Clinical Policy: Filgrastim (Neupogen), Filgrastim-sndz (Zarxio), Tbo-filgrastim (Granix)
Reference Number: CP.CPA.129
Effective Date: 11.16
Last Review Date: 08.18
Line of Business: Commercial

Coding Implications
Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description
Filgrastim (Neupogen®) and its biosimilars, filgrastim-sndz (Zarxio®) and tbo-filgrastim (Granix®), are human granulocyte colony-stimulating factors.

FDA Approved Indication(s)
Granix is indicated to reduce the duration of severe neutropenia in adult and pediatric patients 1 month and older with non-myeloid malignancies receiving myelosuppressive anti-cancer drugs associated with a clinically significant incidence of febrile neutropenia (FN).

Neupogen and Zarxio are indicated to:
- Decrease the incidence of infection, as manifested by FN, in patients with non-myeloid malignancies receiving myelosuppressive anticancer drugs associated with a significant incidence of severe neutropenia with fever.
- Reduce the time to neutrophil recovery and the duration of fever, following induction or consolidation chemotherapy treatment of patients with acute myeloid leukemia (AML).
- Reduce the duration of neutropenia and neutropenia-related clinical sequelae, e.g., FN, in patients with non-myeloid malignancies undergoing myeloablative chemotherapy followed by bone marrow transplantation (BMT).
- Mobilize autologous hematopoietic progenitor cells into the peripheral blood for collection by leukapheresis.
- Reduce the incidence and duration of sequelae of severe neutropenia (e.g., fever, infections, oropharyngeal ulcers) in symptomatic patients with congenital neutropenia, cyclic neutropenia, or idiopathic neutropenia.

Neupogen is also indicated to increase survival in patients acutely exposed to myelosuppressive doses of radiation (hematopoietic syndrome of acute radiation syndrome).

Policy/Criteria
Provider must submit documentation (such as office chart notes, lab results or other clinical information) supporting that member has met all approval criteria.

It is the policy of health plans affiliated with Centene Corporation® that Neupogen, Zarxio, and Granix are medically necessary when the following criteria are met:

I. Initial Approval Criteria
A. Chemotherapy-Induced Neutropenia (must meet all):
   1. Diagnosis of non-myeloid malignancy or AML;
   2. Prescribed for use following myelosuppressive chemotherapy;
   3. Dose does not exceed 30 mcg/kg/day [IV] or 24 mcg/kg/day [SC].
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

B. Bone Marrow Transplantation (must meet all):
   1. Diagnosis of non-myeloid malignancy;
   2. Member is undergoing myeloablative chemotherapy following BMT;
   3. Dose does not exceed 10 mg/kg/day.
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

C. Peripheral Blood Progenitor Cell Collection (must meet all):
   1. Prescribed for the mobilization of autologous hematopoietic progenitor cells into the peripheral blood for collection by leukapheresis;
   2. The prescribed drug will be initiated before leukapheresis (e.g., prescribed for 6 to 7 days with leukapheresis on days 5, 6 and 7);
   3. Dose does not exceed 10 mg/kg/day.
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

D. Chronic Neutropenia (must meet all):
   1. Prescribed for use in symptomatic (e.g., fever, infections, oropharyngeal ulcers) severe chronic neutropenia caused by congenital neutropenia, cyclic neutropenia, or idiopathic neutropenia;
   2. Dose does not exceed 30 mcg/kg/day [IV] or 24 mcg/kg/day [SC].
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

E. Acute Radiation Syndrome (must meet all):
   1. Prescribed for use following suspected or confirmed acute exposure to myelosuppressive doses of radiation;
   2. Dose does not exceed 10 mcg/kg/day.
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

F. Myelodysplastic Syndrome (off-label) (must meet all):
   1. Diagnosis of myelodysplastic syndrome with symptomatic anemia without del (5q) abnormality;
   2. Current (within the past 30 days) serum erythropoietin level ≤ 500 mU/mL;
   3. Request meets one of the following (a or b):
      a. Dose does not exceed 5 mcg/kg/day;
      b. Dose is supported by practice guidelines or peer-reviewed literature for the relevant off-label use (prescriber must submit supporting evidence).
   Approval duration: 6 months or to the member’s renewal date, whichever is longer

G. Other diagnoses/indications:
1. Refer to the off-label use policy for the relevant line of business if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized): CP.CPA.09 for commercial.

