MAP Chemotherapy Regimen Summary

The **MAP regimen** is a chemotherapy protocol most commonly used to treat **osteosarcoma**, particularly in pediatric, adolescent, and young adult patients. It combines **three drugs**: **Methotrexate, Doxorubicin (Adriamycin), and Cisplatin**.

💊 Drugs in the MAP Regimen

1. **Methotrexate (MTX)**
    - **Type:** Antimetabolite
    - **Mechanism:** Inhibits DNA synthesis by blocking dihydrofolate reductase.
    - **Dose:** High-dose methotrexate (HD-MTX), often >10 g/m².
    - **Important Note:** Requires **leucovorin (folinic acid) rescue** and aggressive hydration to prevent toxicity.
2. **Doxorubicin (Adriamycin)**
    - **Type:** Anthracycline antibiotic
    - **Mechanism:** Intercalates into DNA and inhibits topoisomerase II, generating free radicals.
    - **Dose-limiting toxicity:** Cardiotoxicity (monitor cumulative dose).
    - **Other side effects:** Myelosuppression, mucositis, alopecia.
3. **Cisplatin**
    - **Type:** Platinum compound
    - **Mechanism:** Forms DNA crosslinks that inhibit DNA replication and transcription.
    - **Major toxicities:** Nephrotoxicity, ototoxicity, nausea/vomiting, neurotoxicity.

⏱ Treatment Schedule

- The MAP regimen is often given **pre-operatively (neoadjuvant)** and **post-operatively (adjuvant)**.
- The **exact schedule** varies slightly by protocol (e.g., EURAMOS-1 trial), but generally includes:
    - **HD-MTX** given weekly or biweekly with leucovorin rescue.
    - **Doxorubicin + Cisplatin** given every 2–3 weeks in combination blocks.

⚠ Common Side Effects & Monitoring

Drug	Major Side Effects	Monitoring/Supportive Care
Methotrexate	Mucositis, nephrotoxicity, hepatotoxicity	Renal/liver function, leucovorin, hydration
Doxorubicin	Cardiotoxicity, myelosuppression	Cardiac ejection fraction, CBC
Cisplatin	Nephrotoxicity, ototoxicity, nausea	Audiology tests, renal function, antiemetics

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☑ Key Points

- Used primarily for **osteosarcoma** in children and young adults.
- Requires **intensive supportive care**, especially with HD-MTX and cisplatin.
- Careful **monitoring for toxicity** is essential to reduce long-term side effects.
- Typically part of a **multimodal treatment approach** including surgery.