# IP HIGH DOSE METHOTREXATE / LEUCOVORIN (DAY 2)

**Types:** ONCOLOGY TREATMENT  
**Synonyms:** MTX, METHOTREXATE, LEUCO, LEUCOVORIN, HIGH DOSE, PRIMARY, LYMPHOMA

## Cycle 1

### Day 1

**Provider Communication**

<table>
<thead>
<tr>
<th>Provider Communication</th>
<th>Interval</th>
<th>Occurrences</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONC PROVIDER COMMUNICATION 5</td>
<td>Once</td>
<td>--</td>
<td>Use baseline weight to calculate dose. Adjust dose for weight gains/losses of greater than or equal to 10%.</td>
</tr>
</tbody>
</table>

**Labs**

- **☑ COMPREHENSIVE METABOLIC PANEL**
  - Interval: Once
  - Occurrences: --

- **☑ CBC WITH PLATELET AND DIFFERENTIAL**
  - Interval: Once
  - Occurrences: --

- **☐ BASIC METABOLIC PANEL**
  - Interval: Once
  - Occurrences: --

- **☑ MAGNESIUM LEVEL**
  - Interval: Once
  - Occurrences: --

- **☐ LDH**
  - Interval: Once
  - Occurrences: --

- **☐ URIC ACID LEVEL**
  - Interval: Once
  - Occurrences: --

- **☐ ECHOCARDIOGRAM COMPLETE W CONTRAST AND 3D IF NEEDED**
  - Interval: 1 time imaging
  - Occurrences: --

- **☑ METHOTREXATE LEVEL**
  - Interval: Timed
  - Occurrences: --
  - Comments: Timed draw frequency based on MTX dose. Verify with MD for draw frequency.

**Labs**

- **PH, URINALYSIS**
  - Interval: Conditional Frequency
  - Occurrences: --
  - Comments: Draw prior to starting Methotrexate and PRN until pH GREATER than 7. Then draw urine pH every 8 hours until Methotrexate is LESS than 0.05.

**Nursing Orders**

- **TREATMENT CONDITIONS 7**
  - Interval: Once
  - Occurrences: --
  - Comments: HOLD and notify provider if ANC LESS than 1000; Platelets LESS than 100,000.

**Nursing Orders**

- **ONC NURSING COMMUNICATION 35**
  - Interval: Once
  - Occurrences: --
Comments:
1) NO carbonated beverages or fruit juices
2) Obtain weight and height on date of admission. Obtain weight every 8 hours
3) Strict I&O’s every 8 hours
4) Check urine output every 4 hours
5) Check urine pH every shift with Nitrazine paper

Line Flush

**sodium chloride 0.9 % flush 20 mL**
Dose: 20 mL  
Route: intravenous  
PRN

Nursing Orders

**sodium chloride 0.9 % infusion 250 mL**
Dose: 250 mL  
Route: intravenous  
once @ 30 mL/hr for 1 dose

Instructions:
To keep vein open.

Pre-Hydration

**dextrose 5% 1,000 mL with sodium acetate 100 mEq infusion**
Dose: 125 mL/hr  
Route: intravenous  
continuous

Start: S

Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Dose</th>
<th>Selected</th>
<th>Adds Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEXTROSE 5 % IN WATER (D5W)</td>
<td>Base</td>
<td>1,000 mL</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>INTRAVENOUS SOLUTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**dextrose 5% 1,000 mL with sodium bicarbonate 100 mEq infusion**
Dose: 125 mL/hr  
Route: intravenous  
continuous

Start: S

Ingredients:

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<tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### Pre-Medications

<table>
<thead>
<tr>
<th>Name</th>
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<th>Adds Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ondansetron (ZOFRAN) 16 mg, dexamethasone</strong> (DECADRON) 12 mg in sodium chloride 0.9% 50 mL IVPB</td>
<td>Medications</td>
<td>16 mg</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>aprepitant (CINVANTI) 130 mg in dextrose (NON-PVC) 5% 130 mL IVPB</strong></td>
<td>Medications</td>
<td>130 mg</td>
<td>Main Ingredient</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Ingredients:

