# LUNG CANCER CHEMOTHERAPY REGIMENS Part 1 of 3

*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 FOR NSCLC

- Regarding concurrent chemotherapy and radiotherapy, data support full-dose cisplatin over carboplatin-based regimens; carboplatin regimens have not been adequately tested.[1]
- Principles for treating advanced disease:[1]
  - Platinum-based chemotherapy prolongs survival, improves symptom control, and yields superior quality of life compared with best supportive care.
  - No specific platinum-based cytotoxic combination is clearly superior to another.
  - Patients with performance statuses of 3 or 4, of any age, do not benefit from cytotoxic treatment, except erlotinib for epidermal growth factor receptor (EGFR) mutation–positive patients.

| REGIMEN | DOSING |
|---|---|
| **NON-SMALL CELL LUNG CANCER (NSCLC)** | |
| **CHEMOTHERAPY FOR ADJUVANT THERAPY** | |
| Cisplatin (Platinol; CDDP) + vinorelbine (Navelbine) | **Days 1 and 8:** Cisplatin 50mg/m$^2$ IV, plus<br>**Days 1, 8, 15, 22:** Vinorelbine 25mg/m$^2$ IV.<br>Repeat cycle every 28 days for 4 cycles.[1,2]<br>**Day 1:** Cisplatin 100mg/m$^2$ IV, plus<br>**Days 1, 8, 15, 22:** Vinorelbine 30mg/m$^2$ IV.<br>Repeat cycle every 28 days for 4 cycles.[1,34] |
| Cisplatin + etoposide (Toposar, VePesid, Etopophos; VP-16) | **Day 1:** Cisplatin 100mg/m$^2$ IV, plus<br>**Days 1–3:** Etoposide 100mg/m$^2$ IV.<br>Repeat cycle every 28 days for 4 cycles.[1,3] |
| Cisplatin + vinblastine (Velban) | **Days 1:** Cisplatin 80mg/m$^2$ IV.<br>Repeat cycle every 21 days for 4 cycles.[3]<br>**Days 1, 8, 15, 22, 29:** Vinblastine 4mg/m$^2$ IV, then every 2 weeks after Day 43 until last cisplatin administration. |
| Cisplatin + gemicitabine (Gemzar) | **Day 1:** Cisplatin 75mg/m$^2$ IV, plus<br>**Days 1 and 8**: Gemcitabine 1,250mg/m$^2$ IV.<br>Repeat cycle every 21 days.[1] |
| Cisplatin + docetaxel (Taxotere) | **Day 1:** Docetaxel 75mg/m$^2$ IV + cisplatin 75mg/m$^2$ IV<br>Repeat cycle every 21 days.[1,5] |
| Cisplatin + pemetrexed (Alimta) | **Day 1:** Cisplatin 75mg/m$^2$ IV + pemetrexed 500mg/m$^2$ IV.<br>Repeat cycle every 21 days for 4 cycles.<br>(For adenocarcinoma and large cell carcinoma and NSCLC NOS [without specific histologic subtype])[1] |
| Paclitaxel (Taxol) + carboplatin (Paraplatin) | **Day 1:** Paclitaxel 200mg/m$^2$ IV + carboplatin AUC=6mg/mL/min IV<br>Repeat cycle every 21 days for 4 cycles. |
| **CONCURRENT CHEMOTHERAPY AND RADIOTHERAPY (RT)** | |
| Cisplatin + etoposide | **Days 1, 8, 29, 36:** Cisplatin 50mg/m$^2$ IV, plus<br>**Days 1–5 and 29–33:** Etoposide 50mg/m$^2$ IV, plus<br>Concurrent thoracic RT 1.8Gy/day for 5 days/week (total dose, 61Gy);[7] preferred regimen.[1] |
| Cisplatin + vinblastine | **Days 1 and 29:** Cisplatin 100mg/m$^2$ IV, plus<br>**Days 1, 8, 15, 22, 29:** Vinblastine 5mg/m$^2$ IV.<br>Concurrent thoracic RT (total dose, 60 Gy);[1,8] preferred regimen.[1] |
| Paclitaxel + carboplatin | **Day 1:** Paclitaxel 45mg/m$^2$ IV + carboplatin AUC=2mg/mL/min.<br>Concurrent thoracic RT 63 Gy/7 wks/34 fractions.[9]<br>Repeat chemotherapy cycle 3–4 weeks following completion of RT for a total of 2 courses. |
| **CONCURRENT CHEMOTHERAPY AND RADIOTHERAPY FOLLOWED BY CHEMOTHERAPY** | |
| Cisplatin + etoposide + docetaxel | **Days 1, 8, 29, 36:** Cisplatin 50mg/m$^2$ IV.<br>**Days 1–5 and 29–33:** Etoposide 50mg/m$^2$ IV.<br>Concurrent thoracic RT (total dose, 61Gy)[10] followed by cisplatin 50mg/m$^2$ IV and etoposide 50mg/m$^2$ IV for 2 additional cycles;[7] or followed by docetaxel started 4 to 6 weeks after chemoradiation at an initial dose of 75mg/m$^2$ IV, repeat cycle every 21 days, may increase to docetaxel 100mg/m$^2$ if no toxicity.[10] |
| Paclitaxel + carboplatin | **Day 1:** Paclitaxel 45–50mg/m$^2$ IV + carboplatin AUC=2mg/mL/min IV.<br>Concurrent thoracic RT 63 Gy followed by 2 cycles of paclitaxel 200mg/m$^2$ IV and carboplatin AUC=6 mg/mL/min.[1] |
| **SEQUENTIAL CHEMOTHERAPY AND RADIOTHERAPY** | |
| CDDP + vinblastine | **Days 1 and 29:** Cisplatin 100mg/m$^2$ IV.<br>**Days 1, 8, 15, 22, 29:** Vinblastine 5mg/m$^2$ IV<br>Followed by RT with 60 Gy in 30 fractions beginning on Day 50.[8] |
| Paclitaxel + carboplatin | **Day 1:** Paclitaxel 200mg/m$^2$ IV and carboplatin AUC=6mg/mL/min IV.<br>Repeat cycle every 21 days; 2 cycles.[1]<br>Followed by thoracic RT 63 Gy[10] beginning on Day 42.[1] |

