

**Drug Monograph**

[Drug Name](#) | [Mechanism of Action and Pharmacokinetics](#) | [Indications and Status](#) | [Adverse Effects](#) | [Dosing](#) | [Administration Guidelines](#) | [Special Precautions](#) | [Interactions](#) | [Recommended Clinical Monitoring](#) | [Supplementary Public Funding](#) | [References](#) | [Disclaimer](#)

**A - Drug Name**

# lanreotide

**COMMON TRADE NAME(S):** Somatuline® Autogel®

[back to top](#)

**B - Mechanism of Action and Pharmacokinetics**

Lanreotide is a synthetic analogue of somatostatin, an endogenous peptide with high affinity for somatostatin type 2 and type 5 receptors found in the pituitary gland, pancreas and growth hormone-secreting pituitary tumours. Somatostatin analogues inhibit cell proliferation via direct anti-tumour effects from activation of somatostatin receptors on tumour cells and indirect effects via inhibition of mitogenic growth factors, such as insulin-like growth factor and inhibition of tumour angiogenesis.

Absorption	Population pharmacokinetics in patients with neuroendocrine tumours showed rapid initial release of lanreotide within the first day after injection. Steady state concentrations were reached after 4 to 5 injections of 120 mg every 4 weeks and were sustained up to 96 weeks after the first injection.
------------	--

Distribution	Intravenous administration shows limited extravascular distribution.
--------------	--

PPB	79-83%
-----	--------

Metabolism	Extensive metabolism in the GI tract after biliary excretion.
------------	---

Elimination	Urine	< 1% after a single dose of 3 mg SC
-------------	-------	-------------------------------------

Feces	< 0.5% of administered dose over 24 hrs at steady state
-------	---

Half-life

mean terminal in patients with  
neuroendocrine tumours: 50 +/- 28 days[back to top](#)**C - Indications and Status****Health Canada Approvals:**

- For the treatment of enteropancreatic neuroendocrine tumours in adult patients with grade 1 or a subset of grade 2 (equivalent to Ki67 < 10%) unresectable, locally advanced or metastatic disease
- Treatment of adult patients with carcinoid syndrome; when used, lanreotide reduces the administration frequency of short-acting somatostatin analog rescue therapy

**Notes:**

Approval on enteropancreatic neuroendocrine tumours was based on a progression-free survival benefit in a placebo controlled phase III study. No overall survival benefit was noted. Data on hindgut tumour was limited.

Refer to the product monograph for non-oncologic indications.

[back to top](#)**D - Adverse Effects**

**Emetogenic Potential:** Not applicable

**Extravasation Potential:** None

The following adverse effects includes those reported with a frequency  $\geq 5\%$  in clinical trials in enteropancreatic NETs patients administered lanreotide every 4 weeks, where the incidence was greater than placebo by  $\geq 2\%$ , as well severe or life-threatening events from other trials.

ORGAN SITE	SIDE EFFECT* (%)	ONSET**
Auditory	Hearing impaired (1- <5%, permanent; carcinoid patients)	E D
Cardiovascular	Bradycardia (rare)	E

	Hypertension (13%)	E
Dermatological	Rash (5%)	E
Gastrointestinal	Abdominal pain (24%)	E
	Dehydration (5%)	E
	Nausea, vomiting (19%)	I E
General	Fatigue (8%)	E
Hematological	Anemia (1 to <5%; carcinoid patients)	D
Hepatobiliary	Biliary tract disorders (14%) (cholelithiasis; rare - cholecystitis)	E D
	Hepatic failure (rare)	E D
	Other (6%) (pancreatic insufficiency - 6%)	E
	Pancreatitis (rare)	D
Hypersensitivity	Hypersensitivity / anaphylaxis	I
Injection site	Injection site reaction (8%) (pain)	I E
Metabolic / Endocrine	Hyperglycemia (7%) /diabetes	E
	Hypoglycemia (rare)	E
	Hypothyroidism (rare)	E D
Musculoskeletal	Musculoskeletal pain (10%)	E
Nervous System	Dizziness (9%)	E
	Headache (16%)	E
	Syncope (rare)	E
Respiratory	Cough, dyspnea (6%)	E

\* "*Incidence*" may refer to an absolute value or the higher value from a reported range.  
 "*Rare*" may refer to events with < 1% incidence, reported in post-marketing, phase 1 studies, isolated data or anecdotal reports.

