



THIOGUANINE

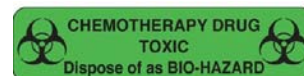
INSTRUCTIONS FOR THE PHARMACIST

Prescription

- All orders should be written on a **pre-printed order**; if not, compare prescription to standard regimens in the Systemic Therapy Manual to confirm the dosing and instructions
 - The order must be signed by BOTH the prescriber (at the bottom) AND at least one other oncology health professional (nurse or hospital pharmacist) who has verified the order
- The prescription may **not** be refilled (unless specifically ordered by the oncologist) and it may **not** be filled as a continuing care prescription
 - If the prescriber has written for refills, do **not** dispense until the oncology team authorizes the refill.
 - Blood work must be checked for each cycle.
- Always check for drug-drug interactions, especially before the first cycle, as described below. Consult the **Drug Interactions** section (page 4), and consider an online drug interactions checking program.
- Check with patient for any other medications filled at a different pharmacy

Handling and Dispensing

- When handling this drug, disposable gloves should be worn at all times by any woman of child-bearing potential. Counting trays and other equipment directly exposed to the drug should be cleaned with **soap and water**, followed by rinsing with copious amounts of water (wear gloves).
- Do not crush tablets in an open air environment and risk inhalation of powder.
- ALWAYS affix the auxiliary label to identify this medication as “Cancer Chemotherapy”- this is an important warning label for other health professionals caring for the patient.



Patient Counseling and Follow-up

- Counsel the patient, including the key messages listed below. Use the **Initial Assessment and Patient Counseling Visit- Pharmacist Guide ①** and the **Medication Info Sheet ②** for this drug. Be sure that you know the specific treatment schedule and that this is clearly communicated to the patient.
- Call the patient within the first week to identify any problems with adverse reactions or adherence.
 - When speaking with the patient and during call backs, ask the patient to identify any problems with medication adherence. Use the **First Follow-Up Call/Visit- Pharmacist_Guide ①**.
- Continuing follow up calls between clinic visits are necessary for ADR identification and prevention and for adherence management. Contact the oncology clinic nurse or hospital pharmacist to negotiate who will do follow-up calls between clinic visits. Tell the patient that you plan to call back to check on their progress. Consider the suggested call-back schedule (pg. 2), with specific questions for each contact.
 - When speaking with the patient and during call backs, ask the patient to identify any problems with medication adherence. Use the **Continuing Follow-Up Calls/Visits - Pharmacist_Guide ①**.
- If the patient reports any adverse effects, consider the management strategies suggested in the **Adverse Drug Reaction Management Guide ②**.
- ALWAYS document your findings in the patient profile of your pharmacy computer system
- ALWAYS contact the patient’s cancer care team of any findings and actions you have taken.
- ALWAYS **watch for any unusual or unexpected symptoms or problems** (such as an adverse reaction that appears too soon or too severe) and contact the cancer care team promptly if something seems wrong with the patient experience.



CLINICAL INDICATIONS

Thioguanine is clinically indicated for:



- Acute lymphocytic leukemia, acute myelogenous leukemia, chronic myelogenous leukemia

DRUG ADMINISTRATION

- Thioguanine may be given **once daily**.
- Tablets should be swallowed whole with a glass of water.
- Keep tablets out of reach of children and protect from moisture.
- If a dose is missed (or lost due to vomiting), do not take a double dose the next day to make up for it.

PATIENT COUNSELLING- INITIAL AND FOLLOW-UP CALLS

- In addition to other printed materials, use the **Medication Info Sheet** from the Cancer Care Nova Scotia website, and consider the more detailed suggestions in this toolkit.

	Key Messages
Initial counselling- At time of dispensing	<ul style="list-style-type: none"> • How to take the medication properly (including treatment-free breaks) • When to call back to the cancer care team for urgent care • Use the Initial Assessment and Patient Counseling Visit- Pharmacist Guide❶ and the drug-specific Medication Info Sheet❷
First call-back – Within first week: 	<ul style="list-style-type: none"> • Identify any initial problems with understanding or adherence • Use the First Follow-Up Call/Visit- Pharmacist Guide❶ and the Medication Info Sheet❷ (if needed) • Reinforce initial key messages <ul style="list-style-type: none"> ○ How and when treatment is taken ○ Barriers to adherence- remembering to take medication; reluctance to take treatment; financial issues; nausea, vomiting or other adverse effects; trouble with packaging; felt better off medication; other concerns ○ Suggest strategies to ensure adherence; reminder that full dose is needed for cancer control- partial doses may be ineffective. • Identify any early adverse effect symptoms; suggest management strategies
End of Treatment call- back – (telephone or return visit to Pharmacy) 	<ul style="list-style-type: none"> • Ask if there are any pills left over and, if so, PROBE to determine any barriers to treatment adherence (see above) • Identify any adverse effects (PROBE for evidence of nausea and vomiting; symptoms of liver toxicity; mouth sores; diarrhea; other symptoms as listed below) • Use the Continuing Follow-Up Calls/Visits- Pharmacist Guide❶ <ul style="list-style-type: none"> ○ If any identified, contact oncologist or oncology nurse, and consider the information below under Adverse Effects • Reinforce initial key messages and education, if there continue to be any questions or concerns
Subsequent cycles- (at least one call during each cycle):	<ul style="list-style-type: none"> • Negotiate with patient and cancer care team for ongoing needs for counseling and timely follow up calls • Use the Continuing Follow-Up Calls/Visits- Pharmacist Guide❶ • Adherence assessment and support is an important issue for reinforcement at each visit and mid-cycle call-back as treatment continues

