

# BC Cancer Protocol Summary for Treatment of Relapsed/Refractory Mantle-Cell Lymphoma Using iBRUtinib

**Protocol Code**

LYMIBRU

**Tumour Group**

Lymphoma

**Contact Physicians**

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## ELIGIBILITY:

- Relapsed or refractory mantle-cell lymphoma with at least one prior therapy
- AST or ALT less than 3 x ULN

## TESTS:

- Baseline (required before first treatment): CBC & diff, platelets, creatinine, bilirubin, ALT, PTT, INR
- Baseline (required, but results do not have to be available to proceed with first treatment; results must be checked before proceeding with cycle 2): HBsAg, HBcoreAb
- Each time seen by physician: CBC & diff, bilirubin, ALT
- If clinically indicated: creatinine, PTT, INR, ECG, [MUGA scan or echocardiogram](#)

## CAUTION:

- Cardiac risk factors including history of hypertension, diabetes mellitus, cardiac arrhythmia, cardiac failure

## PREMEDICATIONS:

- None

## SUPPORTIVE MEDICATIONS:

If HBsAg or HBcoreAb positive, start lamivudine 100 mg PO daily for the duration of chemotherapy and continue for one year from treatment completion for patients who are HBsAg positive and for six months for patients who are HBcoreAb positive.

## TREATMENT:

Drug	Dose	BC Cancer Administration Guideline
iBRUtinib	560 mg daily	PO

Continuously until disease progression or unacceptable toxicity

## DOSE MODIFICATIONS

### 1. Myelosuppression

Toxicity	iBRUtinib dose
*Neutropenia Grade 4 (ANC less than $0.5 \times 10^9/L$ ) or Grade 3 neutropenia (ANC $0.5$ to $1.0 \times 10^9/L$ ) associated with an infection or fever $38.5^\circ C$	Hold until ANC greater than or equal to 1.0, restart at dose indicated <a href="#">below</a>
*Grade 4 thrombocytopenia (platelets less than $25 \times 10^9/L$ ) or Grade 3 (platelets less than $50 \times 10^9/L$ ) with bleeding	Hold until platelets greater than or equal to 50 restart at dose indicated <a href="#">below</a>
Nonhematological toxicity greater than or equal to Grade 3	Hold until improvement to grade 1 toxicity or baseline, restart at dose indicated <a href="#">below</a>

\*No dose reduction if decreased counts are due to disease

Toxicity occurrence	Mantle-cell lymphoma iBRUtinib dose modification for myelosuppression after recovery
1st	Restart at 560 mg daily
2 <sup>nd</sup>	Restart at 420 mg daily
3rd	Restart at 280 mg daily
4th	Discontinue

## 2. Cardiac Toxicities:

Toxicity	Recommended iBRUtinib dose
Grade 2 cardiac failure	First occurrence: Hold until improvement to grade 1 or baseline. Restart at 420 mg PO daily
	Second occurrence: Hold until improvement to grade 1 or baseline. Restart at 280 mg PO daily
	Third occurrence: Discontinue iBRUtinib
Grade 3 cardiac arrhythmias	First occurrence: Hold until improvement to grade 1 or baseline. Restart at 420 mg PO daily
	Second occurrence: discontinue iBRUtinib
Grade 3 or 4 cardiac failure or Grade 4 cardiac arrhythmias	First occurrence: discontinue iBRUtinib

### Grading of Adverse Cardiac Events\*

Adverse Event		Grade 1	Grade 2	Grade 3	Grade 4
<b>Cardiac Failure</b>		Asymptomatic with laboratory (e.g., BNP [BNatriuretic Peptide ]) or cardiac imaging abnormalities	Symptoms with moderate activity or exertion	Symptoms at rest or with minimal activity or exertion; hospitalization; new onset of symptoms	Life-threatening consequences; urgent intervention indicated (e.g., continuous IV therapy or mechanical hemodynamic support)
<b>Cardiac Arrhythmias</b>	<b>Atrial Fibrillation or Atrial Flutter</b>	Asymptomatic, intervention not indicated	Non-urgent medical intervention indicated	Symptomatic, urgent intervention indicated; device (e.g., pacemaker); ablation; new onset	Life-threatening consequences; embolus requiring urgent intervention
	<b>Ventricular Arrhythmia</b>	Asymptomatic, intervention not indicated	Non-urgent medical intervention indicated	Urgent intervention indicated	Life-threatening consequences; hemodynamic compromise

\*Table not exhaustive. See CTCAE v5.0 for additional information, including for grading of other arrhythmias not listed here.