\*\* I = *immediate* (onset in hours to days)    E = *early* (days to weeks)  
 D = *delayed* (weeks to months)    L = *late* (months to years)

The most common side effects for lanreotide include abdominal pain, nausea, vomiting, headache, biliary tract disorders, hypertension, musculoskeletal pain, dizziness, fatigue, hyperglycemia and ↓ pancreatic enzymes.

Patients with cardiac disorders may experience **sinus bradycardia**; heart rate should be monitored.

Lanreotide inhibits the secretion of insulin and glucagon and may result in changes to blood glucose levels, including **hypo or hyperglycemia**. Blood glucose levels should be monitored, especially in

diabetic patients.

Lanreotide may reduce gallbladder motility leading to **cholelithiasis**.

[back to top](#)

## E - Dosing

Refer to protocol by which patient is being treated.

If patients are being treated with lanreotide for enteropancreatic NETs, do not give an additional dose for the treatment of carcinoid syndrome.

### **Adults:**

**Subcutaneous:** 120 mg Every 4 weeks until disease progression

### **Dosage with Toxicity:**

No dosage adjustment required. The drug should be discontinued in the case of disease progression or severe adverse events.

### **Dosage with Hepatic Impairment:**

In acromegaly patients, lanreotide clearance is reduced by 30% in patients with moderate to severe hepatic impairment. Patients with neuroendocrine tumours or carcinoid tumours and hepatic impairment have not been studied.

Suggested dosage adjustment:

Hepatic impairment	Lanreotide starting dose
Mild (Child-Pugh A)	Use with caution as no data
Moderate to severe (Child-Pugh B or C)	Use with caution as no data*

\*in acromegaly, a dose of 60 mg is recommended.

**Dosage with Renal Impairment:**

Lanreotide clearance was not affected in patients with neuroendocrine tumours and mild or moderate renal impairment. Patients with carcinoid syndrome and renal impairment have not been studied.

Suggested dosage adjustment:

<b>Renal impairment (CrCl in ml/min)</b>	<b>Enteropancreatic NET starting dose (mg)</b>	<b>Carcinoid syndrome starting dose (mg)</b>
Mild to moderate (CrCl $\geq$ 30)	120	Use with caution as no data
Severe (CrCl < 30)	Use with caution as no data*	Use with caution as no data*

\*in acromegaly, a dose of 60 mg is recommended.

**Dosage in the elderly:**

Increases in half-life and mean residence time were observed in healthy subjects over 65 years of age, with no change in either AUC or C<sub>max</sub>. No effect of age on clearance and volume of distribution was observed in pharmacokinetics analysis with NET patients aged 65-85 years. Clinical studies did not include sufficient patients to evaluate the impact of age.

Dosage adjustment is not necessary.

**Children:**

Lanreotide has not been studied in pediatric patients.

[back to top](#)

## F - Administration Guidelines

- Lanreotide should be injected by deep subcutaneous route in the superior external quadrant of the buttock
- In the case of self-administration (with appropriate training), the injection may be given in the upper outer thigh
- The injection site should be alternated between right and left sides
- If a dose is missed, the next dose should be administered as soon as possible
- The drug should be stored under refrigeration (2-8°C) in its original package

[back to top](#)

## G - Special Precautions

### Contraindications:

- Patients who are hypersensitive to this drug or any ingredients in the formulation
- Patients who are hypersensitive to somatostatin or related peptides
- Patients with complicated, untreated lithiasis of the bile ducts

### Other Warnings/Precautions:

- Use with caution and monitor blood glucose closely in patients with diabetes
- Exercise caution when driving or operating machinery while on treatment, as headache and dizziness were most commonly reported.

### Other Drug Properties:

- Carcinogenicity: Documented in animals  
An increased incidence of subcutaneous tumours at injection sites was observed in animals given daily injections. These findings are unlikely to be clinically relevant in humans receiving monthly injections.

### Pregnancy and Lactation:

- Fetotoxicity: Yes
- Teratogenicity: Unlikely  
Lanreotide is not recommended for use in pregnancy given limited clinical experience. Adequate contraception should be used by both sexes during treatment, and for at least 6 months after the last dose.
- Excretion into breast milk: Unknown  
Breastfeeding is not recommended.
- Fertility effects: Unlikely

[back to top](#)

## H - Interactions

Lanreotide is extensively metabolized in the GI tract after biliary excretion and may reduce intestinal absorption of co-administered drugs.

Limited data indicate that somatostatin analogues may decrease metabolic clearance of drugs metabolized by CYP450 enzymes.

