

a report by

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Despite the tremendous advances in our knowledge of pathophysiology of the common neurological disorders, their treatment remains stubbornly problematical and in some cases solely palliative. Meanwhile, the graying of and rise in body mass index (BMI) of our populations dictates that many of these diseases will become more and more significant to society. So, are we yet on the cusp of medical and drug discovery breakthroughs that will really make a difference to the lives of people with diseases such as Alzheimer's? In this special supplement, we have asked leading experts in the fields of neurology, pain, and sleep medicine to comment on the prospects for five disease areas of high interest to the medical community and patients—Alzheimer's disease, multiple sclerosis (MS), neuropathic pain, migraine, and sleep apnea.

The rise in prevalence of Alzheimer's disease is undoubtedly a consequence of the aging global population. According to the World Health Organization (WHO), in 2000, there were 600 million people aged 60 and over, and there will be 1.2 billion by 2025 and two billion by 2050. As a consequence, today there are approximately five million sufferers of Alzheimer's disease in the US alone. Coupled with that is an annual cost of caring for Alzheimer's patients of around US\$100 billion. Over the next two decades, the number of Alzheimer's patients will double. Realistically, a cure for Alzheimer's disease is not yet on the horizon, but our improved understanding of the molecular pathology of the disease means that drugs that slow down the degenerative process and minimize the debilitating symptoms are within reach. Such drugs will be immensely valuable both to their developers and to society—a five-year extension of functional life would mean a 50% decrease in the prevalence of Alzheimer's, significantly reducing the societal burden. Serge Gauthier looks at how clinical trial designs for new pharmacotherapeutics are being refined to better elucidate drug effects on core symptoms and disease progression. Daniel Kaufer will take us through the prospects for new medicines that will make a difference to patients and carers.

MS is a debilitating neurological disease associated with inflammation in the central nervous system (CNS) white matter and progressive neurodegeneration. Its lifelong and progressive nature presents significant treatment problems. However, this disease is an example of how increased disease understanding has fueled innovation in the biotechnology industry—several disease-modifying agents (DMAs) have been introduced and despite some false starts, more are on the way. Nancy Holland discusses the status of DMA therapies and immunosuppressants in MS treatment and the results in some trials.

Pain is a symptom of many conditions, and is the number-one cause of adult disability in the US. Approximately 50 million Americans, for example, suffer from chronic pain at a cost to society of US\$100 billion. A high proportion of these are the elderly, who suffer more frequently from pain-associated diseases such as arthritis, diabetes, and cancer. Pain associated with nerve injury—neuropathic pain—is particularly difficult to treat. Based on diagnosis rates, diabetic neuropathy and neuropathic lower back pain are the most prevalent pains of this type. New therapies for neuropathic pain are increasingly sought after, and an update of available medications can be found in Dennis Turk's article.



Russell Hagan, PhD, is Senior Vice President and Head of BTG's Research and Development (R&D) Unit. He has over 20 years of experience of drug discovery, development and commercialization, particularly in the neurosciences. Most recently, he was Director of Disease Strategy for the Psychiatry Centre of Excellence at GlaxoSmithKline (GSK) in the UK. Prior to this, Dr Hagan was Senior Medical Strategy Head in the Neurology & Psychiatry Global Commercial Group of Glaxo Wellcome in the US. Dr Hagan has wide-ranging experience encompassing the key stages and gates of the drug development and commercialization process and has contributed to the success of a number of marketed products. At BTG he is responsible for acquiring, developing and commercializing a portfolio of novel drugs in several therapy areas, including diseases of aging and neuroscience.

Migraine headache presents a broad spectrum of severity requiring different levels of intervention, from mild attacks requiring occasional use of non-steroidal anti-inflammatory drugs (NSAIDs) through to the more severe disabling attacks treated with potent migraine-specific medications. The treatment of migraine headache has undoubtedly benefited from the introduction of the 'triptans', which are now available in a variety of formulations for quick relief and to minimize recurrence. However, significant gaps remain in the treatment armamentarium because of medicine safety concerns in some patients and the lack of specific prophylactic therapies. Alan Rapoport and Christina Sun cover salient issues in emerging treatment options in their paper.

Sleep apnea is a serious respiratory disorder causing cessation of breathing for prolonged intervals during sleep. The most common form is obstructive sleep apnea (OSA) and is caused by transient upper airway collapse in sleep, often associated with obesity. The prevalence of OSA is 2–4% in the general population. Apnea has been linked to increased risk of hypertension, heart failure, depression, and diabetes. The most frequently prescribed treatment for OSA is nasal continuous positive airway pressure (CPAP), which greatly reduces the number of apnea or hypopnea episodes. Patients also report improvement in daytime sleepiness and daytime functioning. However, compliance with the use of CPAP devices is poor due to their bulky and confining nature. Ralph Pascualy of the Swedish Sleep Medicine Center explains that OSA patients are at 2.38 times greater risk of heart failure. There is currently no pharmacological treatment available and, given its increased recognition as a cardiovascular risk factor, this seems to be a gap that is likely to be filled. ■