- **ONDANSETRON HCL (PF) 4 MG/2 ML INJECTION SOLUTION**
- **DEXAMETHASONE 4 MG/ML INJECTION SOLUTION**
- **SODIUM CHLORIDE 0.9% INTRAVENOUS SOLUTION**
- **DEXTROSE 5% IN WATER (D5W) INTRAVENOUS SOLUTION**

---

- **ondansetron (ZOFRAN) tablet 16 mg**
  - Dose: 16 mg
  - Route: oral
  - Start: S
  - End: S 11:30 AM
  - once for 1 dose

- **dexamethasone (DECADRON) tablet 12 mg**
  - Dose: 12 mg
  - Route: oral
  - Start: S
  - End: S 11:30 AM
  - once for 1 dose

- **aprepitant (CINVANTI) 130 mg in dextrose (NON-PVC) 5% 130 mL IVPB**
  - Dose: 130 mg
  - Route: intravenous
  - Start: S
  - End: S
  - once over 30 Minutes for 1 dose
### INTRAVENOUS EMULSION

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>DEXTROSE 5 % IN WATER (D5W) IV SOLP (EXCEL; NON-PVC)</td>
<td>Base</td>
<td>130 mL</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SODIUM CHLORIDE 0.9 % IV SOLP (EXCEL;NON-PVC)</td>
<td>Base</td>
<td>130 mL</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Medications

- **furosemide (LASIX) injection 5 mg**
  - Dose: 5 mg
  - Route: intravenous
  - Instructions: Give if daily weight is GREATER THAN 0.5 kg above admission weight
  - Start: S
  - End: S 8:00 PM

- **furosemide (LASIX) injection 10 mg**
  - Dose: 10 mg
  - Route: intravenous
  - Instructions: Give if daily weight is GREATER THAN 1.0 kg above admission weight
  - Start: S
  - End: S 8:00 PM

- **furosemide (LASIX) injection 15 mg**
  - Dose: 15 mg
  - Route: intravenous
  - Instructions: Give if daily weight is GREATER THAN 1.5 kg above admission weight
  - Start: S
  - End: S 8:00 PM

### Nursing Orders

- **ONC NURSING COMMUNICATION 33**
  - Interval: Until discontinued
  - Occurrences: --
  - Comments: Call MD if urine pH less than 7.0 with each void

### Meditations

- **sodium bicarbonate tablet 3,250 mg**
  - Dose: 3,250 mg
  - Route: oral
  - Instructions: Give until Methotrexate level is LESS THAN or EQUAL to 0.09 mmol
  - Start: S
  - End: --

### Chemotherapy

- **methotrexate PF in sodium chloride 0.9 % 500 mL chemo IVPB**
  - Dose: --
  - Route: intravenous
  - Instructions: Give over 4 Hours for 1 dose
  - Offset: 4 Hours

### Ingredients

<table>
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<tr>
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<th>Selected</th>
<th>Adds Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHOTREXATE SODIUM (PF) 25 MG/ML INJECTION SOLUTION</td>
<td>Medications</td>
<td>Main</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>DEXTROSE 5 % IN WATER (D5W) INTRAVENOUS</td>
<td>QS Base</td>
<td>500 mL</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**SOLUTION**

**SODIUM CHLORIDE 0.9 % INTRAVENOUS SOLUTION**

| QS Base | 500 mL | Yes | Yes |

Hematology & Oncology Hypersensitivity Reaction Standing Order

**ONC NURSING COMMUNICATION 82**

Interval: Until discontinued

Occurrences: --

Comments:

Grade 1 - MILD Symptoms (cutaneous and subcutaneous symptoms only – itching, flushing, periorbital edema, rash, or runny nose)

