IMMUNOTHERAPY is the use of medicines to help a person’s own immune system recognize and destroy cancer cells.

**Immune therapy for Early Stage Bladder Cancer**
- **BCG** is a type of bacteria related to the one that causes tuberculosis. While it doesn’t usually cause a person to get sick, it can help trigger an immune response.
- **BCG** can be put directly into the bladder (as a liquid) through a catheter. This activates immune system cells in the bladder, which in turn can attack bladder cancer cells.
- For some early-stage cancers, **BCG** can be used after transurethral resection of bladder tumor (TURBT) to help keep the cancer from coming back.
- **BCG** treatment is usually done by your urologist, is started a few weeks after a TURBT and is given once a week for 6 weeks. Sometimes long-term maintenance **BCG** therapy is given.
- Treatment with **BCG** can cause symptoms that feel like having the flu, such as fever, chills, and fatigue. It can also cause a burning feeling in the bladder. Rarely, **BCG** can spread through the body, leading to a serious infection. One sign of this can be a high fever that isn’t helped by aspirin or similar medicines.

**Immune therapy for Locally Advanced or Metastatic Bladder Cancer**
- A new class of drugs called Immune checkpoint inhibitors (for advanced cancers) target the PD-L1 and PD-1 (Programmed Death-Ligand) on the cancer cell. Under normal conditions, PD-L1 and PD-1 tell the immune system not to kill the cell. Bladder tumors have higher levels of PD-L1 which allow cancer cells to “hide” from the host immune system. Immune checkpoint inhibitor drugs bind to PD-L1 and PD-1 and essentially tell the immune system to attack the cancer cells.

**Currently three PD-L1 inhibitors are clinically available including atezolizumab (Tecentriq), avelumab (Bavencio), and durvalumab (Imfinzi).**
- **Tecentriq**: IV 1200 mg (flat dose) once every 3 weeks over 60 minutes.
- **Bavencio**: IV 10 mg/kg once every 2 weeks over 60 minutes.
- **Imfinzi**: IV 10 mg/kg once every 2 weeks over 60 minutes.

**Currently two PD-1 inhibitors are clinically available including nivolumab (Opdivo) and pembrolizumab (Keytruda).** They block a signal that would have prevented activated T cells from attacking the cancer, thus allowing the immune system to clear the cancer.
- **Opdivo**: IV 240 mg (flat dose) once every 2 weeks over 60 minutes.
- **Keytruda**: IV: 200 mg (flat dose) once every 3 weeks over 30 minutes.

**Side Effects**: Common side effects of these drugs include fatigue, nausea, loss of appetite, fever, urinary tract infections, rash, diarrhea, and constipation.

**Less often, more serious side effects can occur.** These drugs work by basically removing the brakes on the body’s immune system. Sometimes the immune system starts attacking other parts of the body, which can
cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, or other organs.

The information provided in this article is intended for your general knowledge only and is not a substitute for professional medical advice or treatment for specific medical conditions. You should not use this information to diagnose or treat a health problem or disease without consulting with a qualified healthcare provider. Please consult your healthcare provider with any questions or concerns you may have regarding your condition.