

BREAST CANCER TREATMENT REGIMENS (Part 1 of 6)

The selection, dosing, and administration of anticancer 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 anticancer agents requires a healthcare delivery team experienced in the use of such agents and the management of associated toxicities in patients with cancer. The cancer treatment 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.

NOTE: GREY SHADED BOXES CONTAIN UPDATED REGIMENS.

General treatment note: All trastuzumab-containing regimens require cardiac monitoring at baseline and at Months 3, 6, and 9.¹

REGIMEN	DOSING
Adjuvant Therapy With Concomitant Trastuzumab	
AC (doxorubicin [Adriamycin] + cyclophosphamide [Cytosan]) followed by paclitaxel (Taxol) + concurrent trastuzumab (Herceptin) ^{1,2}	<p>Cycles 1–4 Day 1: Doxorubicin 60mg/m² IV + cyclophosphamide 600mg/m² IV. Repeat cycle every 3 weeks for 4 cycles.</p> <p>Subsequent cycles Day 1: Paclitaxel 80mg/m² IV once weekly for 12 weeks, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly (or trastuzumab 6mg/kg IV once every 3 weeks) to complete 1 year of treatment.</p> <p style="text-align: center;">.....OR.....</p> <p>Cycles 1–4 Day 1: Doxorubicin 60mg/m² IV + cyclophosphamide 600mg/m² IV. Repeat cycle every 3 weeks for 4 cycles.</p> <p>Subsequent cycles Day 1: Paclitaxel 175mg/m² IV. Repeat cycle every 3 weeks for 4 cycles, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly (or trastuzumab 6mg/kg IV once every 3 weeks) to complete 1 year of treatment.</p>
Dose-dense AC (doxorubicin + cyclophosphamide) followed by dose dense paclitaxel + concurrent trastuzumab ^{1,3-5}	<p>Cycles 1–4 Day 1: Doxorubicin 60mg/m² IV + cyclophosphamide 600mg/m² IV. Repeat cycle every 2 weeks for 4 cycles. Day 2: Pegfilgrastim 6mg SC approximately 24 hrs after chemotherapy, OR Days 3–10: Filgrastim 5mcg/kg (total 300mcg or 480mcg) after chemotherapy.</p> <p>Subsequent cycles Day 1: Paclitaxel 175mg/m² IV. Repeat cycle every 2 weeks for 4 cycles, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until completion of paclitaxel. Then administer trastuzumab 6mg/kg IV once every 3 weeks to complete 1 year of treatment. Day 2: Pegfilgrastim 6mg SC approximately 24 hrs after paclitaxel, OR Days 3–10: Filgrastim 5mcg/kg (total 300mcg or 480mcg) after paclitaxel.</p>
TCH (Docetaxel [Taxotere] + carboplatin [Paraplatin] + concurrent trastuzumab) ^{1,6}	<p>Day 1: Docetaxel 75mg/m² IV, followed by carboplatin AUC 6. Repeat every 3 weeks for 6 cycles.</p> <p>Subsequent cycles Trastuzumab 4mg/kg week 1, followed by trastuzumab 2mg/kg for 17 weeks, followed by trastuzumab 6mg/kg every 3 weeks to complete 1 year of trastuzumab therapy.</p>
Docetaxel + concurrent trastuzumab followed by FEC (5-fluorouracil [5-FU] + epirubicin [Elevance] + cyclophosphamide) ^{1,7}	<p>Weeks 1–8 Day 1: Docetaxel 100mg/m² IV. Repeat cycle every 3 weeks for 3 cycles, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly for 8 weeks.</p> <p>Subsequent cycles Day 1: 5-FU 600mg/m² IV + epirubicin 60mg/m² IV + cyclophosphamide 600mg/m² IV. Repeat cycle every 3 weeks for 3 cycles.</p>

continued

BREAST CANCER TREATMENT REGIMENS (Part 2 of 6)

