

# Weekly Pharmacy Pearl #30 – Is Immunotherapy Same as Chemotherapy?

## Immunotherapy vs Chemotherapy

Immunotherapy	Cytotoxic Chemotherapy
<ul style="list-style-type: none"> <li>Target tumor cells indirectly</li> <li>Stimulate patient's immune system to attack and kill cancer cells</li> </ul>	<ul style="list-style-type: none"> <li>Directly interfere with tumor cell growth and survival</li> <li>Cause death of both tumor cells and rapidly dividing cells</li> </ul>
Adverse event profile due to an overactive immune system	Adverse event profile due to killing rapidly dividing cells
Adverse events can occur at any point throughout therapy	Adverse events occur more acutely, predictable, around cycles
<b>Does not cause neutropenia</b>	<b>Commonly causes bone marrow suppression and neutropenia</b>

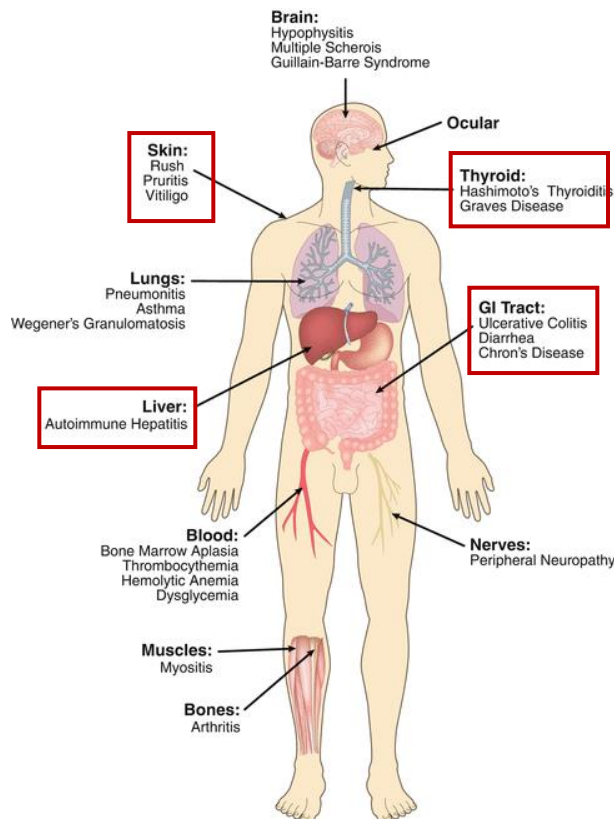
## Common Immune Checkpoint Inhibitors

- Pembrolizumab (Keytruda)
- Nivolumab (Opdivo)
- Cemiplimab (Libtayo)
- Ipilimumab (Yervoy)
- Atezolizumab (Tecentriq)
- Avelumab (Bavencio)
- Durvalumab (Imfinzi)

Most commonly utilized in malignancies involving kidney, lung, liver, breast and bladder

## Adverse Effects of Immunotherapy

Most common AEs involve skin, GI tract, endocrine system and liver



## Treatment of Immune Related Adverse Events

<b>Dermatologic</b>	<ul style="list-style-type: none"> <li>• Topical emollient</li> <li>• Antihistamines</li> <li>• Topical steroids</li> <li>• Systemic steroids</li> <li>• IVIG</li> <li>• Cyclosporine</li> </ul>
<b>Gastrointestinal</b>	<ul style="list-style-type: none"> <li>• Systemic steroids</li> <li>• Infliximab</li> <li>• Vedolizumab</li> </ul>
<b>Endocrine</b>	<p><u>Hypothyroidism</u></p> <ul style="list-style-type: none"> <li>• Levothyroxine</li> </ul> <p><u>Hyperthyroidism</u></p> <ul style="list-style-type: none"> <li>• Beta blockers</li> <li>• Hydration/Supportive Care</li> <li>• Systemic steroids</li> </ul> <p><u>Adrenal Insufficiency</u></p> <ul style="list-style-type: none"> <li>• Systemic steroids</li> </ul> <p><u>Hypophysitis</u></p> <ul style="list-style-type: none"> <li>• Systemic steroids</li> <li>• Hormone replacement</li> </ul>
<b>Hepatic</b>	<ul style="list-style-type: none"> <li>• Systemic steroids</li> <li>• Mycophenolate mofetil</li> <li>• Antithymocyte globulin therapy (ATG)</li> </ul>

\*Dependent upon grades or severity of symptoms

## Key Points

- These medications utilize our own T cells to rev up the immune system to attack cancer cells
- Unlike chemotherapy, **does not kill off all rapidly dividing cells**
- Being increasingly utilized for many different types of malignancies
  - Important to clarify what type of treatment pts are receiving (many pts assume everything is chemo)
- **Immunotherapy does not cause bone marrow suppression**
  - Would not treat these patients the same as those presenting with febrile neutropenia
- Patients receiving immunotherapy can often present to the ED with immune related AEs (irAE)
  - Rashes, diarrhea, abdominal pain, elevated LFTs, altered thyroid studies, etc
- irAEs most commonly treated with steroids to blunt effects of overactive immune system
- Important not to mask the symptoms of irAEs (ex. Providing antidiarrheal agents)
  - May interfere with grading and result in incorrect treatment