NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Evaluation

Ciltacabtagene autoleucel for treating relapsed and lenalidomide-refractory multiple myeloma after 1 to 3 therapies [GID-TA12518]

Final scope

Remit/evaluation objective

To appraise the clinical and cost effectiveness of ciltacabtagene autoleucel within its marketing authorisation for treating relapsed and lenalidomide-refractory multiple myeloma after at least one prior therapy, including an immunomodulatory agent and a proteasome inhibitor.

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, known as paraprotein. Unlike normal antibodies, paraprotein has no useful function and lacks the capacity to fight infection. Myeloma cells supress the development of normal blood cells that are responsible for fighting infection (white blood cells), carrying oxygen around the body (red blood cells) and blood clotting (platelets). 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 (due to anaemia), infections, hypercalcaemia (too much calcium in the blood) and kidney problems.

Approximately 6,300 people are diagnosed with multiple myeloma in England each year (2018 to 2019, 2021 data).[1] Five-year prevalence of multiple myeloma in the UK is estimated to be 28 per 100,000.[2] It is most frequently diagnosed in older people, with about 44% of new cases of multiple myeloma in England in people aged 75 years or older.[1] The 10-year survival rate for people with multiple myeloma in England is estimated to be 38%.[1] The incidence rates are reported to be lower in the Asian ethnic group, higher in the Black ethnic group, and similar in people of mixed or multiple ethnicity, compared with the White ethnic group, in England (2013-2017 data).[1]

The main aims of therapy are to prolong survival and maintain a good quality of life by controlling the condition and relieving symptoms. If the condition progresses after initial treatment, the choice of subsequent therapy is influenced by previous treatment and response to it, duration of remission, comorbidities and patient preference.

For people whose condition is relapsed or refractory after at least 1 prior therapy, NICE recommends:

- bortezomib monotherapy for people who are at first relapse and who have undergone, or are unsuitable for, bone marrow transplantation (technology appraisal guidance 129), although this is rarely used in clinical practice.

- lenalidomide plus dexamethasone (technology appraisal guidance 586) and carfilzomib plus lenalidomide and dexamethasone (technology appraisal guidance 695) for people who had bortezomib.

- carfilzomib plus dexamethasone (technology appraisal guidance 657).

- daratumumab plus bortezomib and dexamethasone for people who previously had lenalidomide or when lenalidomide is unsuitable as a second-line treatment (technology appraisal guidance 897).

- selinexor with bortezomib and dexamethasone for people who are refractory to both daratumumab and lenalidomide (technology appraisal guidance 974).

- belantamab mafodotin with pomalidomide and dexamethasone for people who have had only 1 line of treatment containing lenalidomide, and who cannot tolerate lenalidomide or whose myeloma has stopped responding to it (technology appraisal guidance 1133).

- belantamab mafodotin with bortezomib and dexamethasone for people who have had only 1 line of treatment (technology appraisal guidance 1149)

For people whose condition is relapsed or refractory after at least 2 prior therapies, NICE recommends:

- lenalidomide plus dexamethasone (technology appraisal guidance 171).

- panobinostat plus bortezomib and dexamethasone for people who had bortezomib and an immunomodulatory agent (technology appraisal guidance 380).

- ixazomib plus lenalidomide and dexamethasone (technology appraisal guidance 870).

- selinexor with bortezomib and dexamethasone for people who are refractory to lenalidomide (technology appraisal guidance 974).

For people whose condition is relapsed or refractory after 3 prior therapies, NICE recommends:

- pomalidomide plus low-dose dexamethasone for people who had both lenalidomide and bortezomib (technology appraisal guidance 427).

- daratumumab monotherapy for people who had a proteasome inhibitor and an immunomodulator (technology appraisal guidance 783).

- isatuximab plus pomalidomide and dexamethasone for use within the Cancer Drugs Fund for people who had both lenalidomide and a proteasome inhibitor (technology appraisal guidance 658).

- teclistamab for people who had an immunomodulatory agent, a proteasome inhibitor and an anti-CD38 antibody (technology appraisal guidance 1015).

- elranatamab for use within managed access for people who had an immunomodulatory agent, a proteasome inhibitor and an anti-CD38 antibody (technology appraisal guidance 1023).

- talquetamab for people who had an immunomodulatory agent, a proteasome inhibitor and an anti-CD38 antibody (technology appraisal guidance 1114).

The technology

Ciltacabtagene autoleucel (Carvykti, Janssen-Cilag) is indicated for the treatment of adult patients with relapsed and refractory multiple myeloma, who have received at least one prior therapy, including an immunomodulatory agent and a proteasome inhibitor, have demonstrated disease progression on the last therapy, and are refractory to lenalidomide. It has been studied in a phase 3 clinical trial in people with relapsed and lenalidomide-refractory multiple myeloma who have had 1 to 3 prior lines of therapy.