REGIMEN	DOSING
Adjuvant Therapy Without Concomitant Trastuzumab	
Tamoxifen ^{1,8}	Tamoxifen 20–40mg orally daily for no longer than 5 years (doses higher than 20mg should be divided into 2 doses, AM and PM).
TAC (docetaxel + doxorubicin + cyclophosphamide) ^{1,9}	Day 1: Doxorubicin 50mg/m ² IV, followed by cyclophosphamide 500mg/m ² IV, followed by docetaxel 75mg/m ² IV after a 1-hr interval, plus Day 2: Pegfilgrastim 6mg SC approximately 24 hrs after chemotherapy, OR Days 4–11: Filgrastim 5mcg/kg after chemotherapy.
AC (doxorubicin + cyclophosphamide) ^{1,10}	Day 1: Doxorubicin 60mg/m ² . Day 1: Cyclophosphamide 600mg/m ² . Repeat every 3 weeks for 4 cycles.
AC (doxorubicin + cyclophosphamide) followed by paclitaxel ^{1,11}	<u>Cycles 1–4</u> Day 1: Doxorubicin 60mg/m ² IV + cyclophosphamide 600mg/m ² IV. Repeat cycle every 3 weeks for 4 cycles. <u>Subsequent cycles</u> Day 1: Paclitaxel 80mg/m ² IV once weekly for 12 weeks.
Dose-dense AC (doxorubicin + cyclophosphamide) followed by dose dense paclitaxel ^{1,4,5}	<u>Cycles 1–4</u> Day 1: Doxorubicin 60mg/m ² IV + cyclophosphamide 600mg/m ² IV. Repeat cycle every 2 weeks. <u>Subsequent cycles</u> Day 1: Paclitaxel 175mg/m ² IV. Repeat cycle every 2 weeks for 4 cycles. <u>All cycles</u> Day 2: Pegfilgrastim 6mg SC approximately 24 hrs after chemotherapy, OR Days 3–10: Filgrastim 5mcg/kg (total 300mcg or 480mcg) after chemotherapy.
TC (docetaxel + cyclophosphamide) ^{1,12}	Day 1: Docetaxel 75mg/m ² IV + cyclophosphamide 600mg/m ² IV. Growth factor support recommended with this regimen. Repeat cycle every 3 weeks for 4 cycles.
Neoadjuvant Therapy	
Trastuzumab + paclitaxel + FEC (5-FU + epirubicin + cyclophosphamide) ^{1,13}	<u>Cycles 1–4</u> Day 1: Trastuzumab 4mg/kg IV for one dose (for first dose, administer 1 day before paclitaxel to monitor for infusion reactions), followed by trastuzumab 2mg/kg once weekly for 24 weeks total, plus Day 1: Paclitaxel 225mg/m ² continuous IV infusion over 24 hrs. Repeat cycle every 3 weeks for 4 cycles. <u>Subsequent cycles</u> Day 1: Epirubicin 75mg/m ² IV + cyclophosphamide 500mg/m ² IV, plus Days 1 and 3: 5-FU 500mg/m ² IV. Repeat cycle every 3 weeks for 4 cycles.
Recurrent or Metastatic Breast Cancer—Combination Therapy	
CAF (cyclophosphamide + doxorubicin + 5-FU) ^{1,14}	Days 1–14: Cyclophosphamide 100mg/m ² . Days 1 and 8: Doxorubicin 30mg/m ² + 5-FU 500mg/m ² . Repeat every 4 weeks.
FAC (5-FU + doxorubicin + cyclophosphamide) ^{1,15}	Days 1 and 8 OR Days 1 and 4: 5-FU 500mg/m ² IV. Day 1: Doxorubicin 50mg/m ² IV + cyclophosphamide 500mg/m ² IV. Repeat cycle every 3 weeks.
AC (doxorubicin + cyclophosphamide) ^{1,10}	Day 1: Doxorubicin 60mg/m ² IV + cyclophosphamide 600mg/m ² IV. Repeat cycle every 3 weeks.
CMF (cyclophosphamide + methotrexate + 5-FU) ^{1,16}	Days 1–14: Cyclophosphamide 100mg/m ² orally. Days 1 and 8: Methotrexate 40mg/m ² IV + 5-FU 600mg/m ² IV. Repeat cycle every 4 weeks.
FEC (5-FU + epirubicin + cyclophosphamide) ^{1,17}	Days 1 and 8: 5-FU 500mg/m ² IV + epirubicin 50mg/m ² IV + cyclophosphamide 400mg/m ² IV. Repeat cycle every 4 weeks.
EC (epirubicin + cyclophosphamide) ^{1,18}	Day 1: Epirubicin 75mg/m ² IV + cyclophosphamide 600mg/m ² IV. Repeat cycle every 3 weeks.
AT (doxorubicin + docetaxel) ^{1,19}	Day 1: Doxorubicin 50mg/m ² IV + docetaxel 75mg/m ² IV. Repeat cycle every 3 weeks for max 8 cycles.

