



# In-Patient Bosentan Risk Evaluation and Mitigation Strategy (REMS)

February 2025

# Objectives

1. Understand the purpose of the Bosentan REMS program.
2. Identify where to locate the steps for prescribers to enroll and maintain certification in the Bosentan REMS program.
3. Outline the criteria for in-patient pharmacies to dispense Bosentan emphasizing the safety risks and necessary precautions and importance of verifying prescriber enrollment before dispensing.
4. Identify the tools available on the REMS website for managing prescriber and patient information.
5. Review the documentation requirements for pharmacy staff.
6. Summarize the essential REMS requirements for all stakeholders (prescribers, pharmacists, patients).

# Bosentan

## ■ Indication

- Treatment of pulmonary arterial hypertension (PAH)
- **Mechanism of Action:** endothelin receptor antagonist (ERA)

Hepatotoxicity	Embryo-fetal Toxicity
<ul style="list-style-type: none"><li>• May cause liver problems</li><li>• Changes in aminotransferases may occur early or late in treatment</li><li>• Use of bosentan should generally be avoided in patients with elevated aminotransferases (&gt;3 x ULN) at baseline since monitoring may be difficult</li><li>• Liver function testing (LFT) must be monitored:<ul style="list-style-type: none"><li>(1) Prior to bosentan initiation</li><li>(2) Monthly, thereafter</li></ul></li></ul>	<ul style="list-style-type: none"><li>• May cause fetal harm when administered to pregnant females</li><li>• <u>Contraindicated during pregnancy</u></li><li>• Pregnancy must be excluded:<ul style="list-style-type: none"><li>(1) Prior to bosentan initiation</li><li>(2) Monthly, thereafter</li><li>(3) One month following bosentan discontinuation</li></ul></li></ul>

# Bosentan Prescriber Requirements

- If providers ask about Bosentan requirements, refer them to this [link](#) for the 8 steps that must be completed.
- Reminder, they **must** complete the prescriber enrollment form prior to ordering Bosentan.

# Overview of Bosentan Prescriber Requirements

Requirement	All Patients	Females of Reproductive Potential	Females of Non-Reproductive Potential	
			Pre-pubertal	Post-menopausal or other medical reasons for permanent, irreversible infertility
Prescriber enrolls the patient into the Bosentan REMS	X			
Prescriber counsels the patient using the <b>Guide for Patients</b> , particularly on the risks of hepatotoxicity and embryo-fetal toxicity and the need to use reliable contraception during treatment and for one month following treatment discontinuation	X*			
Prescriber orders and reviews liver tests prior to initiation of treatment and monthly during treatment	X			
Prescriber orders and reviews pregnancy tests prior to initiation of treatment, monthly during treatment, and for one month following treatment discontinuation		X		
Prescriber counsels the patient to contact the prescriber if they has any signs or symptoms of liver problems	X			
Prescriber counsels the patient to immediately contact the prescriber when the patient begins to menstruate			X	

Requirement	All Patients	Females of Reproductive Potential	Females of Non-Reproductive Potential	
			Pre-pubertal	Post-menopausal or other medical reasons for permanent, irreversible infertility
Prescriber counsels the patient to immediately contact the prescriber if the patient misses a menstrual period, suspects that they are pregnant, had unprotected sex, or thinks that their birth control has failed, and about the patient's medical options in the event of unprotected sexual intercourse or known or suspected contraception failure		X		
Prescriber verifies reproductive status annually in patients 8 years of age or older by completing the <b>Change in Reproductive Potential Status and Pre-Pubertal Annual Verification Form</b>			X	
Prescriber completes the <b>Change in Reproductive Potential Status and Pre-Pubertal Annual Verification Form</b> upon becoming aware of any change or misclassification in reproductive potential status within 10 business days of awareness		X	X	X

\*For pre-pubertal female patients: Counsel only about the risks of hepatotoxicity, embryo-fetal toxicity, and the need to immediately contact the prescriber when the patient begins to menstruate.

