The multi-year closure of Pfizer's Zydus Hospira Oncology Private Limited (ZHOPL) facility in India due to severe flooding will disrupt the U.S. chemotherapy supply chain through mid-to-late 2028. Because Pfizer holds dominant market shares in several essential sterile injectables, multiple critical shortages are expected to emerge in under 3 months. To maintain patient safety, oncology practices must immediately shift to active conservation, dose rounding, and evidence-based therapeutic substitution. This document outlines affected agents by shortage risk in Table 1 and by disease site in Table 2. Volunteers from the American Society of Clinical Oncology developed this disease site-specific clinical reference for affected products.

Table 1. Shortage Risk by Treatment

Drug	Pfizer U.S. Market Share	Supply Status (as of Oct 2026)	Associated Cancers Treated	Next Best Therapeutic Alternatives
Pentostatin	100% **Critical (Highest)**	Depleted	Hairy Cell Leukemia (HCL), Cutaneous T-Cell Lymphoma (CTCL) / Mycosis Fungoides, and adult T-cell leukemia/lymphoma.	Cladribine (2-CdA) (preferred first-line purine analog), Interferon-Alpha (for cytopenic patients), or Moxetumomab Pasudotox-tdfk (relapsed/refractory CD22+ HCL).
Epirubicin	100% **Critical (Sole Source)**	3 to 9 Months	Breast cancer (early-stage adjuvant & metastatic), gastric/gastroesophageal junction cancers, ovarian cancer, small cell lung cancer (SCLC), advanced NSCLC, Hodgkin/Non-Hodgkin Lymphoma, and Hepatocellular Carcinoma (via TACE).	Doxorubicin (clinical equivalent for systemic regimens), Idarubicin (preferred for TACE), or Docetaxel/Paclitaxel-based non-anthracycline regimens.
Topotecan	63% **Severe**	< 3 Months	Relapsed small cell lung cancer (SCLC) (second-line), advanced Stage IV cervical cancer, and relapsed/refractory ovarian cancer.	Lurbinectedin (preferred for SCLC), Irinotecan (alternative Topoisomerase I inhibitor), or Paclitaxel/Docetaxel/PLD (for ovarian cancer).
Cytarabine	44% **Severe**	< 3 Months	Acute Myeloid Leukemia (AML) (remission induction/consolidation), Acute Lymphocytic Leukemia (ALL), CML blast crisis, pediatric/adult high-dose NHL salvage, and meningeal leukemia.	Note: Core AML backbone agent. Liposomal Daunorubicin and Cytarabine (Vyxeos) (for t-AML/AML-MRC), Hypomethylating Agents (HMAs) + Venetoclax (low-intensity AML), or alternative purine-analog-based regimens (Fludarabine/Cladribine).
Mitoxantrone	41% **Severe**	< 3 Months (Feb 2027 Expiry)	Acute Non-Lymphocytic Leukemia / AML, Non-Hodgkin Lymphoma (NHL), metastatic breast cancer, and hormone-refractory prostate cancer.	Daunorubicin / Idarubicin (for AML induction), Doxorubicin (for NHL / breast cancer), or Cabazitaxel / Docetaxel (for prostate cancer).

Drug	Pfizer U.S. Market Share	Supply Status (as of Oct 2026)	Associated Cancers Treated	Next Best Therapeutic Alternatives
Doxorubicin	31% Moderate to High	< 3 to 9 Months (50mg Depleted)	Breast, ovarian, and thyroid cancers; Hodgkin & Non-Hodgkin Lymphomas; soft tissue & osteogenic sarcomas; gastric cancers; Wilms' tumor; and neuroblastoma.	Epirubicin (most direct anthracycline substitute), Pegylated Liposomal Doxorubicin (Doxil) (for ovarian/metastatic breast), or Taxane-based (TC) and CMF anthracycline-free regimens (for early-stage breast cancer).
Gemcitabine	31% Moderate	< 3 to 6 Months (200mg Short-Dated)	Pancreatic, advanced non-small cell lung cancer (NSCLC), metastatic breast, and advanced ovarian cancers; biliary tract (cholangiocarcinoma); bladder cancer; and Hodgkin/NHL salvage.	Fluorouracil (5-FU) / Capec 延 bine (for pancreatic & biliary tract), Pemetrexed (for nonsquamous NSCLC), or Docetaxel / Mitomycin C (for intravesical bladder cancer).
Idarubicin	31% Low (Long-Term)	6 to >12 Months	Acute Myeloid Leukemia (AML) (remission induction) and relapsed/refractory Acute Lymphocytic Leukemia (ALL).	Daunorubicin (Dose-Intense 60-90 mg/m²) (clinically equivalent for AML induction) or Doxorubicin (for ALL).

