



# GLP-1 AGONISTS

Jordan Millin, PharmD Candidate 2023  
The Ohio State University  
October 11, 2022

# OBJECTIVES

- Review pertinent information about the most common GLP-1 agonists [Trulicity, Ozempic, and Victoza] including:
  - Mechanism of action
  - Dosing frequency
  - What to do if a patient misses a dose
  - Common side effects
  - Rare but serious side effects
  - Storage
  - Administration technique

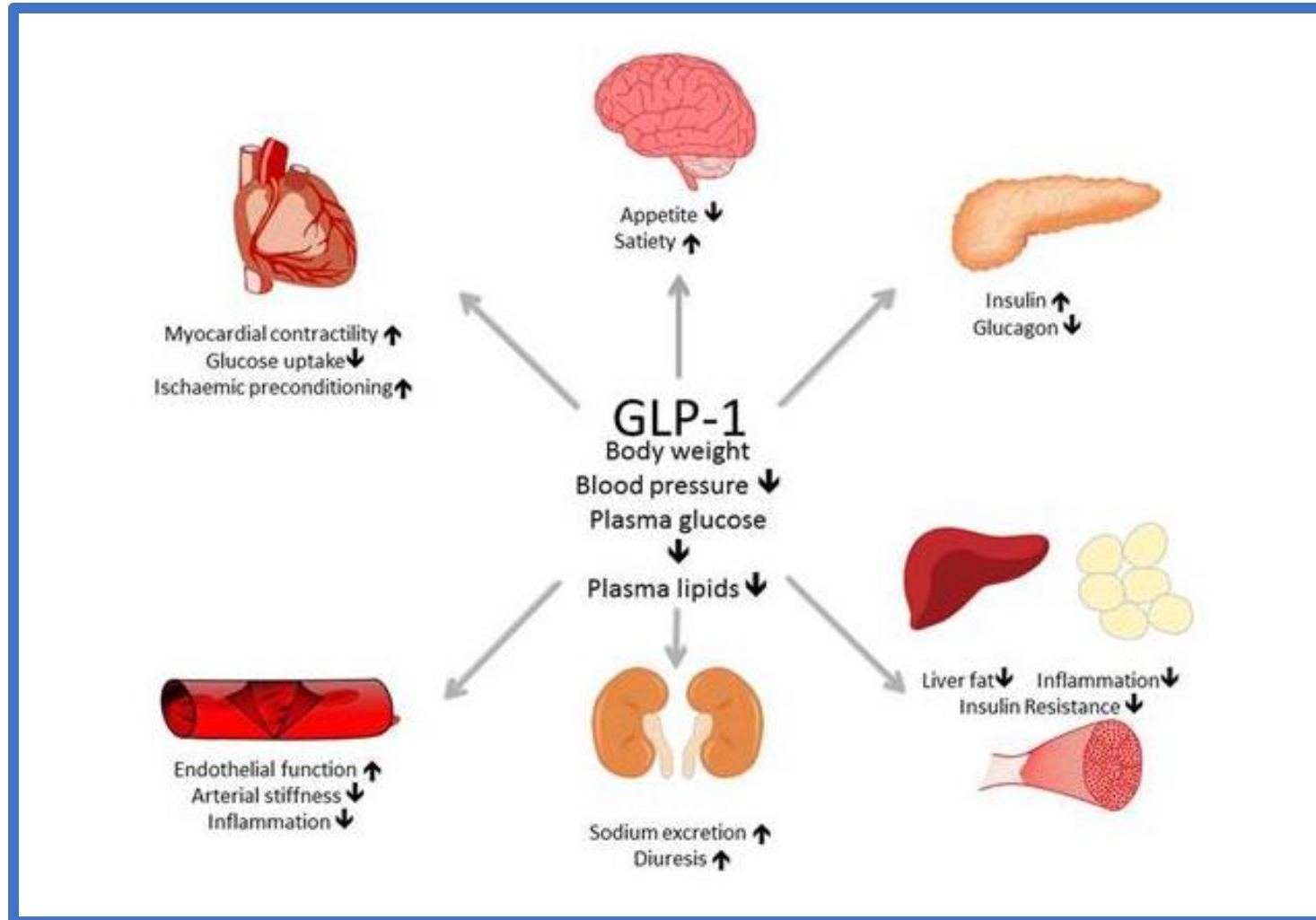
# AVAILABLE GLP-1 AGONISTS

- ❖ **Dulaglutide (Trulicity)\***
- ❖ Exenatide (Bydureon BCise, Byetta)
- ❖ **Liraglutide (Saxenda, Victoza)\***
- ❖ Lixisenatide (Adlyxin)
- ❖ **Semaglutide (Ozempic, Wegovy, Rybelsus)\***

