# High Dose Cytarabine: AML, Adult Cancer Inpatient Order Set

## Clinical Decision Support

**Guides:**

- Each order set should include access to the LYHE-008 ACUTE MYELOID LEUKEMIA Guidelines Resource Unit (GURU) Clinical Practice Guideline

**References:**

- Build required for *Neurological Assessment for Cerebellar Dysfunction* form; See internal Alberta Health Services webpage for assessment form

**Alerts:**

- If patient has an FMS-like tyrosine kinase 3 (Flt 3) positive mutation previously resulted in their chart, alert clinician, at time of ordering treatment protocol, to ensure midostaurin is added to treatment protocol

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

**Order Set Keywords:** HiDAC, HDAC, AML, Acute Myeloid Leukemia, consolidation, cytarabine, ARA-C, midostaurin, FMS-like tyrosine kinase 3 (Flt 3) positive mutation

**Order Set Requirements:**

Most Recent:

- Height _____ cm
- Weight
  - actual _____ kg
- BSA _____ $m^2$
- Estimated Creatinine Clearance (CrCl) _____
- Bilirubin and creatinine lab results
- Link patient age with recommended dose of chemotherapy:
  - For adults age less than or equal to 60 years: cytarabine (3000 mg/$m^2$/dose)
  - For adults age greater than 60 years: cytarabine (1000 mg/$m^2$/dose)
- FMS-like tyrosine kinase 3 (Flt 3) status

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

**Indication**

Consolidation therapy for Acute Myeloid Leukemia (AML)

**Treatment Phase:**

Consolidation

**Treatment Goal:**

_____

**Treatment Cycle and Dates**

Cycle _____ *(current cycle number)* of __4___ *(total number of cycles to be administered)*

Cycle length __35___ *(days/~~weeks~~)*

Day 1 (T) _____ *(dd-Mon-yyyy)*

***Protocol Description:***
***Cycle length:*** *35 days (dependent on count recovery)*
***Number of Cycles:*** *4 (or less)*
***Protocol Day 1 to 6***
*cytarabine 3000 mg/m$^2$/DOSE (for 60 years old or less),* ***OR***
*cytarabine 1000 mg/m$^2$/DOSE (for more than 60 years old)*
***Morning Start: DAY 1, 3 & 5: 0730 hours & 1930 hours***
***Afternoon Start: Day 1 to 6: 1630 hours & 0830 hours***
***Evening Start: DAY 1 to 6: 2000 hours & 0800 hours***
***Protocol Day 8 to 21***
*midostaurin 50 mg BID (for FMS-like tyrosine kinase 3 (Flt 3) positive status only)*

## Laboratory Investigations

***~Start of Order Panel~ Hematology Laboratory Investigations – ONCE – Inpatient***

## Hematology Laboratory Investigations – ONCE – Inpatient

**Keywords:** Admission, labs, one time

**ONCE - Day of admission or start of therapy**

☐ Unit to Collect ☐ Lab to Collect

**Hematology**

☑ Complete Blood Count (CBC) with Differential
☑ PT (INR)
☑ PTT
☑ Fibrinogen
☑ Retic Count

**Transfusion Medicine**

☑ Type and Screen

**Chemistry**

☑ Electrolytes (Na, K, Cl, CO2)
☑ Creatinine
☑ Glucose (Random)
☑ Calcium (Ca)
☑ Magnesium (Mg)
☑ Phosphate
☑ Albumin
☐ AST
☑ ALT
☑ ALP
☑ GGT
☑ Bilirubin Total
☐ Bilirubin Direct
☑ LD
☐ Lipase
☑ Protein Total
☑ Urea
☑ Urate (Uric Acid)

**Other Labs**

*Order for ALL women of childbearing age*

☐ HCG Beta - serum

***~End~***

~*Start of Order Panel*~ *Hematology Laboratory Investigations – REPEATING - DAILY/TWICE WEEKLY - Inpatient*

