

IP R-HIGH DOSE METHOTREXATE / LEUCOVORIN (DAY 2)

Types: ONCOLOGY TREATMENT

Synonyms: MTX, METHOTREXATE, LEUCO, LEUCOVORIN, HIGH DOSE, PRIMARY, LYMPHOMA, CNS, RITUX, RITUXAN, RITUXIMAB

Cycle 1	Repeat 1 time	Cycle length: 14 days
Day 1	Perform every 1 day x1	
Provider Communication		
ONC PROVIDER COMMUNICATION 5		
Interval: Once Occurrences: --		
Comments: Use baseline weight to calculate dose. Adjust dose for weight gains/losses of greater than or equal to 10%.		
Labs		
<input checked="" type="checkbox"/> COMPREHENSIVE METABOLIC PANEL		
Interval: Once Occurrences: --		
<input checked="" type="checkbox"/> CBC WITH PLATELET AND DIFFERENTIAL		
Interval: Once Occurrences: --		
<input type="checkbox"/> BASIC METABOLIC PANEL		
Interval: Once Occurrences: --		
<input checked="" type="checkbox"/> MAGNESIUM LEVEL		
Interval: Once Occurrences: --		
<input type="checkbox"/> LDH		
Interval: Once Occurrences: --		
<input type="checkbox"/> URIC ACID LEVEL		
Interval: Once Occurrences: --		
<input type="checkbox"/> ECHOCARDIOGRAM COMPLETE W CONTRAST AND 3D IF NEEDED		
Interval: 1 time imaging Occurrences: --		
<input checked="" type="checkbox"/> METHOTREXATE LEVEL		
Interval: Timed Occurrences: --		
Comments: Timed draw frequency based on MTX dose. Verify with MD for draw frequency.		
Labs		
PH, URINALYSIS		
Interval: Conditional Occurrences: --		
Frequency		
Comments: Draw prior to starting methotrexate and PRN until pH GREATER than 7. Then draw urine pH every 8 hours until MTX is LESS than 0.05		
Provider Communication		
ONC PROVIDER COMMUNICATION 58		
Interval: Once Occurrences: --		
Comments: Prior to beginning Rituxan infusion, please check if a Hepatitis B and C serology has been performed within the past 6 months. Hepatitis B and C serologies results: Push F2:11554001 drawn on ***.		
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

Start: S

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.

Hydration**sodium chloride 0.9 % infusion**

Dose: 100 mL/hr

Route: intravenous

continuous

Start: S

Pre-Hydration☐**dextrose 5% 1,000 mL with sodium acetate 100****mEq infusion**

Dose: 125 mL/hr

Route: intravenous

continuous

Start: S

Ingredients:**Name****Type****Dose****Selected****Adds Vol.**

DEXTROSE 5 % IN

Base

1,000 mL

Yes

Yes

WATER (D5W)

INTRAVENOUS

SOLUTION

☒ **dextrose 5% 1,000 mL with sodium bicarbonate
100 mEq infusion**

Dose: 125 mL/hr

Route: intravenous

continuous

Start: S

Ingredients:

Name

Type

Dose

Selected

Adds Vol.

DEXTROSE 5 % IN
WATER (D5W)
INTRAVENOUS
SOLUTION

Base

1,000 mL

Yes

Yes

Pre-Medications

ondansetron (ZOFTRAN) 16 mg, dexamethasone

☒ **(DECADRON) 12 mg in sodium chloride 0.9%
50 mL IVPB**

Dose: --

Route: intravenous

once over 15 Minutes for 1 dose

Start: S

End: S 11:30 AM

Ingredients:

Name

Type

Dose

Selected

Adds Vol.