Table 2. Shortage by Disease-Site

Disease Site (Cancers Treated)	Drug	Pfizer U.S. Market Share & Risk Level	Remaining Supply Timeline	Next Best Evidence Based Clinical Alternatives
Hairy Cell Leukemia (HCL) & Cutaneous T-Cell Lymphoma (CTCL)	**Pentostatin**	100% Market Share — **Critical (Highest Risk)**	**Depleted**	**Cladribine (2-CdA)** is the primary first-line alternative, offering equivalent or superior complete response rates. Non-chemotherapeutic **Interferon-Alpha** can be used in severely cytopenic patients. **Moxetumomab Pasudotox-tdfk** is reserved for relapsed/refractory CD22+ disease.
Acute Myeloid Leukemia (AML)	**Cytarabine**	44% Market Share — **Severe Risk**	< 3 Months	**Liposomal Daunorubicin and Cytarabine (Vyxeos)** can be utilized for therapy-related AML (t-AML) or AML-MRC. Low-intensity regimens such as **Hypomethylating Agents (Decitabine/Azacitidine) combined with Venetoclax** bypass cytarabine entirely. For consolidation, consider FLAG-Ida (incorporating Fludarabine/Cladribine) to reduce cytarabine exposure.
Acute Myeloid Leukemia (AML)	**Mitoxantrone**	41% Market Share — **Severe Risk**	< 3 Months	**Idarubicin** or dose-intense **Daunorubicin** are direct, clinically equivalent anthracycline substitutes for induction and consolidation regimens.
Acute Myeloid Leukemia (AML)	**Idarubicin**	31% Market Share — **Low Risk**	6 to > 12 Months	**Daunorubicin (Dose-Intense 60 to 90 mg/m²)** is the standard clinically equivalent alternative for induction.
Breast Cancer (Early-Stage Adjuvant & Metastatic)	**Epirubicin**	100% Market Share — **Critical (Sole Source)**	3 to 9 Months	**Doxorubicin** represents the primary direct anthracycline substitute. Anthracycline-free cytotoxic regimens such as **Docetaxel/Cyclophosphamide (TC)** or **CMF (Cyclophosphamide/Methotrexate/Fluorouracil)** can be selected to spare anthracyclines completely.
Breast Cancer (Early-Stage Adjuvant & Metastatic)	**Doxorubicin**	31% Market Share — **Moderate to High Risk**	< 3 to 9 Months (50 mg Depleted)	**Epirubicin** is the most direct systemic anthracycline substitute. **Pegylated Liposomal Doxorubicin (Doxil)** can be used for metastatic disease. Anthracycline-free regimens such as **TC (Docetaxel/Cyclophosphamide)** or **CMF** are preferred for early-stage adjuvant settings to avoid doxorubicin entirely.
Breast Cancer (Metastatic)	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	**Taxane monotherapies (Paclitaxel or Docetaxel)**, **Capecitabine**, or **Eribulin** can be utilized as alternative cytotoxic backbones in metastatic settings.
Small Cell Lung Cancer (SCLC)	**Topotecan**	63% Market Share — **Severe Risk**	< 3 Months	Tarlatamab is the preferred 2nd-line option. Other subsequent treatment options include paclitaxel, temozolomide, vinorelbine, cytoxan/doxorubicin/vincristine.