(continued)

# LUNG CANCER CHEMOTHERAPY REGIMENS Part 2 of 3

| REGIMEN | DOSING |
|---|---|
| **SYSTEMIC THERAPY FOR ADVANCED DISEASE—FIRST-LINE** | |
| Bevacizumab (Avastin) + carboplatin and paclitaxel | Bevacizumab 15mg/kg IV every 21 days with carboplatin/paclitaxel; administer bevacizumab until disease progression.[11] |
| Cetuximab (Erbitux)<br>*Indicated in advanced NSCLC*<br>+ cisplatin and vinorelbine | **Day 1:** Cetuximab 400mg/m$^2$ IV + cisplatin 80mg/m$^2$ IV, plus<br>**Days 1 and 8:** Vinorelbine 25mg/m$^2$ IV, plus<br>**Day 8:** Cetuximab 250mg/m$^2$ IV once weekly.<br>Repeat cycle every 21 days for 6 cycles.[12] |
| Erlotinib (Tarceva) | **Day 1:** Erlotinib 150mg orally once daily; following 4 cycles of platinum-based chemotherapy.[13,14]<br>Indicated for EGFR mutation-positive patients and may be considered as an option for patients who test positive for an EGFR mutation.[1] |
| Pemetrexed (Alimta) + cisplatin | **Day 1:** Pemetrexed 500mg/m$^2$ IV + cisplatin 75mg/m$^2$ IV.<br>Repeat cycle every 21 days.[15] |
| Pemetrexed | **Day 1:** Pemetrexed 500mg/m$^2$ IV.<br>Repeat cycle every 21 days.[15] |
| Gefitinib (Iressa) | **Day 1:** 250mg orally once daily.[16,17]<br>May be considered as an option for patients who test positive for an EGFR mutation.[1] |
| **SYSTEMIC THERAPY FOR ADVANCED DISEASE—SECOND-LINE** | |
| Docetaxel or<br>Pemetrexed or<br>Erlotinib<br>**In patients who have experienced disease progression either during or after first-line therapy, single-agent docetaxel, pemetrexed, or erlotinib are established second-line agents.* | **Day 1:** Docetaxel 75mg/m$^2$ IV.<br>Repeat cycle every 21 days.[18] Docetaxel has been proved superior to BSC, vinorelbine, or ifosfamide with improved survival and quality of life. |
| | **Day 1:** Pemetrexed 500mg/m$^2$ IV.<br>Repeat cycle every 21 days.[19] Pemetrexed has been shown to be superior to docetaxel with less toxicity in patients with adenocarcinoma and large cell carcinoma (non-squamous histology). |
| | **Day 1:** Erlotinib 150mg orally once daily.[20]<br>Erlotinib has proved superior to BSC with significantly improved survival and delayed time to symptom deterioration in NSCLC patients previously treated with chemotherapy. |
| **SYSTEMIC THERAPY FOR ADVANCED DISEASE—THIRD-LINE** | |
| Erlotinib | **Day 1:** Erlotinib 150mg orally once daily.[20]<br>Erlotinib has proved superior to BSC with significantly improved survival and delayed time to symptom deterioration in patients who previously failed first- and second-line chemotherapy. |
| **GENERAL TREATMENT NOTES FOR SCLC** | |