AGENT	EFFECT	MECHANISM	MANAGEMENT
Bradycardia-inducing drugs (e.g. beta-blockers)	↓ heart rate	Additive	Dose adjustment of concomitant drugs may be necessary
Cyclosporine (oral)	↓ cyclosporine serum levels	Delayed intestinal absorption of cyclosporine	Monitor serum levels of cyclosporine and adjust the cyclosporine dose as needed or switch to IV cyclosporine
Bromocriptine	↑ bioavailability of bromocriptine	altered bromocriptine absorption	Caution and monitor for bromocriptine toxicity
Hypoglycemic agents (e.g. insulin, sulfonylureas)	↑ risk of hypoglycemia	Additive	Caution, monitor and adjust dose of hypoglycemic agent as required
CYP3A4 substrates (e.g. cyclosporine, pimozone, tacrolimus, triazolo-benzodiazepines, dihydropyridine calcium-channel blockers, certain HMG-CoA reductase inhibitors)	↑ substrate exposure	lanreotide may reduce clearance (theoretical)	Caution & monitor with drugs that have a low therapeutic index

[back to top](#)

## I - Recommended Clinical Monitoring

Treating physicians may decide to monitor more or less frequently for individual patients but should always consider recommendations from the product monograph.

### **Recommended Clinical Monitoring**

Monitor Type	Monitor Frequency
Blood glucose	Baseline and at each visit; more frequent in diabetic patients
Heart rate	Baseline and at each visit; more frequent in patients with cardiac disorders
Gallbladder ultrasound	Baseline and periodic
Thyroid function	As clinically indicated
Clinical toxicity assessment for GI effects, injection site reactions, CNS effects, hypertension	At each visit

Grade toxicity using the current [NCI-CTCAE \(Common Terminology Criteria for Adverse Events\) version](#)

[back to top](#)

## J - Supplementary Public Funding

### **ODB - General Benefit ([ODB Formulary](#))**

- lanreotide

[back to top](#)

## K - References

Caplin ME, Pavel M, Ćwikła JB, et al; CLARINET Investigators. Lanreotide in metastatic enteropancreatic neuroendocrine tumors. *N Engl J Med*. 2014 Jul 17;371(3):224-33.

Lanreotide: Drug information. Lexicomp. Accessed June 12, 2017.



---

Somatuline autogel (lanreotide injection) product monograph. Ipsen Biopharmaceuticals Canada Inc. February 1, 2018.

**June 2019** Updated emetic risk category.

[back to top](#)

## L - Disclaimer

Refer to the [New Drug Funding Program](#) or [Ontario Public Drug Programs](#) websites for the most up-to-date public funding information.

*The information set out in the drug monographs, regimen monographs, appendices and symptom management information (for health professionals) contained in the Drug Formulary (the "Formulary") is intended for healthcare providers and is to be used for informational purposes only. The information is not intended to cover all possible uses, directions, precautions, drug interactions or adverse effects of a particular drug, nor should it be construed to indicate that use of a particular drug is safe, appropriate or effective for a given condition. The information in the Formulary is not intended to constitute or be a substitute for medical advice and should not be relied upon in any such regard. All uses of the Formulary are subject to clinical judgment and actual prescribing patterns may not follow the information provided in the Formulary.*

*The format and content of the drug monographs, regimen monographs, appendices and symptom management information contained in the Formulary will change as they are reviewed and revised on a periodic basis. The date of last revision will be visible on each page of the monograph and regimen. Since standards of usage are constantly evolving, it is advised that the Formulary not be used as the sole source of information. It is strongly recommended that original references or product monograph be consulted prior to using a chemotherapy regimen for the first time.*

*Some Formulary documents, such as the medication information sheets, regimen information sheets and symptom management information (for patients), are intended for patients. Patients should always consult with their healthcare provider if they have questions regarding any information set out in the Formulary documents.*

*While care has been taken in the preparation of the information contained in the Formulary, such information is provided on an "as-is" basis, without any representation, warranty, or condition, whether express, or implied, statutory or otherwise, as to the information's quality, accuracy, currency, completeness, or reliability.*

*CCO and the Formulary's content providers shall have no liability, whether direct, indirect, consequential, contingent, special, or incidental, related to or arising from the information in the Formulary or its use thereof, whether based on breach of contract or tort (including negligence), and even if advised of the possibility thereof. Anyone using the*

---

*information in the Formulary does so at his or her own risk, and by using such information, agrees to indemnify CCO and its content providers from any and all liability, loss, damages, costs and expenses (including legal fees and expenses) arising from such person's use of the information in the Formulary.*

[back to top](#)