evolution of the Bertelsmann Foundation's Health Policy Monitor and its successful 2011 merger with the Observatory's own network of national lead institutions. Uwe and his wife May were very much the godparents of the resulting Health Systems and Policies Monitor and he supported its growth and increasing dynamism with clear critical insights and with real affection. In 2016 the Deutsche Gesellschaft für Gesundheitsökonomie (German Association for Health Economics) awarded Uwe its Gerard Gäfgen Medal for his extraordinary contribution to the discipline in Germany. He had already, in 2010, been awarded the Federal Cross of Merit by the German Government in recognition of his contributions to the development of German health policy.

On a personal note we shall remember not just his academic prowess but also his kindness and great sense of humour. He was never afraid to poke fun at himself, but equally did not pull punches when highlighting health policy failings and challenges around the world. Our thoughts are with his wife May and their family at this difficult time.

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