Disease Site (Cancers Treated)	Drug	Pfizer U.S. Market Share & Risk Level	Remaining Supply Timeline	Next Best Evidence Based Clinical Alternatives
Non-Small Cell Lung Cancer (NSCLC)	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	**Pemetrexed** combined with a platinum agent (Cisplatin/Carboplatin) is the gold standard for nonsquamous NSCLC. For squamous NSCLC, **Taxane-platinum doublets (Paclitaxel/Docetaxel)** paired with platinum chemotherapy can replace gemcitabine-based regimens. Other monotherapy agents such as docetaxel, navelbine and paclitaxel can also be used as later line substitutes for gemcitabine monotherapy.
Ovarian Cancer	**Topotecan**	63% Market Share — **Severe Risk**	< 3 Months	**Pegylated Liposomal Doxorubicin (PLD / Doxil)**, **Paclitaxel**, **Docetaxel**, or **Gemcitabine** are preferred single-agent choices for platinum-resistant relapsed ovarian cancer.
Ovarian Cancer	**Doxorubicin**	31% Market Share — **Moderate to High Risk**	< 3 to 9 Months (50 mg Depleted)	**Epirubicin** can be used as a direct systemic replacement. **Pegylated Liposomal Doxorubicin (PLD / Doxil)** is highly preferred for recurrent ovarian cancer and does not substitute on a 1:1 milligram basis with conventional doxorubicin.
Ovarian Cancer	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	Alternate platinum-doublet combinations such as **Carboplatin/Paclitaxel** or **Carboplatin/PLD (Doxil)** should be prioritized over Carboplatin/Gemcitabine.
Ovarian Cancer	**Epirubicin**	100% Market Share — **Critical (Sole Source)**	3 to 9 Months	**Doxorubicin** is the standard systemic anthracycline alternative.
Pancreatic Adenocarcinoma	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	**FOLFIRINOX / mFOLFIRINOX (Fluorouracil, Leucovorin, Irinotecan, Oxaliplatin)**may be used with the caveat that this is more aggressive medical therapy than gemcitabine-based regimens.
Biliary Tract Cancers	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	FOLFOX, which is recommended as an option for patients who have elevated bilirubin levels, may be used.
Bladder Cancer	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	For systemic advanced bladder cancer, substitute with **Methotrexate, Vinblastine, Doxorubicin, and Cisplatin (MVAC)**. For intravesical non-muscle-invasive bladder cancer (NMIBC), substitute with **Mitomycin C** or **Valrubicin** if the standard Gemcitabine/Docetaxel regimen is restricted. Gemcitabine use could be restricted to Platinum + gemcitabine + durvalumab regimen for perioperative urothelial cancer for patients that are not suitable for enfortumab + pembrolizumab.