# In-Patient Pharmacy Dispensing Requirements

BEFORE DISPENSING BOSENTAN, pharmacists should verify safe use conditions:

For ALL Patients	For Female Patients
<ul style="list-style-type: none"><li>• Verify the patient is under the supervision of a <b>REMS-certified prescriber</b></li><li>• Verify <b>counseling regarding hepatotoxicity</b> has been completed by the prescriber</li><li>• <b>Verify LFTs</b> have been completed prior to bosentan initiation or within 30 days of continuation of bosentan therapy</li><li>• Verify that the <b>patient is enrolled in Bosentan REMS or will be enrolled prior to discharge</b></li></ul>	<ul style="list-style-type: none"><li>• Verify the <b>patient's reproductive potential</b></li><li>• For females of reproductive potential:<ul style="list-style-type: none"><li>• <b>Verify counseling regarding embryo-fetal toxicity</b> has been completed by the prescriber</li><li>• <b>Verify a negative pregnancy test (HCG)</b> has been completed within the past 24 hours</li></ul></li></ul>

# Bosentan REMS Account

- Julianna, Pediatric Pharmacy Clinical Manager, is the authorized Pharmacy Representative at LEMC/RCH
- A pharmacist must be enrolled prior to completing REMS verification for a patient

# Bosentan REMS Verification

## REMS Requirement Verification

Please enter the information below to verify REMS requirements prior to dispensing bosentan.

Fields marked with \* are required.

### Prescriber Information

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You may enter the Prescriber NPI# or Name, then select the prescriber


\* Prescriber 

### Patient Information

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\* First Name 

\* Last Name 

\* Date of Birth 




# Patient REMS ID Generated

- IF both patient and provider are verified, you will see “okay to dispense”:

## REMS Requirement Verification Results

Please review the information below. If you need to correct any information, click "Go Back".



**OK TO DISPENSE**  
REMS requirements met.

[Go Back](#) [New Verification](#)

<b>Prescriber</b>	✓ Prescriber REMS ID: 1465934025 NPI: 1124248067 Amanda Hauck	<b>Certified</b>
<b>Patient</b>	✓ Patient REMS ID: [REDACTED] First Name: [REDACTED] Last Name: [REDACTED] Patient Reproductive Status: N/A	<b>Enrolled</b>

**(1) Document REMS ID in the pharmacy handoff in EPIC side bar.**

# Patient NOT YET Enrolled when verifying Bosentan Order

- **If the REMS Authorization code is unavailable, add this information to the Pharmacy Hand Off section in EPIC Sidebar.**
  - The patient MUST be enrolled **prior to discharge.**
  - Pharmacist to contact the prescriber to ensure that the patient will be enrolled.
  - Once completed by provider, REMS ID MUST be documented in the pharmacy handoff.
- Remember your steps prior to order verification!
  - May proceed with order verification if provider is enrolled, has counseled patient, labs are documented, and HCG is documented for female patients of reproductive age

# Pharmacist Order Verification

- Upon verification, please verify the responses provided by the ordering prescriber:

**bosentan (TRACLEER) tablet 62.5 mg** New  
62.5 mg, Oral, TWICE DAILY, First dose on Wed 3/15/23 at 2100, Until Discontinued

NF: Prior Approval by P & T Member From bosentan (Tracleer) orders

Interactions Edit i-Vents New i-Vent Order Hx Show Charge Label Preview

**Clinical Details**

Order Dose <b>62.5 mg</b>	Route <b>Oral</b>	Frequency <b>TWICE DAILY</b>
Admin Dose (amount) 62.5 mg (0.5 tablet)		For Until discontinued
		First Dose Today 2100 As Scheduled
		Scheduled Times (Adjusted)
		3/15/2023   2100
		3/16/2023   0900, 2100
		3/17/2023   0900, 2100

Additional Details

## For all patients:

- Verify **LFTs** has been completed within 24 hours prior to bosentan initiation or within 30 days if continuation of bosentan therapy

## For female patients of reproductive potential:

- Ensure that a **pregnancy test** has been completed prior to order verification

## For all patients:

- Verify the patient is under supervision of a REMS-certified prescriber
- Verify counseling regarding hepatotoxicity has been completed by the prescriber
- Verify that the patient is enrolled in Bosentan REMS or will be prior to discharge

# REMS Requirements

## BEFORE DISCHARGE:

1. **If** an Emergency Dispense is requested, do not dispense more than a 15 days' supply from in-patient

## AT ALL TIMES:

1. Notify Bosentan REMS of adverse events suggestive of hepatotoxicity
2. Report pregnancies to Bosentan REMS
3. Do NOT distribute, transfer, loan, or sell bosentan EXCEPT to certified dispensers
4. Maintain records that all processes and procedures are in place and being followed
5. Comply with audits carried out by the manufacturers or a third party acting on behalf of the manufacturers



**Thank you!**