II. Continued Therapy
   A. All Indications in Section I (must meet all):
      1. Currently receiving medication via Centene benefit or member has previously met initial approval criteria;
      2. Member is responding positively to therapy;
      3. Dose does not exceed the FDA-approved maximum recommended dose for the relevant indication.
      Approval duration: 6 months or to the member’s renewal date, whichever is longer

   B. Other diagnoses/indications (must meet 1 or 2):
      1. Currently receiving medication via Centene benefit and documentation supports positive response to therapy.
      Approval duration: Duration of request or 6 months (whichever is less); or
      2. Refer to the off-label use policy for the relevant line of business if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized): CP.CPA.09 for commercial.

III. Diagnoses/Indications for which coverage is NOT authorized:
   A. Non-FDA approved indications, which are not addressed in this policy, unless there is sufficient documentation of efficacy and safety according to the off label use policies – CP.CPA.09 for commercial or evidence of coverage documents.

IV. Appendices/General Information
   Appendix A: Abbreviation/Acronym Key
   AML: acute myeloid/myelogenous leukemia
   ANC: absolute neutrophil count
   BMT: bone marrow transplantation
   FDA: Food and Drug Administration
   FN: febrile neutropenia
   G-CSF: granulocyte colony-stimulating factor

   Appendix B: Therapeutic Alternatives
   Not applicable

   Appendix C: Contraindications
   Not applicable

   Appendix D: General Information
   • Neutropenia is defined as an absolute neutrophil count (ANC) of < 500 neutrophils/mcL or an ANC of < 1,000 neutrophils/mcL and a predicted decline to ≤ 500 neutrophils/mcL over the next 48 hours. Neutropenia can progress to FN, defined as a single temperature of ≥ 38.8°C orally or ≥ 38.0°C over 1 hour.
   • The development of febrile neutropenia is a common dose-limiting toxicity of many chemotherapy regimens. This risk is directly related to the intensity of the chemotherapy regimen. Chemotherapy regimens that have an incidence of febrile neutropenia greater
than 20% in clinical trials in chemotherapy naïve patients are considered by the National Comprehensive Cancer Network (NCCN) panel at high risk. Prophylaxis with myeloid growth factors is recommended at this level of risk (Category 1 recommendation). NCCN Compendium recommend prophylaxis be considered in intermediate-risk (10-20% overall risk of FN) patients (Category 2A recommendation). In addition to chemotherapy regimens, other risk factors such as: treatment-related, patient related, cancer-related, and co-morbidities have also been associated with an increased risk of febrile neutropenia. Therefore, the type of chemotherapy regimen is only one component of the risk assessment.

- For chemotherapy patients, continuing filgrastim until the ANC has reached 10,000/mm³ following the expected chemotherapy-induced neutrophil nadir (as specified in the G-CSF package insert), is known to be safe and effective. However, a shorter duration of administration that is sufficient to achieve clinically adequate neutrophil recovery is a reasonable alternative, considering issues of patient convenience and cost.
- Evidence supports dose reduction of pegylated interferon according to FDA-approved labeling as treatment for neutropenia occurring in hepatitis C patients treated with combination therapy (pegylated interferon + ribavirin). Treatment with filgrastim is not FDA approved or recommended by current hepatitis C treatment guidelines except in patients with decompensated cirrhosis.
- There are insufficient data to support the use of filgrastim to treat febrile neutropenia in patients who have received prophylactic Neulasta.
- In a randomized, double-blind, multi-center safety and efficacy study of 218 breast cancer patients receiving chemotherapy with a high risk of neutropenia, Zarxio was non-inferior to Neupogen on the primary endpoint of duration of severe neutropenia (1.17 days for Zarxio and 1.20 days for Neupogen).
- NCCN guidelines for myelodysplastic syndrome list filgrastim with a category 2A recommendation for use as initial treatment of symptomatic anemia in lower risk disease with no del (5q), serum erythropoietin levels ≤500 mU/mL, and ring sideroblasts ≥15%. Filgrastim may also be considered for the treatment of symptomatic anemia in lower risk disease with serum erythropoietin levels ≤500 mU/mL, and ring sideroblasts <15% when these is no response to epoetin or darbepoetin alone (category 2A recommendation).