\*Most common in practice

# MECHANISM OF ACTION

★  
**Cannot be taken with DPP-4 inhibitors (work on same pathway)**



★  
**DPP-4s:  
Januvia  
Tradjenta  
Onglyza  
Nesina**



# BENEFITS OF GLP-1 AGONISTS



Weight loss



Cardiovascular benefits



A1c lowering




Insulin sparing

# SIDE EFFECTS

## Common

- Nausea, vomiting, diarrhea
  - Eat more slowly
  - Smaller portions especially of foods high in fat and carbs

## Rare but Serious

- **Pancreatitis** 
- Gallbladder disease
- Acute kidney injury (AKI)
- Medullary thyroid cancer (MTC)
- Hypoglycemia (with sulfonylurea or insulin)

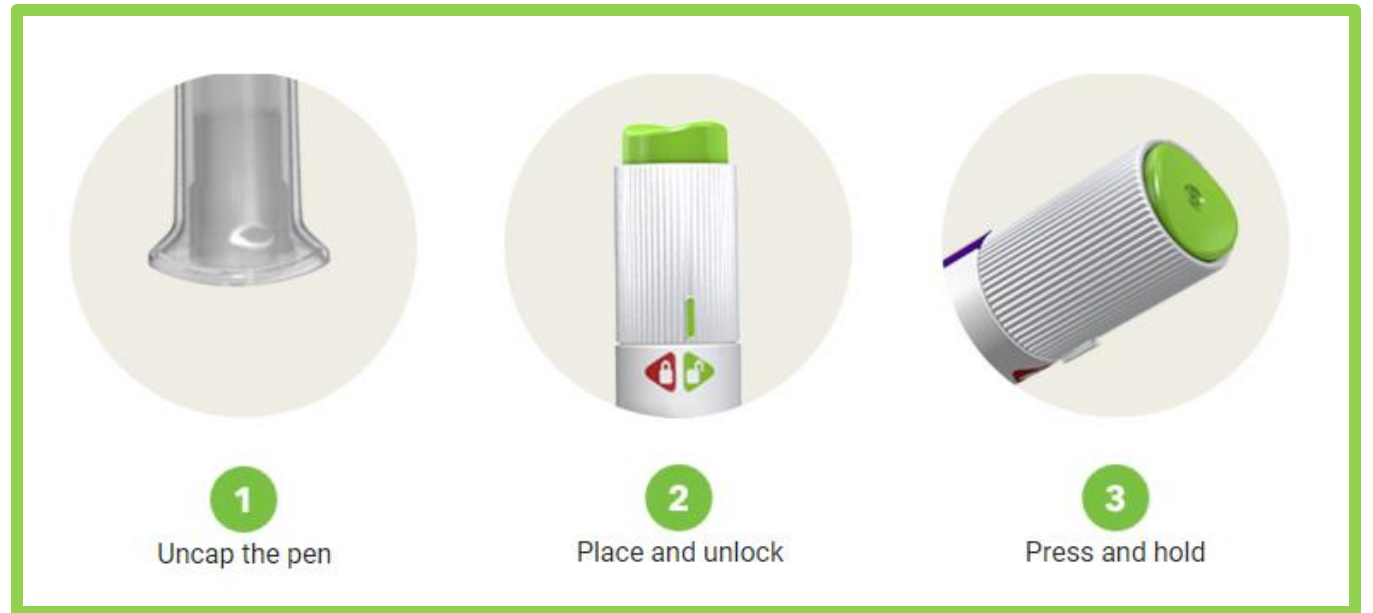
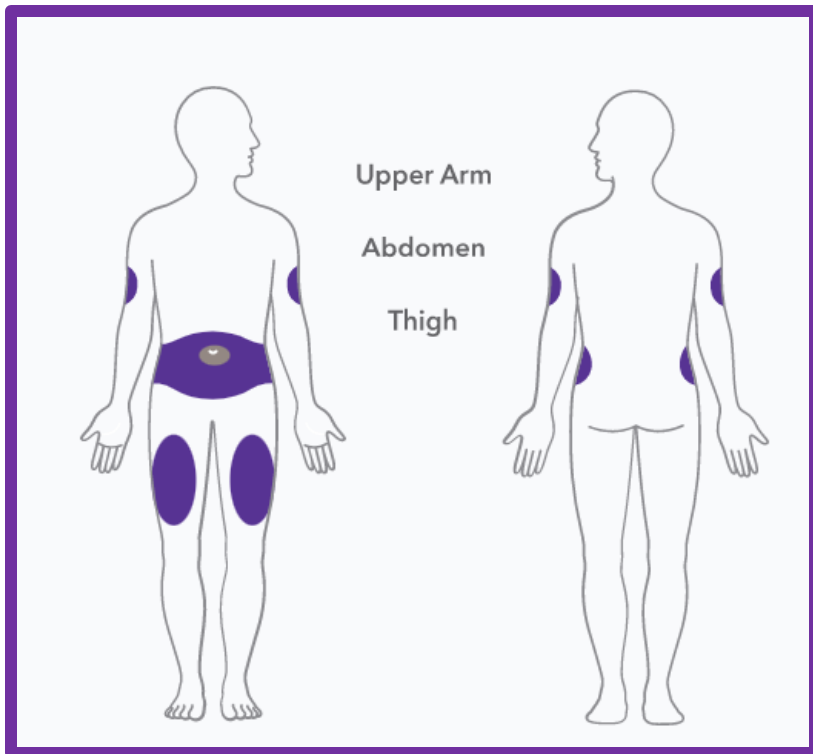
# TRULICITY (DULAGLUTIDE)

