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BACKGROUND: The use of interferon beta and glatiramer acetate for the treatment of multiple sclerosis (MS) has, to some extent, changed the course of the disease. The annual relapse rate of patients treated with these drugs is lower than that in placebo-treated patients, and more treated patients remain relapse-free compared with untreated patients. In addition, these compounds reduce the development of new lesions, as detected by MRI. RECENT DEVELOPMENTS: The limited effectiveness of approved treatments for MS, as well as reports of adverse events and toxicity, emphasise the need for the development of new therapies with improved efficacy and fewer side-effects. Clinical observations, increased understanding of the underlying pathophysiology of the disease, and advances in biotechnology have led to several new therapeutic approaches to the treatment of MS that are currently under investigation. WHERE NEXT? Mitoxantrone has recently been shown to produce benefit when used to treat patients with progressive MS; it may also be an effective second-line treatment for patients who do not respond to interferon beta or glatiramer acetate. Over the past few years, several studies have drawn attention to the potential of natalizumab, alemtuzumab, statins, and oestrogens as effective treatments for MS. These drugs are at different stages of clinical development and additional clinical data are needed to support their use and devise dosage regimens. However, they are important and attractive candidates for several reasons: they counteract a fundamental and well-defined pathophysiological process; they have a less cumbersome route of administration than interferon beta and glatiramer acetate; or they have a remarkable safety record.

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