Intervention	Ciltacabtagene autoleucel
Population	People with relapsed or refractory multiple myeloma who have had 1 to 3 prior lines of therapy, including lenalidomide and a proteasome inhibitor
Subgroups	If the evidence allows the following subgroup will be considered: • Prior lines of treatment

Comparators	For people who have had 1 previous therapy: • carfilzomib plus dexamethasone • daratumumab plus bortezomib and dexamethasone • selinexor plus bortezomib and dexamethasone • belantamab mafodotin with pomalidomide and dexamethasone • belantamab mafodotin with bortezomib and dexamethasone For people who have had 2 previous therapies: • panobinostat plus bortezomib and dexamethasone • selinexor plus bortezomib and dexamethasone For people who have had 3 or more previous therapies: • isatuximab plus pomalidomide and dexamethasone (subject to NICE evaluation) • panobinostat plus bortezomib and dexamethasone • pomalidomide plus dexamethasone • daratumumab monotherapy • teclistamab monotherapy • talquetamab monotherapy For people who have received any number of previous therapies: • conventional chemotherapy regimens • best supportive care
Outcomes	The outcome measures to be considered include: • progression-free survival • overall survival • response rates (for example complete response) • time to next treatment • adverse effects of 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. The availability of any commercial arrangements for the intervention, comparator and subsequent treatment technologies will be taken into account.
Other considerations	Guidance will only be issued in accordance with the marketing authorisation. Where the wording of the therapeutic indication does not include specific treatment combinations, guidance will be issued only in the context of the evidence that has underpinned the marketing authorisation granted by the regulator.
Related NICE recommendations	**Related Technology Appraisals:** Belantamab mafodotin with bortezomib and dexamethasone for previously treated multiple myeloma (2026) NICE technology appraisal guidance 1149. Belantamab mafodotin with pomalidomide and dexamethasone for previously treated multiple myeloma (2026) NICE technology appraisal guidance 1133. Talquetamab for treating relapsed and refractory multiple myeloma after 3 or more treatments (2025) NICE technology appraisal guidance 1114. Elranatamab for treating relapsed and refractory multiple myeloma after 3 or more treatments (2024) NICE technology appraisal guidance 1023. Teclistamab for treating relapsed and refractory multiple myeloma after 3 or more treatments (2024) NICE technology appraisal guidance 1015. Selinexor with bortezomib and dexamethasone for previously treated multiple myeloma (2024) NICE technology appraisal guidance 974. Daratumumab with bortezomib and dexamethasone for previously treated multiple myeloma (2023) NICE technology appraisal guidance 897. Ixazomib with lenalidomide and dexamethasone for treating relapsed or refractory multiple myeloma (2023) NICE technology appraisal guidance 870.

	Daratumumab monotherapy for treating relapsed and refractory multiple myeloma (2022) NICE technology appraisal guidance 783. Carfilzomib with dexamethasone and lenalidomide for previously treated multiple myeloma (2021) NICE technology appraisal guidance 695. Carfilzomib for previously treated multiple myeloma (2020) NICE technology appraisal guidance 657. Lenalidomide plus dexamethasone for multiple myeloma after 1 treatment with bortezomib (2019) NICE technology appraisal guidance 586. Pomalidomide for multiple myeloma previously treated with lenalidomide and bortezomibv (2017) NICE technology appraisal guidance 427. Panobinostat for treating multiple myeloma after at least 2 previous treatments (2016) NICE technology appraisal guidance 380. Lenalidomide for the treatment of multiple myeloma in people who have received at least 2 prior therapies (2009) NICE technology appraisal guidance 171. Bortezomib monotherapy for relapsed multiple myeloma (2007) NICE technology appraisal guidance 129. **Related appraisals in development (excludes suspended):** Isatuximab with pomalidomide and dexamethasone for treating relapsed and refractory multiple myeloma (review of TA658). NICE technology appraisal guidance [ID4067] Publication TBC Linvoseltamab for treating relapsed or refractory multiple myeloma after 3 or more treatments [ID6609] Publication TBC Elranatamab for treating relapsed and refractory multiple myeloma after 3 or more treatments (managed access review of TA1023) NICE technology appraisal guidance [ID6653]. Publication expected January 2027 Linvoseltamab for treating relapsed or refractory multiple myeloma after 3 or more treatments NICE technology appraisal guidance [ID6609]. Publication expected February 2027. Anitocabtagene autoleucel for treating relapsed or refractory multiple myeloma NICE technology appraisal guidance [ID6549]. Publication expected May 2027 Talquetamab with daratumumab for treating relapsed or refractory multiple myeloma after 1 or more lines of treatment including a proteasome inhibitor and lenalidomide NICE

	technology appraisal guidance [ID6625]. Publication expected TBC Mezigdomide with dexamethasone and carfilzomib for treating relapsed or refractory multiple myeloma after at least 1 line of treatment. NICE technology appraisal guidance [ID6513]. Publication expected TBC Teclistamab for treating relapsed or refractory multiple myeloma after 1 or more treatments NICE technology appraisal guidance [ID6628]. Publication expected TBC **Related Guidelines**: Myeloma: diagnosis and management (2016; last updated October 2018) NICE guideline NG35 British Society for Haematology (2021) Guidelines on the diagnosis, investigation and initial treatment of myeloma British Committee for Standards in Haematology (2017) Guidelines for screening and management of late and long-term consequences of myeloma and its treatment British Committee for Standards in Haematology (2011) Guidelines for the diagnosis and management of multiple myeloma European Hematology Association/European Society for Medical Oncology (2021) Multiple myeloma: EHA-ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up European Society for Medical Oncology (2017) Multiple myeloma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up Clinical knowledge summaries Multiple myeloma (last revised January 2021) **Related Quality Standards:** Haematological cancers (2017) NICE quality standard 150

References

1. Cancer Research UK. Myeloma statistics. Accessed April 2026.

2. World Health Organisation International Agency for Research on Cancer (2021) United Kingdom fact sheet. Accessed April 2026.