### 3. Hepatic Impairment:

Hepatic impairment	Recommended dose
Mild ( <u>Child-Pugh Class A</u> )	140 mg PO daily; monitor patient for signs of toxicity
Moderate or severe ( <u>Child-Pugh Class B or C</u> )	not recommended; hepatic impairment is associated with coagulopathy and may increase the risk of bleeding

### 3. Renal impairment:

No adjustment recommended in mild or moderate renal impairment; no information found for severe renal impairment

### PRECAUTIONS:

1. **Neutropenia:** Fever or other evidence of infection must be assessed promptly and treated aggressively.
2. **Hyperuricemia and tumour lysis syndrome:** Patients at risk of tumour lysis syndrome should have appropriate prophylaxis and be monitored closely. See BC Cancer Drug Manual iBRUtinib Drug Monograph for more information.
3. **Hemorrhagic events:** Minor hemorrhagic events including bruising, epistaxis and petechiae occur in approximately half of the patients treated with iBRUtinib. Major hemorrhagic events including subdural hematoma, gastrointestinal bleeding, hematuria and post-procedural bleeding occur in 3% of patients. Use with caution in patients taking anticoagulants or medications that inhibit platelet function. Hold treatment for 3-7 days pre- and post-surgery; reinstitute post-surgery based on the risk of bleeding.
4. **CYP3A4 substrate:** Concomitant therapy with strong or moderate CYP 3A inhibitors may increase iBRUtinib exposure; avoid if possible. [iBRUtinib dose reduction for concurrent use may be necessary](#). Concomitant use of iBRUtinib with strong CYP 3A inducer may decrease iBRUtinib exposure; avoid if possible.
5. **Elderly Patients:** patients over 65 yrs of age experience more cardiac events (atrial fibrillation, hypertension), infection (pneumonia, cellulitis), gastrointestinal events (diarrhea, dehydration), as well as a higher frequency of grade 3 or greater adverse effects.
6. **Cardiac Failure:** [evaluate cardiac risk at baseline and monitor for signs of deterioration during treatment with ibrutinib. Hold iBRUtinib as indicated in dose modifications above, and evaluate with echocardiogram for new onset or worsening cardiac failure. Consider risk vs benefit prior to restarting at reduced dose.](#)
7. **Cardiac arrhythmias including atrial fibrillation:** [baseline ECG recommended for patients with cardiac risk factors.](#) ECG is recommended in patients who develop arrhythmic symptoms including palpitations and lightheadedness or a new onset of dyspnea. If atrial fibrillation persists, evaluate the risk vs. benefit of continuing treatment. [iBRUtinib dose reduction is recommended for patients who develop cardiac arrhythmias or who have worsening symptoms while taking iBRUtinib.](#)
8. **Lymphocytosis:** Has been reported, usually occurring within the first few weeks of therapy and resolving by 8-23 weeks. Possibly related to the inhibition of BTK-mediated cellular homing and adhesion.

9. **Hepatitis B Reactivation:** All lymphoma patients should be tested for both HBsAg and HBcAb. If either test is positive, such patients should be treated with lamivudine during chemotherapy and continue for one year from treatment completion for patients who are HBsAg positive and for six months for patients who are HBcoreAb positive. Such patients should also be monitored with frequent liver function tests and hepatitis B virus DNA at least every two months. If the hepatitis B virus DNA level rises during this monitoring, management should be reviewed with an appropriate specialist with experience managing hepatitis and consideration given to halting chemotherapy.

**Call Dr. Laurie Sehn or tumour group delegate at (604) 877-6000 or 1-800-663-3333 with any problems or questions regarding this treatment program.**

**References:**

1. Dreyling M, Jurczak W, Jerkeman M. Ibrutinib versus temsirolimus in patients with relapsed or refractory mantle-cell lymphoma: an international, randomised, open-label, phase 3 study. *Lancet* 2016;387(10020):770-8.
2. Janssen Inc. **IMBRUVICA®** product monograph. Toronto, Ontario; 29 June 2022.