NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Single Technology Appraisal

Lenalidomide as maintenance treatment of multiple myeloma after autologous stem cell transplantation

Final scope

Appraisal objective

To appraise the clinical and cost effectiveness of lenalidomide within its licensed indication for the maintenance treatment of multiple myeloma after autologous stem cell transplantation.

Background

Multiple myeloma is a form of cancer that arises from plasma cells (a type of white blood cell) in the bone marrow. Myeloma cells produce large quantities of an abnormal antibody that does not work properly and is not able to fight infection. Myeloma cells build up in the bone marrow and interfere with the production of normal blood cells, which are responsible for fighting infections, blood clotting and carrying oxygen around the body. They also have the ability to spread throughout the bone marrow and into the hard outer casing of the bone. The term multiple myeloma refers to the presence of more than one site of affected bone at the time of diagnosis. People with multiple myeloma can experience bone pain, bone fractures, tiredness (because of anaemia), infections, hypercalcaemia (too much calcium in the blood) and kidney problems.

About 3900 people were diagnosed with multiple myeloma in England and Wales in 2008. It is most frequently diagnosed in people aged 70–79 years and is uncommon in young people (fewer than 2% of diagnoses are in people less than 40 years old). Multiple myeloma is more common in men than in women. Average survival for people with multiple myeloma is between 3 and 5 years, but covers a wide range that can be beyond 20 years.

Multiple myeloma is an incurable disease. The aim of therapy is to achieve as long a period of stable disease as possible, thereby prolonging survival and maximising quality of life. The primary objective of maintenance therapy is to extend the duration of response to previous treatment and to achieve as long a period of progression-free survival as possible. Aggressive initial treatment with high-dose chemotherapy (usually melphalan), to kill off as many myeloma cells as possible, is considered for people in good general health. However, chemotherapy of this intensity also destroys normal, healthy bone marrow cells. To reduce the effect on healthy cells, autologous stem cell transplantation can be undertaken. This process involves ‘harvesting’ haematopoietic stem cells (blood cells at their earliest stage of development before they become red blood cells, white blood cells and platelets) from a patient’s blood before chemotherapy treatment. The harvested stem cells are

stored and then reintroduced to the patient's blood following chemotherapy. This enables the bone marrow to recover quickly, so it can produce healthy blood cells again. In 2008, approximately 820 autologous stem cell transplants were conducted in the UK for people with multiple myeloma (that is, approximately 20% of all people newly diagnosed that year). Following stem cell transplantation, all patients receive ongoing monitoring and supportive care. In some people, maintenance treatment may be considered, with the aim of stimulating the immune system and slowing or stopping cancer cell growth. However, there is currently no standard maintenance treatment routinely used in the NHS.

The technology

Lenalidomide (Revlimid, Celgene) is a structural analogue of thalidomide. Its mechanism of action includes anti-neoplastic, anti-angiogenic, pro-erythropoeitic, and immunomodulatory properties. Lenalidomide inhibits proliferation of certain haematopoietic tumour cells, enhances T cell- and Natural Killer (NK) cell-mediated immunity and inhibits production of pro-inflammatory cytokines. Lenalidomide is administered orally.

Lenalidomide does not currently have a UK marketing authorisation for the maintenance treatment of multiple myeloma after autologous stem cell transplantation. It has been studied in clinical trials as a maintenance therapy compared with placebo for adults with multiple myeloma who have had autologous stem cell transplantation.

Intervention(s)	Lenalidomide
Population(s)	People with multiple myeloma who have had high dose chemotherapy and autologous stem cell transplantation and whose disease has achieved either a response or stable disease on treatment with high dose chemotherapy.
Comparators	• Best supportive care (including a range of treatment options as appropriate)
Outcomes	The outcome measures to be considered include: • overall survival • progression-free survival and/or time to progression • response rates • adverse effects of treatment • time to next treatment • health-related quality of life.

Economic analysis	The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year. The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared. Costs will be considered from an NHS and Personal Social Services perspective.
Other considerations	Guidance will only be issued in accordance with the marketing authorisation.
Related NICE recommendations	Related Technology Appraisals: Technology Appraisal No. 171, June 2009, 'Lenalidomide for the treatment of multiple myeloma in people who have received at least one prior therapy'. Review date: mid-2011. Technology Appraisal in preparation, 'Lenalidomide for the treatment of newly diagnosed multiple myeloma'. Anticipated publication date: April 2013 Related Guidelines: Cancer Service Guidance, October 2003, 'Improving Outcomes in Haematological Cancer.'