## **Hematology Laboratory Investigations – REPEATING: DAILY/TWICE WEEKLY – Inpatient

**Keywords:** labs, repeat, Day 2

**REPEATING - Starting on Day 2**

☐ Unit to Collect ☐ Lab to Collect

**Draw the following labs daily for 5 weeks**

☑ Complete Blood Count (CBC) with Differential ☑ Electrolytes (Na, K, Cl, $CO_2$)

☑ Creatinine

**Draw the following labs every Monday and Thursday for 5 weeks**

**Hematology**

☑ PT (INR)

☑ PTT

☑ Fibrinogen

☐ Retic Count

**Chemistry**

| | | |
|---|---|---|
| ☑ Calcium (Ca) | ☑ ALT | ☑ LD |
| ☑ Glucose (Random) | ☑ ALP | ☐ Lipase |
| ☑ Magnesium (Mg) | ☐ GGT | ☑ Protein Total |
| ☑ Phosphate | ☑ Bilirubin Total | ☐ Urea |
| ☑ Albumin | ☐ Bilirubin Conjugated | ☑ Urate (Uric Acid) |
| ☐ AST | | |

~*End*~

## Diagnostic Investigations

☐ Chest X-ray, 2 Projections (GR Chest, 2 Projections): Once prior to starting chemotherapy

☐ Electrocardiogram – 12 lead: Once prior to starting chemotherapy

*Order the following only if patient to receive midostaurin:*

☐ Electrocardiogram – 12 Lead: Monday, Wednesday, Friday starting Day 8 and continuing for duration of midostaurin

## Provider Communication

☐ Provider Communication: If patient is positive for Flt 3 mutation, add midostaurin to treatment protocol

☐ Provider Communication: Review medications to ensure strong CYP34 inhibitors are not ordered as may be contraindicated with midostaurin

☐ Provider Communication: Refer to British Columbia Cancer Agency (BCCA) Cancer Drug Manual for cytarabine dose adjustment guidelines

☐ Provider Communication: Consider a dose reduction or holding of midostaurin if ECG results report a QTc greater than 480 or if the QTc increases more than 25% over prior ECG, even if QTc is within normal limits

## Nurse Communication

- ☐ Nurse Communication: Ensure HLA typing has been drawn prior to initiating treatment
- ☐ Nurse Communication: Ensure central venous access device (CVAD) is insitu and patent prior to initiating treatment protocol
- ☐ Nurse Communication: Perform Neurological Assessment for Cerebellar Dysfunction prior to initiation of each cytarabine dose
- ☐ Nurse Communication: **Pre-Day 1 lab results**: May be drawn within 5 days prior to Day 1 chemotherapy; Hold and notify provider prior to starting Day 1 chemotherapy if labs results within 5 days prior to Day 1 are:
  - absolute neutrophil count (ANC) less than 1.5 x $10^9$/L, or
  - platelets less than 100 x $10^9$/L, or
  - creatinine clearance 60 mL/min or lower
- ☐ Nurse Communication: **Day 1 to 6 lab results**: Notify provider if creatinine clearance less than 60 mL/min once result is available; However, do not need to wait for lab results prior to starting chemotherapy
- ☐ Nurse Communication: Ensure clinician has reviewed and approved ECG results prior to administering midostaurin

## Supportive Medications

*Only order for menstruating women*

- ☐ norethindrone - ethinyl estradiol (Ortho 1/35) 1 tab PO daily starting Day 1

## Prophylactic Medications

- ☐ fluCONazole 400 mg PO daily starting Day 1 and continuing for 35 days or reassess when absolute neutrophil count (ANC) greater or equal to 0.5x$10^9$/L

## Conjunctivitis Prophylaxis

*Choose ONE of the following:*

**Preferred Option:**

- ☐ predniSOLone 1% eye drops 2 drops to each eye TID while awake starting on Day 1 and continuing until 48 hours after last dose of cytarabine for a total of 12 doses; First dose to be given pre cytarabine on Day 1

**OR choose BOTH:**

- ☐ dexamethasone 0.1% eye drops 2 drops to each eye every 4 hours while awake starting on Day 1 and continuing until 48 hours after last dose of cytarabine for a total of 24 doses; First dose to be given pre cytarabine on Day 1