| • Because of their inability to augment or enhance standard platinum-based chemotherapies in the setting of clinical trials, to date, no targeted therapy has been approved for use in the treatment of patients with SCLC,[21] including bevacizumab, thalidomide, gefitinib, sorafenib, vandetanib, tipifarnib, and imatinib. | |
| **SMALL CELL LUNG CANCER (SCLC)** | |
| **PLATINUM-BASED CHEMOTHERAPIES** | |
| Cisplatin + etoposide + irinotecan (Camptosar; CPT-11) | *Cycle 1*<br>**Day 1:** Cisplatin 80mg/m$^2$ IV, plus<br>**Days 1–3:** Etoposide 100mg/m$^2$ IV; maximum 4–6 cycles; beginning on Day 2, RT twice daily (1.5Gy per fraction, a total dose of 45Gy).<br>*Cycles 2–4*<br>**Day 1:** Cisplatin 60mg/m$^2$, plus<br>**Days 1, 8, 15:** Irinotecan 60mg/m$^2$<br>Repeat cycle every 28 days.[22] |
| Cisplatin + etoposide | **Day 1:** Cisplatin 60mg/m$^2$ IV, plus<br>**Days 1–3:** Etoposide 120mg/m$^2$ IV.<br>Repeat cycle every 21 days for at least 4 cycles.[23] |
| Carboplatin (Paraplatin) + irinotecan | **Day 1:** Carboplatin AUC=5mg/mL/min IV, plus<br>**Days 1, 8, 15:** Irinotecan 50mg/m$^2$ IV.<br>Repeat cycle every 28 days.[24] |
| Carboplatin + etoposide | **Day 1:** Carboplatin AUC=5mg/mL/min IV, plus<br>**Days 1–3:** Etoposide 140mg/m$^2$ IV.<br>Repeat cycle every 28 days.[24] |
| Carboplatin + topotecan (Hycamtin) | **Day 1:** Carboplatin AUC=5mg/mL/min IV, plus<br>**Days 1 and 8:** Topotecan 4mg/m$^2$ IV.<br>Repeat cycle every 21 days for maximum 6 cycles.[25] |
| **PLATINUM-BASED TARGETED THERAPIES** | |
| Bevacizumab* + carboplatin + irinotecan | **Day 1:** Carboplatin AUC=4mg/mL/min IV, plus<br>**Days 1, 8, 15:** Irinotecan 60mg/m$^2$ IV.<br>Repeat cycle every 28 days for maximum 6 cycles.<br>**Days 1 and 15:** Bevacizumab 10mg/kg IV (for Cycle 1 only).[26] |

(continued)

# LUNG CANCER CHEMOTHERAPY REGIMENS Part 3 of 3

| REGIMEN | DOSING |
|---|---|
| **SMALL CELL LUNG CANCER (SCLC) (continued)** | |
| **PLATINUM-BASED TARGETED THERAPIES (continued)** | |
| Bevacizumab* + cisplatin + etoposide<br>**Use with extreme caution due to reports of life-threatening tracheoesophageal fistula that developed in some patients in clinical trials who received chemotherapy, RT and bevacizumab; bevacizumab is indicated only for NSCLC, not small cell lung cancer.*[11] | **Day 1:** Cisplatin 60mg/m$^2$ IV, plus<br>**Days 1–3:** Etoposide 120mg/m$^2$ IV.<br>Repeat cycle every 21 days for maximum 4 cycles.<br>Following completion of chemotherapy: Bevacizumab 15mg/kg IV until disease progression for total of 1 year.[27] |

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