### V. Dosage and Administration

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Indication</th>
<th>Dosing Regimen</th>
<th>Maximum Dose</th>
</tr>
</thead>
</table>
| Filgrastim (Neupogen), filgrastim-sndz (Zarxio) | Chemotherapy-Induced Neutropenia | 5 mcg/kg SC or IV QD  
Dose may be increased in increments of 5 mcg/kg for each chemotherapy cycle, according to the duration and severity of the ANC nadir  
Do not administer 24 hours before and after chemotherapy | 30 mcg/kg/day [IV] or 24 mcg/kg/day [SC] |
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Indication</th>
<th>Dosing Regimen</th>
<th>Maximum Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic neutropenia</td>
<td>Congenital: 6 mcg/kg SC BID</td>
<td></td>
<td>30 mcg/kg/day [IV] or 24 mcg/kg/day [SC]</td>
</tr>
<tr>
<td></td>
<td>Idiopathic or cyclic: 5 mcg/kg SC QD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMT</td>
<td>10 mcg/kg IV or SC infusion QD</td>
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<td>10 mcg/kg/day</td>
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<tr>
<td>Peripheral blood progenitor cell collection</td>
<td>10 mcg/kg SC bolus or continuous infusion QD</td>
<td></td>
<td>10 mcg/kg/day</td>
</tr>
<tr>
<td>Patients acutely exposed to myelosuppressive doses of radiation</td>
<td>10 mcg/kg SC QD</td>
<td></td>
<td>10 mcg/kg/day</td>
</tr>
<tr>
<td>Tbo-filgrastim (Granix)</td>
<td>Myelosuppressive chemotherapy</td>
<td>5 mcg/kg SC or IV QD</td>
<td>5 mcg/kg/day</td>
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VI. Product Availability

<table>
<thead>
<tr>
<th>Drug</th>
<th>Availability</th>
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</thead>
<tbody>
<tr>
<td>Filgrastim (Neupogen)</td>
<td>Single-dose prefilled syringes for injection: 300 mcg/0.5 mL, 480 mcg/0.8 mL</td>
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<tr>
<td></td>
<td>Single-dose vials for injection: 300 mg/mL, 480 mg/1.6 mL</td>
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<tr>
<td>Filgrastim-sndz (Zarxio)</td>
<td>Single-dose prefilled syringes for injection: 300 mcg/0.5 mL, 480 mcg/0.8 mL</td>
</tr>
<tr>
<td>Tbo-filgrastim (Granix)</td>
<td>Single-dose prefilled syringes for injection: 300 mcg/0.5 mL, 480 mcg/0.8 mL</td>
</tr>
</tbody>
</table>

VII. References

Coding Implications
Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

<table>
<thead>
<tr>
<th>HCPCS Codes</th>
<th>Description</th>
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<tr>
<td>J1442</td>
<td>Injection, filgrastim (G-CSF), excludes biosimilars, 1 microgram</td>
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<tr>
<td>J1447</td>
<td>Injection, tbo-filgrastim, 1 microgram</td>
</tr>
<tr>
<td>Q5101</td>
<td>Injection, filgrastim (G-CSF), biosimilar, 1 microgram</td>
</tr>
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Reviews, Revisions, and Approvals

<table>
<thead>
<tr>
<th>Date</th>
<th>P&amp;T Approval Date</th>
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<tbody>
<tr>
<td>01.17.17</td>
<td>11.17</td>
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<td>05.02.18</td>
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<td>09.26.18</td>
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Important Reminder
This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice.
current at the time that this clinical policy was approved. “Health Plan” means a health plan that
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of the guidelines used to assist in making coverage decisions and administering benefits. It does
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administration of benefits are subject to all terms, conditions, exclusions and limitations of the
coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of
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administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting
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for the medical advice and treatment of members. This clinical policy is not intended to
recommend treatment for members. Members should consult with their treating physician in
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