1. Stop the infusion.
2. Place the patient on continuous monitoring.
3. Obtain vital signs.
4. Administer Normal Saline at 50 mL per hour using a new bag and new intravenous tubing.
5. If greater than or equal to 30 minutes since the last dose of Diphenhydramine, administer Diphenhydramine 25 mg intravenous once.
6. If less than 30 minutes since the last dose of Diphenhydramine, administer Fexofenadine 180 mg orally and Famotidine 20 mg intravenous once.
7. Notify the treating physician.
8. If no improvement after 15 minutes, advance level of care to Grade 2 (Moderate) or Grade 3 (Severe).
9. Assess vital signs every 15 minutes until resolution of symptoms or otherwise ordered by covering physician.

**ONC NURSING COMMUNICATION 83**

Interval: Until discontinued

Occurrences: --

Comments:

Grade 2 – MODERATE Symptoms (cardiovascular, respiratory, or gastrointestinal symptoms – shortness of breath, wheezing, nausea, vomiting, dizziness, diaphoresis, throat or chest tightness, abdominal or back pain)

1. Stop the infusion.
2. Notify the CERT team and treating physician immediately.
3. Place the patient on continuous monitoring.
4. Obtain vital signs.
5. Administer Oxygen at 2 L per minute via nasal cannula. Titrate to maintain O2 saturation of greater than or equal to 92%.
6. Administer Normal Saline at 150 mL per hour using a new bag and new intravenous tubing.
7. Administer Hydrocortisone 100 mg intravenous (if patient has allergy to Hydrocortisone, please administer Dexamethasone 4 mg intravenous), Fexofenadine 180 mg orally and Famotidine 20 mg intravenous once.
8. If no improvement after 15 minutes, advance level of care to Grade 3 (Severe).
9. Assess vital signs every 15 minutes until resolution of symptoms or otherwise ordered by covering physician.

**ONC NURSING COMMUNICATION 4**

Interval: Until discontinued

Occurrences: --

Comments:

Grade 3 – SEVERE Symptoms (hypoxia, hypotension, or neurologic compromise – cyanosis or O2 saturation less than 92%, hypotension with systolic blood pressure less than 90 mmHg, confusion, collapse, loss of consciousness, or incontinence)

1. Stop the infusion.
2. Notify the CERT team and treating physician immediately.
3. Place the patient on continuous monitoring.
4. Obtain vital signs.
5. If heart rate is less than 50 or greater than 120, or blood pressure is less than 90/50 mmHg, place patient in reclined or flattened position.
6. Administer Oxygen at 2 L per minute via nasal cannula. Titrate to maintain O2 saturation of greater than or equal to 92%.
7. Administer Normal Saline at 1000 mL intravenous bolus using a new bag and new intravenous tubing.
8. Administer Hydrocortisone 100 mg intravenous (if patient has allergy to Hydrocortisone, please administer Dexamethasone 4 mg intravenous) and Famotidine 20 mg intravenous once.
9. Administer Epinephrine (1:1000) 0.3 mg subcutaneous.
10. Assess vital signs every 15 minutes until resolution of symptoms or otherwise ordered by covering physician.

diphenhydramine (BENADRYL) injection 25 mg
- Dose: 25 mg
- Route: intravenous
- PRN

fexofenadine (ALLEGRA) tablet 180 mg
- Dose: 180 mg
- Route: oral
- PRN

famotidine (PEPCID) 20 mg/2 mL injection 20 mg
- Dose: 20 mg
- Route: intravenous
- PRN

hydrocortisone sodium succinate (Solu-CORTEF) injection 100 mg
- Dose: 100 mg
- Route: intravenous
- PRN

dexamethasone (DECADRON) injection 4 mg
- Dose: 4 mg
- Route: intravenous
- PRN

epinephrine (ADRENALIN) 1 mg/10 mL ADULT injection syringe 0.3 mg
- Dose: 0.3 mg
- Route: subcutaneous
- PRN

Discharge Nursing Orders

- Sodium chloride 0.9 % flush 20 mL
  - Dose: 20 mL
  - Route: intravenous
  - PRN

- Heparin, porcine (PF) injection 500 Units
  - Dose: 500 Units
  - Route: intra-catheter
  - once PRN

Instructions:
- Concentration: 100 units/mL. Heparin flush for Implanted Vascular Access Device maintenance.

