Drug Therapies for Relapsing-Remitting Multiple Sclerosis

Condition
Multiple sclerosis (MS) is a disabling disease of the central nervous system. It damages the myelin (the protective layer that forms around nerves), including the myelin in the brain and spinal cord. Relapsing-remitting MS (RRMS) is the most common type of MS, affecting 85% to 90% of patients. In RRMS, symptoms appear and then partially or completely fade away. The frequency of relapse is highly variable, but relapses tend to occur more often in the first few years of disease onset.

Drugs
Disease-modifying treatments (DMTs) are the standard of care for patients with RRMS. These drugs are prescribed to reduce the frequency of relapses and to potentially delay the progression of physical disability. In Canada, the available DMTs include interferon beta-1a and interferon beta-1b, glatiramer acetate, natalizumab, fingolimod, and dimethyl fumarate.

Issues
The comparative safety and effectiveness of RRMS treatments is not well-established. Further, treatment options are changing rapidly as new oral and injectable drugs are approved for use in Canada. In this context, it is important to determine the comparative clinical and cost-effectiveness of currently available and newly emerging DMTs, both alone and in combination.

Methods
An expert committee made recommendations on drug therapies for RRMS. The recommendations were based on a systematic review and network meta-analysis of the clinical evidence of these drugs, as well as an economic analysis of their cost-effectiveness.

Key Messages
- For patients newly diagnosed with RRMS, start with glatiramer acetate or interferon beta-1b.
- For patients who do not respond to or are unable to take one of the recommended initial drugs, switch to the other recommended drug.
- For patients who do not respond to or are unable to take both glatiramer acetate and interferon beta-1b, choose one of dimethyl fumarate, fingolimod, or natalizumab, based on cost and safety considerations.
- Combination therapy should not be used.

Research Results
Clinical evidence suggests that glatiramer acetate and interferon beta-1b have clinically meaningful effects on the annualized relapse rate relative to placebo and are the most cost-effective initial therapies. The economic analysis indicates that interferon beta-1a, dimethyl fumarate, fingolimod, and natalizumab were not cost-effective as initial treatment.

DISCLAIMER: The information in this Project in Brief is intended to help health care decision-makers, patients, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. The information in this Project in Brief should not be used as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process nor is it intended to replace professional medical advice. While CADTH has taken care in the preparation of the Project in Brief to ensure that its contents are accurate, complete, and up-to-date, CADTH does not make any guarantee to that effect. CADTH is not responsible for any errors or omissions or injury, loss, or damage arising from or as a result of the use (or misuse) of any information contained in or implied by the information in this Project in Brief.

CADTH takes sole responsibility for the final form and content of this Project in Brief. The statements, conclusions, and views expressed herein do not necessarily represent the view of Health Canada or any provincial or territorial government. Production of this Project in Brief is made possible through a financial contribution from Health Canada.