**AND**

- ☐ dexamethasone 0.1% eye ointment 1.5 cm strip to each eye at bedtime starting on Day 1 and continuing until 48 hours after last dose of cytarabine for a total of 4 doses

## Pre-Medication

- ☐ ondansetron 8 mg PO/IV BID on Days 1 to 6 for a total of 12 doses; To be given 30 to 60 minutes pre chemotherapy

- ☐ ondansetron 8 mg PO/IV BID PRN starting on Day 7 for nausea

☐ metoclopramide 10 mg PO/IV every 6 hours PRN starting on Day 1 for nausea

## Oral Chemotherapy

*Only for **FIt 3 positive** patients*

☐ midostaurin 50 mg PO BID on Days 8 to 21 for a total of 14 days; Administer with food; On days when ECG is ordered, do not administer until ECG has been read and assessed by physician for QTc prolongation

- ❖ *Dosing adjustments: Dosage reduction may be required for renal impairment*
- ❖ *Dosing adjustments: Dose may need to be held for QTc prolongation*

## Systemic Therapy

*Choose ONE of the following three treatment schedules:*

1. **<u>Morning Start Schedule</u> (0730h)**

**Chemotherapy**

*Choose ONE of the following doses:*

**For adults age 60 or under**

☐ cytarabine (3000 mg/m$^2$) _____ mg IV in 500 mL every 12 hours at 0730h and 1930h on Days 1, 3, and 5 for a total of 6 doses; Infuse each dose over 2 to 3 hours

- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**OR**

**For adults greater than 60 years of age**

☐ cytarabine (1000 mg/m$^2$) _____ mg IV in 500 mL every 12 hours at 0730h and 1930h on Days 1, 3, and 5 for a total of 6 doses; Infuse each dose over 2 to 3 hours

- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**Intravenous Fluid**

☐ 0.9% NaCl 500 mL IV every 12 hours on Days 1, 3 and 5 for a total of 6 boluses; Infuse concurrently with cytarabine over 2 to 3 hours

*Optional:*

☐ 0.9% NaCl 1000 mL IV on Days 2, 4 and 6 for a total of 3 boluses; Infuse each bolus over 2 to 3 hours

2. **<u>Afternoon Start Schedule (1630h)</u>**

**Chemotherapy**

*Choose ONE of the following doses:*

**For adults age 60 or under**

☐ cytarabine (3000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 1630h on Days 1, 3, and 5 for a total of 3 doses; Infuse each dose over 2 to 3 hours

- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**AND**

☐ cytarabine (3000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 0830h on Days 2, 4, and 6 for a total of 3 doses; Infuse each dose over 2 to 3 hours

- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**OR**

**For adults greater than 60 years of age**

☐ cytarabine (1000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 1630h on Days 1, 3, and 5 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**AND**

☐ cytarabine (1000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 0830h on Days 2, 4, and 6 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**Intravenous Fluid**

☐ 0.9% NaCl 500 mL IV daily on Days 1 to 6 for a total of 6 boluses; Infuse concurrently with cytarabine over 2 to 3 hours

3. **<u>Evening Start Schedule (2000h)</u>**

**Chemotherapy**

*Choose ONE of the following doses:*

**For adults age 60 or under**

☐ cytarabine (3000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 2000h on Days 1, 3, and 5 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**AND**

☐ cytarabine (3000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 0800h on Days 2, 4, and 6 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**OR**

**For adults greater than 60 years of age**

☐ cytarabine (1000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 2000h on Days 1, 3, and 5 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**AND**

☐ cytarabine (1000 mg/m$^2$) _____ mg IV in 500 mL every 48 hours at 0800h on Days 2, 4, and 6 for a total of 3 doses; Infuse each dose over 2 to 3 hours
- ❖ *Dosing adjustments: Dosage reduction may be required for renal or hepatic impairment*

**Intravenous Fluid**

☐ 0.9 % NaCl 500 mL IV daily on Days 1 to 6 for a total of 6 boluses; Infuse concurrently with cytarabine over 2 to 3 hours