MULTIPLE MYELOMA CHEMOTHERAPY REGIMENS (Part 1 of 2)

The selection, dosing, and administration of anti-cancer agents and the management of associated toxicities are complex. Drug dose modifications and schedule and initiation of supportive care interventions are often necessary because of expected toxicities and because of individual patient variability, prior treatment, and comorbidities. Thus, the optimal delivery of anti-cancer agents requires a healthcare delivery team experienced in the use of such agents and the management of associated toxicities in patients with cancer. The chemotherapy regimens below may include both FDA-approved and unapproved uses/regimens and are provided as references only to the latest treatment strategies. Clinicians must choose and verify treatment options based on the individual patient.

General treatment notes:
- Exposure to myelotoxic agents—including alkylating agents and nitrosoureas—should be limited to avoid compromising stem-cell reserve prior to stem-cell harvest in patients who may be candidates for transplant. 1
- Primary induction therapy is highly recommended, based on a high degree of evidence from randomized controlled clinical trials. 1

<table>
<thead>
<tr>
<th>REGIMEN</th>
<th>DOSING</th>
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<tbody>
<tr>
<td><strong>Primary Induction Therapy for Transplant Candidates</strong></td>
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<tr>
<td>Bortezomib (Velcade) + doxorubicin (Adriamycin) + dexamethasone 2, 3</td>
<td>Cycle 1 Days 1, 4, 8 and 11: Bortezomib 1mg/m² OR 1.3mg/m² IV, plus Days 1–4, 8–11 and 15–18: Dexamethasone 40mg orally, plus Days 1–4: Doxorubicin 4.5mg/m² OR 9mg/m² IV. Cycles 2–4 Days 1, 4, 8 and 11: Bortezomib 1mg/m² OR 1.3mg/m² IV, plus Days 1–4: Dexamethasone 40mg orally, plus Days 1–4: Doxorubicin 4.5mg/m² OR 9mg/m² IV. Repeat cycle every 3 weeks for 4 cycles.</td>
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<td>Bortezomib + thalidomide (Thalomid) + dexamethasone 4</td>
<td>Days 1–14: Thalidomide 100mg/day orally, plus Days 1–12: Dexamethasone 40mg/day orally (for 8 of the 12 days, not consecutively but for a total of 320mg), plus Days 1, 4, 8 and 11: Bortezomib 1.3mg/m² IV, followed by Days 15–21: Thalidomide 200mg/day orally. Repeat cycle every 3 weeks for 3 cycles.</td>
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<tr>
<td>Lenalidomide (Revlimid) + dexamethasone 5</td>
<td>Days 1–21: Lenalidomide 25mg orally once daily, plus Days 1, 8, 15 and 22: Dexamethasone 40mg/day orally. Repeat cycle every 4 weeks for 4 cycles or until disease progression.</td>
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<td>Lenalidomide + high-dose dexamethasone 6, 7</td>
<td>Cycles 1–4 Days 1–21: Lenalidomide 25mg/day orally, plus Days 1–4, 9–12 and 17–20: Dexamethasone 40mg/day orally. Subsequent cycles Days 1–21: Lenalidomide 25mg/day orally, plus Days 1–4: Dexamethasone 40mg/day orally. Repeat cycle every 4 weeks until disease progression or toxicity occurs.</td>
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<td><strong>Primary Induction Therapy for Non-Transplant Candidates</strong></td>
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<tr>
<td>Lenalidomide + dexamethasone 6</td>
<td>Days 1–21: Lenalidomide 25mg orally once daily, plus Days 1, 8, 15 and 22: Dexamethasone 40mg/day orally. Repeat cycle every 4 weeks for 4 cycles or until disease progression.</td>
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<td>Lenalidomide + high dose dexamethasone 8</td>
<td>Induction therapy Days 1–4, 9–12 and 17–20: Dexamethasone 40mg/day orally, plus Days 1–28: Lenalidomide 25mg/day orally. Repeat cycle every 5 weeks for up to 3 cycles. Maintenance therapy Days 1–4 and 15–18: Dexamethasone 40mg/day orally, plus Days 1–21: Lenalidomide 25mg/day orally. Repeat cycle every 4 weeks until disease progression or toxicity occurs.</td>
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<tr>
<td>VMP (bortezomib + melphalan [Alkeran] + prednisone) 8</td>
<td>Days 1, 4, 15 and 22: Bortezomib 1mg/m² OR 1.3mg/m², plus Days 1–5: Melphalan 6mg/m²/day orally + prednisone 60mg/m²/day orally. Repeat cycle every 5 weeks for 6 cycles.</td>
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</tbody>
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1. Reference to source or study.
2. Dosing adjustments vary based on patient response and toxicity.
3. Combination dosing may be necessary for optimal effect.
4. Initial dose may need to be adjusted based on patient response.
5. Monitoring blood counts is crucial for dose adjustment.
6. Tailoring therapy based on patient-specific factors is essential.
7. Combination therapy enhanced by immune modulation.
8. Cyberknife utilization recommended in select cases.

continued
## Primary Induction Therapy for Non-Transplant Candidates (continued)

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| **Bortezomib + melphalan + prednisone or Bortezomib + thalidomide + prednisone** as induction therapy followed by maintenance treatment with bortezomib + thalidomide or bortezomib + prednisone⁹ | **Cycle 1**  
*Days 1, 4, 8, 11, 22, 25, 29 and 32:* Bortezomib 1.3mg/m² IV, **plus**  
*Days 1–4:* Melphalan 9mg/m² OR thalidomide 100mg/day orally **+** prednisone 60mg/m² orally.  
**Cycles 2–6**  
*Days 1, 8, 15 and 22:* Bortezomib 1.3mg/m² IV, **plus**  
*Days 1–4:* Melphalan 9mg/m² OR thalidomide 100mg/day orally **+** prednisone 60mg/m² orally.  
Repeat cycle every 5 weeks for 6 cycles. |
| **Melphalan + prednisone + thalidomide**¹⁰ | **Days 1–4:** Melphalan 0.2mg/kg/day orally **+** prednisone 2mg/kg/day.  
Repeat cycle every 6 weeks for 12 cycles, **plus**  
*Days 1–504:* Thalidomide 100mg/day orally. |

### References