continued

BREAST CANCER TREATMENT REGIMENS (Part 3 of 6)

REGIMEN	DOSING
Recurrent or Metastatic Breast Cancer—Combination Therapy (continued)	
AT (doxorubicin + paclitaxel) ^{1,20}	Day 1: Doxorubicin 60mg/m ² IV + paclitaxel 125–200mg/m ² IV. Repeat cycle every 3 weeks.
Docetaxel + capecitabine ^{1,21}	Day 1: Docetaxel 75mg/m ² IV, <u>plus</u> Days 1–14: Capecitabine 950mg/m ² orally twice daily. Repeat cycle every 3 weeks.
GT (paclitaxel + gemcitabine [Gemzar]) ^{1,22}	Day 1: Paclitaxel 175mg/m ² IV, <u>plus</u> Days 1 and 8: Gemcitabine 1,250mg/m ² IV. Repeat cycle every 3 weeks.
Recurrent or Metastatic Breast Cancer—Single-Agent Therapy	
Doxorubicin ^{1,23}	Day 1: Doxorubicin 60–75mg/m ² IV. Repeat every 3 weeks.
Epirubicin ^{1,24}	Day 1: Epirubicin 60–90mg/m ² IV. Repeat every 3 weeks.
Paclitaxel ^{1,25–28}	Day 1: Paclitaxel 175mg/m ² IV over 3 hrs. Repeat every 3 weeks until progression or limiting toxicity. OR Day 1: Paclitaxel 80mg/m ² IV over 1 hr. Repeat every week until progression or limiting toxicity.
Docetaxel ^{1,29–31}	Day 1: Docetaxel 60–100mg/m ² IV. Repeat every 3 weeks. OR Day 1: Docetaxel 40mg/m ² IV weekly for 6 weeks, followed by a 2-week rest, then repeat.
Gemcitabine ^{1,32}	Day 1, 8 and 15: Gemcitabine 725mg/m ² IV. Repeat every 4 weeks.
Eribulin ^{1,33}	Day 1 and 8: Eribulin 1.4mg/m ² IV. Repeat every 3 weeks.
Vinorelbine ^{1,34}	Day 1, 8, 15 and 22: Vinorelbine 20mg/m ² IV over 1 hr; increase to 25mg/m ² IV every week if the first 4 courses are well tolerated. Repeat every week until progression or limiting toxicity.
Pegylated liposomal encapsulated doxorubicin (PLD; Doxil) ^{1,35}	Day 1: PLD 50mg/m ² IV. Repeat cycle every 4 weeks.
Albumin-bound paclitaxel (Abraxane) ^{1,36,37}	Day 1: Albumin-bound paclitaxel 260mg/m ² IV. Repeat cycle every 3 weeks. OR Day 1, 8 and 15: Abraxane 100mg/m ² or 150mg/m ² IV. Repeat every 4 weeks.
Capecitabine ^{1,38}	Days 1–14: Capecitabine 1,000–1,250mg/m ² orally twice daily. Repeat cycle every 3 weeks.
Recurrent or Metastatic HER2+ Breast Cancer—First-Line Agents	
Pertuzumab (Perjeta) + trastuzumab + docetaxel ^{1,39}	Day 1: Pertuzumab 840mg IV, followed by 420mg IV. Day 1: Trastuzumab 8mg/kg IV, followed by 6mg/kg IV. Day 1: Docetaxel 75–100mg/m ² IV. Repeat cycle every 3 weeks.
TCH (carboplatin + paclitaxel + trastuzumab) ^{1,40}	Cycle 1 Day 1: Trastuzumab 4mg/kg IV, followed by Day 2: Paclitaxel 175mg/m ² IV + carboplatin AUC=6mg/mL/min IV, followed by Days 8 and 15: Trastuzumab 2mg/kg IV. Subsequent cycles Days 1, 8 and 15: Trastuzumab 2mg/kg IV, followed by Day 2: Paclitaxel 175mg/m ² IV + carboplatin AUC=6mg/mL/min. Repeat cycle every 3 weeks. After chemotherapy, administer trastuzumab 2mg/kg IV weekly until disease progression or other discontinuation event occurs.

