

CADTH Reference List

Switching From Reference to Biosimilar Filgrastim in Pediatric Patients

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Key Messages

- No relevant literature was identified regarding the clinical effectiveness of switching from reference to biosimilar filgrastim in pediatric patients.
- No relevant literature was identified regarding the comparative clinical effectiveness of biosimilar Nivestym versus biologic Neupogen for pediatric patients.

Research Questions

1. What is the clinical effectiveness of switching from reference to biosimilar filgrastim in pediatric patients?
2. What is the comparative clinical effectiveness of biosimilar Nivestym versus biologic Neupogen for pediatric patients?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, Embase, the Cochrane Database of Systematic Reviews, the international HTA database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were Neupogen, biosimilars, pediatrics, and biosimilar filgrastim. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2016 and May 17, 2021. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications.

Results

No relevant health technology assessments, systematic reviews, randomized controlled trials, or non-randomized studies were identified regarding the clinical effectiveness of switching from reference to biosimilar filgrastim in pediatric patients or the comparative clinical effectiveness of biosimilar Nivestym versus biologic Neupogen for pediatric patients.

Table 1: Selection Criteria

Criteria	Description
Population	Pediatric patients with cancer including patients with acute myeloid leukemia, severe chronic neutropenia, or patients receiving myelosuppressive chemotherapy or myeloablative chemotherapy with or without bone marrow transplantation follow-up
Intervention	Q1: Switching from reference filgrastim (Neupogen) to biosimilar filgrastim (Nivestym) Q2: Biosimilar filgrastim (Nivestym)
Comparator	Q1: Continuous use of reference filgrastim (Neupogen); pre/post switch comparisons Q2: Biologic/reference filgrastim (Neupogen)
Outcomes	Clinical effectiveness (e.g., clinical response, health-related quality of life, mortality) and safety (e.g., adverse events, withdrawal due to adverse event)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies

References of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

Overall Summary of Findings

No relevant literature was found regarding the clinical effectiveness of switching from reference to biosimilar filgrastim in pediatric patients or the comparative clinical effectiveness of biosimilar Nivestym versus biologic Neupogen for pediatric patients; therefore, no summary can be provided.

References

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Appendix 1: References of Potential Interest

Non-Randomized Studies

Unclear Population

1. Chew C, Ng HY. Efficacy and safety of Nivestim versus Neupogen for mobilization of peripheral blood stem cells for autologous stem cell transplantation. *Sci Rep*. 2019 Dec;9(1):19938. https://www.researchgate.net/publication/338189550_Efficacy_and_Safety_of_Nivestim_Versus_Neupogen_for_Mobilization_of_Peripheral_Blood_Stem_Cells_for_Autologous_Stem_Cell_Transplantation PubMed

Alternative Intervention – Leucostim

2. Buyukavci M, Yildirim ZK. The Comparison of The Efficacy and Safety of Original and Biosimilar Filgrastim in Prevention of Chemotherapy-Induced Neutropenia in Children with Cancer. *Eurasian J Med*. 2019 Jun;51(2):112-115. [PubMed](#)

Additional References

3. Children's Hospital of Eastern Ontario (CHEO). Filgrastim. *CHEO ED Outreach*. 2021 <https://outreach.cheo.on.ca/manual/1576> Accessed 2021 May 21.