- **Dosing frequency:** weekly
- **Missed dose:** okay to take as long as within 4 days of scheduled dose. If < 72 hours until next dose, skip the missed dose.
- **Storage:** refrigerator; 14 days at room temperature
- **Other Important Considerations:**
  - Take this medication on the same day every week.
  - Dispose of pen in a sharps container



Image from Lilly. Trulicity (dulaglutide) injection. <https://www.trulicity.com/how-to-use#how-to-use-trulicity-pen>.

# TRULICITY (DULAGLUTIDE)-ADMINISTRATION



# OZEMPIC (SEMAGLUTIDE)

- **Dosing frequency:** weekly
- **Missed dose:** okay to take as long as within 5 days of the scheduled dose. If < 48 hours until next dose, skip the missed dose.
- **Storage:** refrigerator or room temperature; 56 days at room temperature
- **Other Important Considerations:**
  - Take this medication on the same day every week.
  - Comes with pen needles
  - Dispose of pen in a sharps container



Image from Semaglutide. Lexi-Drugs. Lexicomp. Wolters Kluwer. Hudson, Oh.

# OZEMPIC (SEMAGLUTIDE)-ADMINISTRATION

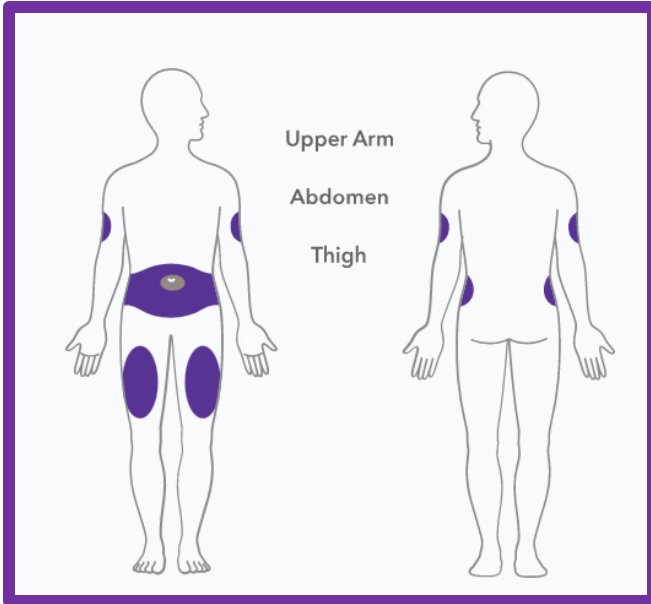


Image from Lilly. Trulicity (dulaglutide) injection.  
[https://www.trulicity.com/how-to-use#how-to-use-trulicity-pen.](https://www.trulicity.com/how-to-use#how-to-use-trulicity-pen)



## Prepare your pen

### Check your Ozempic® pen

Read the label to check that your pen contains Ozempic®. Make sure that the Ozempic® medicine in your pen is clear and colorless.