continued

BREAST CANCER TREATMENT REGIMENS (Part 4 of 6)

REGIMEN	DOSING
Recurrent or Metastatic HER2+ Breast Cancer—First-Line Agents (continued)	
Pertuzumab + trastuzumab + paclitaxel¹	Day 1: Pertuzumab 840mg IV, followed by 420mg IV. Repeat every 3 weeks. Day 1: Trastuzumab 4mg/kg IV, followed by 2mg/kg IV weekly, OR Day 1: Trastuzumab 8mg/kg IV, followed by 6mg/kg IV every 3 weeks. Day 1: Paclitaxel 80mg/kg IV weekly.
TCH (carboplatin + paclitaxel + trastuzumab)^{1,41}	Days 1, 8 and 15: Paclitaxel 80mg/m ² IV + carboplatin AUC=2mg/mL/min IV. Repeat cycle every 4 weeks. Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression.
Paclitaxel + trastuzumab^{1,27,42}	Day 1: Paclitaxel 175mg/m ² IV. Repeat every 3 weeks for 6 cycles, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression. OR Day 1: Paclitaxel 80mg/m ² IV once weekly. Repeat cycle every 3 weeks, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly for at least 2 cycles until disease progression.
Docetaxel + trastuzumab^{1,43,44}	Day 1: Docetaxel 80–100mg/m ² IV. Repeat cycle every 3 weeks for 6 cycles, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression. OR Days 1, 8 and 15: Docetaxel 35mg/m ² IV and trastuzumab 2mg/kg IV (first dose: give trastuzumab 4mg/kg as loading dose). Repeat cycle every 4 weeks until disease progression.
Vinorelbine (Navelbine) + trastuzumab^{1,45}	Day 1: Vinorelbine 2mg/m ² IV once weekly for 8 weeks, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression.
Capecitabine + trastuzumab^{1,46}	Days 1–14: Capecitabine 1,000–1,250mg/m ² orally twice daily. Repeat cycle every 3 weeks, plus Day 1: Trastuzumab 8mg/kg IV loading dose, followed by trastuzumab 6mg/kg IV once every 3 weeks.
Lapatinib (Tykerb) + trastuzumab for trastuzumab-exposed HER-2 positive disease^{1,47}	Day 1: Lapatinib 1,000mg orally once daily, plus Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression.
Lapatinib + capecitabine + trastuzumab^{1,48}	Days 1–14: Lapatinib 1,250mg orally once daily + capecitabine 1,000mg/m ² orally twice daily. Repeat every 3 weeks. Day 1: Trastuzumab 4mg/kg IV loading dose, followed by trastuzumab 2mg/kg IV once weekly until disease progression.
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