ONDANSETRON
HCL (PF) 4 MG/2
ML INJECTION
SOLUTION

Medications

16 mg

Yes

No

DEXAMETHASONE
4 MG/ML
INJECTION
SOLUTION

Medications

12 mg

Yes

No

SODIUM
CHLORIDE 0.9 %
INTRAVENOUS
SOLUTION

Base

50 mL

Always

Yes

DEXTROSE 5 % IN
WATER (D5W)
INTRAVENOUS
SOLUTION

Base

No

Yes

☐ **ondansetron (ZOFTRAN) tablet 16 mg**

Dose: 16 mg Route: oral once for 1 dose
Start: S End: S 11:30 AM

☐ **dexamethasone (DECADRON) tablet 12 mg**

Dose: 12 mg Route: oral once for 1 dose
Start: S

☐ **aprepitant (CINVANTI) 130 mg in dextrose (NON-PVC) 5% 130 mL IVPB**

Dose: 130 mg Route: intravenous once over 30 Minutes for 1 dose
Start: S End: S

Ingredients:	Name	Type	Dose	Selected	Adds Vol.
	APREPITANT 7.2 MG/ML INTRAVENOUS EMULSION	Medications	130 mg	Main Ingredient	Yes
	DEXTROSE 5 % IN WATER (D5W) IV SOLP (EXCEL; NON-PVC)	Base	130 mL	Yes	Yes
	SODIUM CHLORIDE 0.9 % IV SOLP (EXCEL;NON-PVC)	Base	130 mL	No	Yes

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

methotrexate PF in sodium chloride 0.9 % 500 mL chemo IVPB

Dose: --

Route: intravenous

once over 4 Hours for 1 dose

Offset: 4 Hours

Ingredients:

Name

Type

Dose

Selected

Adds Vol.

METHOTREXATE
SODIUM (PF) 25
MG/ML INJECTION
SOLUTION
DEXTROSE 5 % IN
WATER (D5W)
INTRAVENOUS
SOLUTION
SODIUM
CHLORIDE 0.9 %
INTRAVENOUS
SOLUTION

Medications

QS Base

500 mL

No

Yes

QS Base

500 mL

Yes

Yes

Rituximab Pre-Medications

acetaminophen (TYLENOL) tablet 650 mg

Dose: 650 mg

Route: oral

once for 1 dose

Start: S

Instructions:

Give 30 minutes before rituximab infusion.

diphenhydrAMINE (BENADRYL) injection 25 mg

Dose: 25 mg

Route: intravenous

once for 1 dose

Start: S

Instructions:

Give 30 minutes before rituximab infusion.

sodium chloride 0.9 % infusion 500 mL

Dose: 500 mL

Route: intravenous

continuous

Start: S

Pharmacy Consult

PHARMACY CONSULT TO SCREEN FOR RAPID RITUXIMAB INFUSION

Interval: --

Occurrences: --

Rituximab Instructions

VITAL SIGNS - T/P/R/BP PER UNIT PROTOCOL

Interval: Once

Occurrences: --

Comments:

1) During Rituximab infusion:

-Vitals every 15 minutes during 1st hour of infusion, THEN

-Every 30 minutes for 1 hour, THEN

-Every hour until end of infusion

-Call MD if SBP less than 90, pulse less than 60 or greater than 120, temperature greater than 38.5 degrees C

ONC NURSING COMMUNICATION 26

Interval: Once

Occurrences: --

Comments:

2) Infuse antibody via pump

3) If any of the following occurs: FEVER (T greater than 38.5 degrees C), RIGORS, HYPOTENSION (30mm Hg decrease from baseline), and / or MUCOSAL CONGESTION / EDEMA, HOLD infusion until improvement of symptoms (When symptoms improve, resume infusion at HALF the previous rate)

Chemotherapy

● RiTUXimab (PF) (RITUXAN) 375 mg/m2 in sodium chloride 0.9% INITIAL INFUSION RATE

IVPB

Dose: 375 mg/m2

Route: intravenous

once for 1 dose

Offset: 4.5 Hours

Instructions:

Initiate infusion at rate of 50 mg/hour. In the absence of infusion toxicity (SBP within 20 mmHG of baseline, PULSE between 60 and 120 and TEMP less than 38 degrees C, and no symptoms), then increase infusion rate by 50 mg/hour every 30 minutes, to a maximum rate of 400 mg/hour.

Ingredients:**Name****Type****Dose****Selected****Adds Vol.**

RITUXIMAB 10
MG/ML
CONCENTRATE, IN
TRAVENOUS
SODIUM
CHLORIDE 0.9 %
INTRAVENOUS
SOLUTION
DEXTROSE 5 % IN
WATER (D5W)
INTRAVENOUS
SOLUTION

Medications

375
mg/m2Main
Ingredient

Yes

Base

Yes

Yes

Base

No

Yes

☐ **RiTUXimab (PF) (RITUXAN) in sodium chloride
0.9% NON-INITIAL INFUSION IVPB**

Dose: --

Route: intravenous

once for 1 dose

Offset: 4.5 Hours

Instructions:

Initiate infusion rate at a 100 mg/hour. In the absence of infusion toxicity (SBP within 20 mmHG of baseline, PULSE between 60 and 120 and TEMP less than 38 degrees C, and no symptoms), increase rate by 100 mg/hour increments at 30 minute intervals, to a maximum rate of 400 mg/hour.