### Check the Ozempic® flow with each new pen

Turn the dose selector **until the dose counter shows the flow check symbol**. Press and hold in the dose button until the dose counter shows 0. Make sure a drop appears at the needle tip.



## Attach a new needle

Tear off the paper tab. Push and turn the needle on until it is tight. Pull off **both** needle caps.



## Give your injection

### Select your dose

Turn the dose selector until the dose counter shows the dose you need to inject (0.25 mg or 0.5 mg for the red-label pen, 1 mg for the blue-label pen).



## Inject your dose

Insert the needle into your skin. Press and hold down the dose button. After the dose counter reaches 0, slowly count to 6. Remove the needle from your skin.



## After your injection

Carefully remove the needle and place it in a sharps container. Put the pen cap back on the pen.

Image from Novo Nordisk A/S. Ozempic (semaglutide) injection.

# VICTOZA (LIRAGLUTIDE)

- **Dosing frequency:** daily
- **Missed dose:** skip the missed dose and go back to normal time. If miss > 3 days, restart at 0.6 mg/day and titrate based on GI tolerability
- **Storage:** refrigerator; 30 days at room temperature
- **Other Important Considerations:**
  - Take this medication daily.
  - Need a separate Rx for pen needles
  - Dispose of your pen in a sharps container



Image from Novo Nordisk A/S. Victoza (liraglutide) injection.<sup>7</sup>

# VICTOZA (LIRAGLUTIDE) ADMINISTRATION

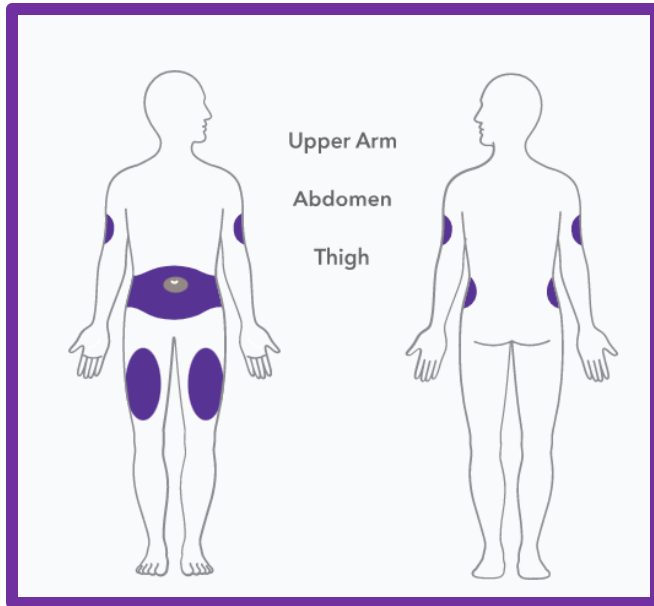
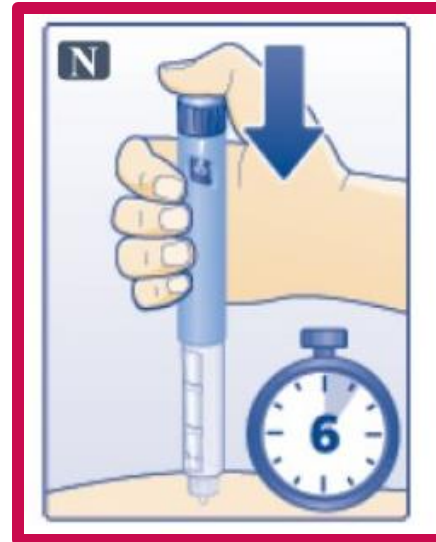


Image from Lilly. Trulicity (dulaglutide) injection.  
<https://www.trulicity.com/how-to-use#how-to-use-trulicity-pen>.