Disease Site (Cancers Treated)	Drug	Pfizer U.S. Market Share & Risk Level	Remaining Supply Timeline	Next Best Evidence Based Clinical Alternatives
Bladder Cancer	**Doxorubicin**	31% Market Share — **Moderate to High Risk**	< 3 to 9 Months (50 mg Depleted)	**Epirubicin** is the standard anthracycline substitute. For advanced disease, gemcitabine/cisplatin (GC) doublets can be chosen over doxorubicin-containing MVAC regimens to conserve doxorubicin.
Cervical Cancer	**Topotecan**	63% Market Share — **Severe Risk**	< 3 Months	Prioritize platinum-doublet regimens such as **Paclitaxel/Cisplatin** or **Paclitaxel/Carboplatin** (with or without Bevacizumab) over Paclitaxel/Topotecan combinations.
Hepatocellular Carcinoma (HCC) (via TACE)	**Epirubicin**	100% Market Share — **Critical (Sole Source)**	3 to 9 Months	Alternative anthracycline doxorubicin may be used. Note higher cardiotoxicity risk with doxorubicin v epirubicin.
Gastric & Gastroesophageal Junction Cancers	**Epirubicin**	100% Market Share — **Critical (Sole Source)**	3 to 9 Months	FLOT (fluorouracil, leucovorin, oxaliplatin and docetaxel) is the recommended first-line chemotherapy standard of care (epirubicin combinations are currently not preferred standard of care). If FLOT is not tolerated, FOLFOX may be an option. If anthracycline-based therapy is preferred, doxorubi**cin** may be used. Note higher cardiotoxicity risk with doxorubicin v epirubicin..
Acute Lymphocytic Leukemia (ALL)	**Cytarabine**	44% Market Share — **Severe Risk**	< 3 Months	Consolidate regimens by utilizing alternative purine analogs like **Fludarabine** or **Cladribine** where clinically appropriate.
Acute Lymphocytic Leukemia (ALL)	**Idarubicin**	31% Market Share — **Low Risk**	6 to > 12 Months	**Doxorubicin** or **Daunorubicin** are the standard anthracycline alternatives for relapsed/refractory ALL regimens.
Lymphomas (Hodgkin & Non-Hodgkin)	**Doxorubicin**	31% Market Share — **Moderate to High Risk**	< 3 to 9 Months (50 mg Depleted)	**Epirubicin** can serve as a direct anthracycline substitute (e.g., in CHOP/ABVD-like protocols), adjusting cumulative dose levels accordingly.
Lymphomas (Hodgkin & Non-Hodgkin)	**Mitoxantrone**	41% Market Share — **Severe Risk**	< 3 Months (Feb 2027 Expiry)	**Doxorubicin** or **Epirubicin** are highly effective alternative anthracyclines in multi-agent lymphoma salvage regimens.
Lymphomas (Hodgkin & Non-Hodgkin)	**Gemcitabine**	31% Market Share — **Moderate Risk**	< 3 to 6 Months (200 mg Short-Dated)	Alternate non-gemcitabine salvage regimens such as **ICE (Ifosfamide, Carboplatin, Etoposide)** or **DHAP (Dexamethasone, Cytarabine, Cisplatin)** should be selected for relapsed/refractory lymphoma.

Disease Site (Cancers Treated)	Drug	Pfizer U.S. Market Share & Risk Level	Remaining Supply Timeline	Next Best Evidence Based Clinical Alternatives
Lymphomas (Hodgkin & Non-Hodgkin)	**Epirubicin**	100% Market Share — **Critical (Sole Source)**	3 to 9 Months	**Doxorubicin** is the preferred systemic anthracycline replacement.
Sarcomas (Soft Tissue & Osteogenic)	**Doxorubicin**	31% Market Share — **Moderate to High Risk**	< 3 to 9 Months (50 mg Depleted)	**Epirubicin** can be used as a direct systemic alternative. Alternatively, utilize anthracycline-free regimens such as **Gemcitabine/Docetaxel** or **Ifosfamide** monotherapy for advanced soft tissue sarcomas.
Prostate Cancer (Castration-Resistant / CRPC)	**Mitoxantrone**	41% Market Share — **Severe Risk**	< 3 Months (Feb 2027 Expiry)	Mitoxantrone has largely been superseded in advanced CRPC. Standard first-line **Docetaxel** or second-line **Cabazitaxel** are the standard-of-care alternatives, providing superior survival benefits and symptomatic pain relief.

Actionable Conservation & Stewardship Strategies

- To mitigate localized impacts, oncology practices are advised to implement active conservation protocols immediately:

Minimize Waste & Implement Dose Rounding:

- Establish protocols to round chemotherapy doses to the nearest vial size (typically within 10% of the calculated dose) to eliminate discarding partial vials.
- Coordinate patient scheduling so multiple patients receiving the same agent are treated on the same day, optimizing vial sharing.

Prioritize and Ration Clinically:

- Form independent multidisciplinary utilization committees to monitor local inventory and establish equitable allocation guidelines.
- Prioritize the use of scarce agents for patients undergoing therapies with curative intent (e.g., adjuvant or neoadjuvant settings).

Identify Alternative Regimens Proactively:

- Review patient charts in advance to plan alternative evidence-based combinations before local stocks run completely dry.

Sources & References

- ASCO Clinical Guidance on Oncology Drug Shortages

- ASHP Current Drug Shortages Database
- NCCN Practice Guidelines & Substitution Protocols
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