Ingredients:**Name****Type****Dose****Selected****Adds Vol.**

RITUXIMAB 10
MG/ML
CONCENTRATE, IN
TRAVENOUS
SODIUM
CHLORIDE 0.9 %
INTRAVENOUS
SOLUTION
DEXTROSE 5 % IN
WATER (D5W)
INTRAVENOUS
SOLUTION

Medications

Main
Ingredient

Yes

Base

Yes

Yes

Base

No

Yes

☐ **RiTUXimab (PF) (RITUXAN) 375 mg/m2 in
sodium chloride 0.9% 250 mL RAPID INFUSION
RATE IVPB**

Dose: 375 mg/m2

Route: intravenous

once over 90 Minutes for 1 dose

Offset: 4.5 Hours

Instructions:

RAPID INFUSION RATE: Initiate infusion at a rate of 100mL/hour. After 30 minutes, in the absence of infusion reactions (SBP within 20 mmHg of baseline, PULSE between 60 and 120 and Temp less than 38 degrees C, and no symptoms), increase the infusion rate to

200mL/hour. This infusion should take 90 minutes to administer.

Reaction grades:

Grade 3 Reaction: Prolonged (e.g., not rapidly responsive to symptomatic medication and/or brief interruption of infusion); recurrence of symptoms following initial improvement; hospitalization indicated for clinical sequelae (e.g., renal impairment, pulmonary infiltrates).

Grade 4 Reaction: Life-threatening consequences; urgent intervention indicated (e.g., vasopressors or ventilator support).

Ingredients:	Name	Type	Dose	Selected	Adds Vol.
	RITUXIMAB 10 MG/ML CONCENTRATE, INTRAVENOUS SOLUTION	Medications	375 mg/m2	Main Ingredient	Yes
	SODIUM CHLORIDE 0.9 % INTRAVENOUS SOLUTION	QS Base	250 mL	Yes	Yes
	DEXTROSE 5 % IN WATER (D5W) INTRAVENOUS SOLUTION	QS Base		No	Yes

Rituximab Infusion Reaction Orders

meperidine (DEMEROL) injection 25 mg

Dose: 25 mg Route: intravenous once PRN
Start: S

diphenhydramine (BENADRYL) injection 25 mg

Dose: 25 mg Route: intravenous once PRN
Start: S

hydrocortisone sodium succinate (Solu-CORTEF) injection 100 mg

Dose: 100 mg Route: intravenous once PRN

famotidine (PEPCID) injection 20 mg

Dose: 20 mg Route: intravenous once PRN
Start: S

Rituximab Additional Orders

epINEPHrine (ADRENALIN) 1 mg/1 mL injection 0.3 mg

Dose: 0.3 mg Route: intramuscular once PRN
Start: S

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
ma**

Dose: 25 mg Route: intravenous PRN
Start: S

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

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

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
Start: S

epiNEPHrine (ADRENALIN) 1 mg/10 mL ADULT injection syringe 0.3 mg
Dose: 0.3 mg Route: subcutaneous PRN
Start: S

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

Day 2

Perform every 1 day x1

Labs

☒ **METHOTREXATE LEVEL**
Interval: Once Occurrences: --

☒ **PH, URINALYSIS**
Interval: Conditional Occurrences: --
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 Occurrences: --
discontinued
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:	Name	Type	Dose	Selected	Adds Vol.
	LEUCOVORIN	Medications	25 mg	Main	Yes
	CALCIUM 350 MG			Ingredient	
	SOLUTION FOR				
	INJECTION				
	DEXTROSE 5 % IN	QS Base	100 mL	No	Yes
	WATER (D5W)				
	INTRAVENOUS				
	SOLUTION				
	SODIUM	QS Base	98.75 mL	Yes	Yes

CHLORIDE 0.9 %
INTRAVENOUS
SOLUTION

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