MAP chemotherapy is a standard treatment regimen for osteosarcoma and consists of three drugs: **methotrexate**, **doxorubicin** (also called Adriamycin), and **cisplatin**[157].

- **Purpose:** Used primarily for high-grade osteosarcoma (a type of bone cancer), MAP is given to shrink tumors before surgery and reduce recurrence risks after surgery, often with curative intent[14].

- **How it is given:**

    - Administration is typically in **cycles**, with each cycle followed by a rest period to allow for recovery[18].

    - Patients often receive **2 cycles before surgery** and **4 cycles after surgery**, with each cycle lasting about **35 days**[18].

    - Drugs are delivered intravenously through a central line, PICC line, or portacath[1].

- **Efficacy:** MAP remains the **preferred regimen for osteosarcoma** based on current evidence. Meta-analyses have not shown significant survival differences between MAP and more intensive combinations (such as adding ifosfamide and etoposide), but MAP is associated with **lower rates of serious toxicities**[56].

- **Toxicity and side effects:**

    - The most common serious side effects are **neutropenia** (low white blood cells), **thrombocytopenia** (low platelets), **anemia**, and **febrile neutropenia** (fever with low white cells)[256].

    - Compared to more intensive regimens, MAP causes these toxicities less frequently[56].

- **Key drug-specific toxicities:**

    - *Methotrexate*: kidney toxicity, mucositis.

    - *Doxorubicin*: heart toxicity (risk increases with cumulative doses)[3].

    - *Cisplatin*: kidney and hearing damage, nerve toxicity.

- **Standard of care:** There is strong expert consensus from major trials (such as EURAMOS-1) that MAP is the standard treatment for resectable osteosarcoma, though no other chemotherapy regimens have shown clear superiority[35].

Important caveats:

- While MAP is the global standard for osteosarcoma, individual patient factors, tumor response, and local protocols may lead to regimen adjustments.

- The regimen is intensive and requires close monitoring for toxicity.

MAP, therefore, is a cornerstone of osteosarcoma therapy due to its balance of efficacy and manageable toxicity compared to alternatives[56].

1. https://www.cancerresearchuk.org/about-cancer/treatment/drugs/map
2. https://pmc.ncbi.nlm.nih.gov/articles/PMC5052459/
3. https://www.eviq.org.au/medical-oncology/sarcoma/bone-sarcoma/1901-osteosarcoma-map-methotrexate-doxorubicin
4. https://www.chemoexperts.com/map-methotrexate-doxorubicin-cisplatin-sarcoma.html
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