ADVERSE EFFECTS: PREVENTION AND MANAGEMENT SUGGESTIONS

If you identify any of the following, you should contact the oncologist and tell the patient to call the oncologist or go directly to the Emergency Department of the nearest hospital right away **↗**:

- Signs of infection (fever, chills, sore throat, flu symptoms, easy bruising or bleeding, loss of appetite, nausea and vomiting, unusual weakness)
- Symptoms of liver toxicity (Nausea, upper stomach pain, itching, loss of appetite, dark urine, clay-coloured stools, jaundice)

The following are some adverse effects from Thioguanine.

More Common	Less Common
<p><u>Hematologic disorders</u></p> <ul style="list-style-type: none"> • Myelosuppression★- leucopenia, neutropenia★ • Anemia★, bleeding★, granulocytopenia • Marrow hypoplasia, thrombocytopenia★ <p><u>Endocrine & Metabolic disorders</u></p> <ul style="list-style-type: none"> • Hyperuricemia◆ 	<p><u>Gastrointestinal disorders</u></p> <ul style="list-style-type: none"> • Anorexia★ • Nausea★, vomiting★, stomatitis ★ <p><u>General disorders</u></p> <ul style="list-style-type: none"> • Infection ↗ <p><u>Hepatic disorders ↗</u></p> <ul style="list-style-type: none"> • Liver problems, jaundice • Hepatitis • Hepatomegaly

★ For detailed recommendations on the management of these adverse drug reactions, see the **Adverse Drug Reaction Management Guide** ②

◆ For management of these symptoms, the patient should see his physician

↗ These symptoms require urgent attention- advise the patient to go to the Emergency Department or contact their doctor (see instructions above)

DRUG INTERACTIONS

Take a **thorough medication history** (call other pharmacies if necessary) and determine the potential for all other drugs to increase or decrease Thioguanine plasma concentration.

- Drug interactions are often missed by community pharmacy computer systems
- **REPORT any potential interaction** to the prescribing oncologist- either the Thioguanine or the interaction drug may need to be dose altered or discontinued.



It is strongly recommended that you check any concurrent medications for interactions with this oral chemotherapy agent. Try one of the following comprehensive programs for checking drug interactions.

<p>Online Programs for Drug Interaction Checking-Publicly available:</p> <ul style="list-style-type: none"> • http://www.drugs.com/drug_interactions.php • http://reference.medscape.com/drug-interactionchecker • http://www.healthline.com/druginteractions • http://cpref.goldstandard.com/inter.asp?r=8084 • http://umm.edu/health/medical/drug-interaction-tool • http://online.epocrates.com/ (free account required) 	<p>Other Interaction Checkers-Subscription required:</p> <ul style="list-style-type: none"> • Lexicomp • Micromedex • eCPS
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Some common interactions with Thioguanine are:

- 5-ASA derivatives: may decrease the metabolism of Thioguanine
- CloZAPine: may increase the toxicity of Clozapine (specifically, agranulocytosis). *Avoid combination.*
- Echinacea: may decrease the therapeutic effect of Thioguanine
- Leflunomide: may increase toxicity of Leflunomide (specifically, the risk of hematologic toxicity). Consider not using a leflunomide loading dose in patients receiving Thioguanine. Monitor patient for bone marrow suppression at least monthly if using these drugs concurrently.
- Tacrolimus (topical): may increase the toxicity of Thioguanine (*avoid combination*)
- Vaccines (inactivated, live): may increase toxicity and decrease therapeutic effect of vaccines (*avoid combination*)

Note: Patients taking Thioguanine should avoid drinking alcohol, as doing so may increase the risk for hepatotoxicity.