Day 2

Labs

- BASIC METABOLIC PANEL
  - Interval: Once
  - Occurrences: --

Labs

- METHOTREXATE LEVEL
  - Interval: Once
  - Occurrences: --
PH, URINALYSIS
Interval: Conditional
Frequency
Comments: Draw prior to starting Methotrexate and PRN until pH GREATER than 7. Then draw urine pH every day until MTX is LESS than 0.05

Nursing Orders

ONC NURSING COMMUNICATION 35
Interval: Once
Occurrences: --
Comments: 1) NO carbonated beverages or fruit juices
2) Obtain weight and height on date of admission. Obtain weight every 8 hours
3) Strict I&O's every 8 hours
4) Check urine output every 4 hours
5) Check urine pH every shift with Nitrazine paper

Nursing Orders

sodium chloride 0.9 % infusion 250 mL
Dose: 250 mL Route: intravenous once @ 30 mL/hr for 1 dose
Start: S
Instructions: To keep vein open.

Medications

☐ furosemide (LASIX) injection 5 mg
Dose: 5 mg Route: intravenous once for 1 dose
Start: S End: S 8:00 PM
Instructions: Give if daily weight is GREATER THAN 0.5 kg above admission weight

☐ furosemide (LASIX) injection 10 mg
Dose: 10 mg Route: intravenous once for 1 dose
Start: S End: S 8:00 PM
Instructions: Give if daily weight is GREATER THAN 1.0 kg above admission weight

☐ furosemide (LASIX) injection 15 mg
Dose: 15 mg Route: intravenous once for 1 dose
Start: S End: S 8:00 PM
Instructions: Give if daily weight is GREATER THAN 1.5 kg above admission weight

Nursing Orders

☑ ONC NURSING COMMUNICATION 33
Interval: Until discontinued
Occurrences: --
Comments: Call MD if urine pH less than 7.0 with each void

Medications

☐ sodium bicarbonate tablet 3,250 mg
Dose: 3,250 mg Route: oral every 4 hours while awake
Start: S
Instructions: Give until Methotrexate level is LESS THAN or EQUAL to 0.09 mmol
Chemotherapy

leucovorin 25 mg in sodium chloride 0.9 % 100 mL chemo IVPB
Dose: 25 mg  Route: intravenous  continuous over 2 Hours
Offset: 0 Hours

Instructions:
- Begin initial infusion EXACTLY 24 hours after START of Methotrexate infusion
- Continue until MTX level is LESS THAN or EQUAL to 0.05 umol/L

Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Dose</th>
<th>Selected</th>
<th>Adds Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEUCOVORIN</td>
<td>Medications</td>
<td>25 mg</td>
<td>Main</td>
<td>Yes</td>
</tr>
<tr>
<td>CALCIUM 350 MG SOLUTION FOR INJECTION</td>
<td></td>
<td></td>
<td>Ingredient</td>
<td></td>
</tr>
<tr>
<td>DEXTROSE 5 % IN WATER (D5W) INTRAVENOUS SOLUTION</td>
<td>QS Base</td>
<td>100 mL</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SODIUM CHLORIDE 0.9 % INTRAVENOUS SOLUTION</td>
<td>QS Base</td>
<td>98.75 mL</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

ONC NURSING COMMUNICATION 34
Interval: Until discontinued
Occurrences: --
Comments: Check MTX levels DAILY beginning EXACTLY 24 hours AFTER completion of MTX infusion until MTX level is LESS THAN 0.05 umol/L