Images from VICTOZA (liraglutide) [package insert]<sup>8</sup>

# KEY POINTS

	<b>Trulicity (Dulaglutide)</b>	<b>Ozempic (Semaglutide)</b>	<b>Victoza (Liraglutide)</b>
<b>Mechanism of Action</b>	It helps your body control insulin release and slows gastric emptying		
<b>Administration</b>	SubQ (Abdomen, thigh, upper arm)		
<b>Common Side Effects</b>	nausea, vomiting, diarrhea		
<b>Rare/Serious Side Effects</b>	<ul style="list-style-type: none"> <li>•Pancreatitis (severe abdominal pain, vomiting, nausea)</li> <li>•Gallbladder disease</li> <li>•Acute kidney injury (AKI)</li> <li>•Medullary thyroid cancer (MTC)</li> </ul>		
<b>Dosing Frequency</b>	Weekly	Weekly	<b>Daily</b>
<b>What to do if a patient missed a dose</b>	If you miss a dose, you may take the dose as soon as you remember as long as it has been within <b>4 days</b> of the scheduled dose. If it is less than 72 hours until your next dose, skip the missed dose.	If you miss a dose, you may take the dose as soon as you remember as long as it has been within <b>5 days</b> of the scheduled dose. If it is less than 48 hours until your next dose, skip the missed dose.	If you miss a dose, skip the missed dose and go back to your normal time. If you miss 3 days of this medication, restart at 0.6 mg/day and titrate based on GI tolerability.
<b>Storage</b>	Stable for <b>14 days</b> at room temperature	Stable for <b>56 days</b> at room temperature	Stable for <b>30 days</b> at room temperature

**QUESTIONS?**

# REFERENCES

1. Boyle JG, Livingstone R, Petrie JR. Cardiovascular benefits of GLP-1 agonists in type 2 diabetes: a comparative review. *Clin Sci (Lond)*. 2018;132(15):1699-1709. Published 2018 Aug 16. doi:10.1042/CS20171299
2. Dulaglutide. Lexi-Drugs. Lexicomp. Wolters Kluwer. Hudson, Oh. Available at <https://online.lexi.com>. Accessed September 27, 2022.
3. Lilly. Trulicity (dulaglutide) injection. <https://www.trulicity.com/how-to-use#how-to-use-trulicity-pen>. Updated July 2022. Accessed September 27, 2022.
4. Semaglutide. Lexi-Drugs. Lexicomp. Wolters Kluwer. Hudson, Oh. Available at <https://online.lexi.com>. Accessed September 27, 2022.
5. Novo Nordisk A/S. Ozempic (semaglutide) injection. [https://www.ozempic.com/how-to-take/ozempic-pen.html?gclid=EAlalQobChMlnPjEj9e1-glVMPLjBx3IGgpNEAAYASAAEgLkoPD\\_BwE&gclsrc=aw.ds#ifu&utm\\_source=google&utm\\_medium=cpc&utm\\_term=using%20ozempic&utm\\_campaign=&mkwid=s-dc\\_pcrd\\_605466743941\\_pkw\\_using%20ozempic\\_pmt\\_p\\_slid\\_\\_product\\_&pgrid=141675593727&ptaid=kwd-391559671880](https://www.ozempic.com/how-to-take/ozempic-pen.html?gclid=EAlalQobChMlnPjEj9e1-glVMPLjBx3IGgpNEAAYASAAEgLkoPD_BwE&gclsrc=aw.ds#ifu&utm_source=google&utm_medium=cpc&utm_term=using%20ozempic&utm_campaign=&mkwid=s-dc_pcrd_605466743941_pkw_using%20ozempic_pmt_p_slid__product_&pgrid=141675593727&ptaid=kwd-391559671880) Updated June 2022. Accessed September 27, 2022.
6. Liraglutide. Lexi-Drugs. Lexicomp. Wolters Kluwer. Hudson, Oh. Available at <https://online.lexi.com>. Accessed September 27, 2022.
7. Novo Nordisk A/S. Victoza (liraglutide) injection. <https://www.victoza.com/>. Updated February 2021. Accessed September 27, 2022.
8. VICTOZA (liraglutide) [package insert]. Denmark; Novo Nordisk; Revised June 10, 2022.