

## TESTICULAR CANCER TREATMENT REGIMENS (Part 1 of 2)

**Clinical Trials:** The National Comprehensive Cancer Network recommends cancer patient participation in clinical trials as the gold standard for treatment.

Cancer therapy selection, dosing, administration, and the management of related adverse events can be a complex process that should be handled by an experienced healthcare team. Clinicians must choose and verify treatment options based on the individual patient; drug dose modifications and supportive care interventions should be administered accordingly. The cancer treatment regimens below may include both U.S. Food and Drug Administration-approved and unapproved indications/regimens. These regimens are only provided to supplement the latest treatment strategies.

These Guidelines are a work in progress that may be refined as often as new significant data becomes available. The NCCN Guidelines® are a consensus statement of its authors regarding their views of currently accepted approaches to treatment. Any clinician seeking to apply or consult any NCCN Guidelines® is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment. The NCCN makes no warranties of any kind whatsoever regarding their content, use, or application and disclaims any responsibility for their application or use in any way.

### Primary Chemotherapy for Germ Cell Tumors<sup>1</sup>

**Note:** All recommendations are category 2A unless otherwise indicated.

REGIMEN	DOSING
<b>Etoposide + cisplatin (EP)</b> <sup>2,a</sup>	<b>Days 1-5:</b> Etoposide 100mg/m <sup>2</sup> IV + cisplatin 20mg/m <sup>2</sup> IV. Repeat cycle every 21 days.
<b>Bleomycin + etoposide + cisplatin (BEP)</b> <sup>3</sup>	<b>Days 1-5:</b> Cisplatin 20mg/m <sup>2</sup> IV + etoposide 100mg/m <sup>2</sup> IV <b>Days 1, 8, and 15 OR Days 2, 9, and 16:</b> Bleomycin 30 units IV weekly. Repeat cycle every 21 days.
<b>Etoposide + ifosfamide + cisplatin + mesna (VIP)</b> <sup>4,b,c</sup>	<b>Day 1 (before ifosfamide):</b> Mesna 120mg/m <sup>2</sup> by slow IV push <b>Days 1-5:</b> Etoposide 75mg/m <sup>2</sup> IV + mesna 1,200mg/m <sup>2</sup> continuous IV infusion + ifosfamide 1,200mg/m <sup>2</sup> IV + cisplatin 20mg/m <sup>2</sup> . Repeat cycle every 21 days.

### Second-Line Chemotherapy For Metastatic Germ Cell Tumors<sup>1</sup>

#### Conventional-dose Chemotherapy Regimens

<b>Vinblastine + ifosfamide + cisplatin + mesna (VeIP)</b> <sup>5,c</sup>	<b>Days 1-2:</b> Vinblastine 0.11mg/kg IV push; <b>plus</b> <b>Days 1-5:</b> Ifosfamide 1,200mg/m <sup>2</sup> IV + cisplatin 20mg/m <sup>2</sup> IV + mesna 240mg/m <sup>2</sup> IV over 15 minutes before ifosfamide, then at 4 and 8 hours from the start of each ifosfamide dose. Repeat cycle every 3 weeks.
<b>Paclitaxel + ifosfamide + mesna + cisplatin (TIP)</b> <sup>6,c</sup>	<b>Day 1:</b> Paclitaxel 250mg/m <sup>2</sup> IV <b>Days 2-5:</b> Ifosfamide 1,500mg/m <sup>2</sup> IV + cisplatin 25mg/m <sup>2</sup> IV + mesna 300mg/m <sup>2</sup> IV over 15 minutes before ifosfamide, then at 4 and 8 hours from the start of each ifosfamide dose. Repeat cycle every 3 weeks.

#### High-dose Chemotherapy Regimens

<b>Carboplatin + etoposide</b> <sup>7</sup>	Carboplatin 700mg/m <sup>2</sup> (body surface area) IV + etoposide 750mg/m <sup>2</sup> IV. Administer 5, 4, and 3 days before peripheral blood stem cell infusion for 2 cycles.
<b>Paclitaxel + ifosfamide + mesna + carboplatin + etoposide</b> <sup>8</sup>	<b>Day 1:</b> Paclitaxel 200mg/m <sup>2</sup> IV over 24 hours <b>Days 2-4:</b> Ifosfamide 2,000mg/m <sup>2</sup> over 4 hours with mesna protection Repeat every 14 days for 2 cycles; <b>followed by</b> <b>Days 1-3:</b> Carboplatin AUC 7-8mg • min/mL IV over 60 minutes + etoposide 400mg/m <sup>2</sup> IV. Administer with peripheral blood stem cell support at 14- to 21-day intervals for 3 cycles.

### Third-line Chemotherapy For Metastatic Germ Cell Tumors<sup>1</sup>

#### Palliative Chemotherapy Regimens

<b>Gemcitabine + oxaliplatin</b> <sup>9-11</sup>	<b>Days 1 and 8:</b> Gemcitabine 1,000mg/m <sup>2</sup> IV, <b>plus</b> <b>Day 1:</b> Oxaliplatin 130mg/m <sup>2</sup> IV Repeat cycle every 3 weeks. <b>OR</b> <b>Days 1 and 8:</b> Gemcitabine 1,250mg/m <sup>2</sup> IV, <b>plus</b> <b>Day 1:</b> Oxaliplatin 130mg/m <sup>2</sup> IV. Repeat cycle every 3 weeks.
<b>Gemcitabine + paclitaxel</b> <sup>12,13</sup>	<b>Days 1, 8, and 15:</b> Gemcitabine 1,000mg/m <sup>2</sup> IV over 30 minutes + paclitaxel 100mg/m <sup>2</sup> IV over 1 hour. Repeat every 4 weeks for a maximum of 6 cycles.
<b>Gemcitabine + paclitaxel + oxaliplatin</b> <sup>14</sup>	<b>Days 1 and 8:</b> Gemcitabine 800mg/m <sup>2</sup> IV + paclitaxel 80mg/m <sup>2</sup> IV <b>Day 1:</b> Oxaliplatin 130mg/m <sup>2</sup> IV. Repeat every 3 weeks for at least 2 cycles.
<b>Etoposide</b> <sup>15</sup>	Etoposide 50mg/m <sup>2</sup> orally daily until progression or toxicity.
<b>Pembrolizumab (for MSI-H/dMMR tumors)</b> <sup>16,17</sup>	<b>Day 1:</b> Pembrolizumab 10mg/kg IV. Repeat cycle every 2 weeks.

*continued*

## TESTICULAR CANCER TREATMENT REGIMENS (Part 2 of 2)

### Notes

- <sup>a</sup> Option only for good-risk patients, patients with pathologic stage II disease, and patients with viable germ cell tumors (GCT) at surgery following first-line chemotherapy.
- <sup>b</sup> Option only for intermediate or poor-risk patients or patients with viable GCT at surgery following first-line chemotherapy.
- <sup>c</sup> These regimens are high risk for febrile neutropenia and granulocyte colony-stimulating factors (G-CSFs) should be used.

### References

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(Revised 1/2018)

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