

INTRODUCTION TO IMMUNOSUPPRESSION

BACKGROUND & DEFINITIONS



Immunosuppression occurs when our immune system's ability to fight infections and other diseases is decreased. Immunosuppression can be caused by medications but may also result from some diseases. After someone receives a liver transplant, the goal is to prevent rejection with immunosuppression. Rejection is when your body recognizes the new liver as not its own and tries to attack it. We can prevent rejection by decreasing the immune's system response to unknown materials in our body, including your new liver. The goal is to use the minimal amount of medications possible to still allow your body to respond to possible harmful agents that enter our body (i.e. infections/diseases, toxins, etc). This goal requires a balance between preventing rejection, while avoiding too much immunosuppression that could lead to other problems including infection and medication side-effects, for example.

Current anti-rejection or immunosuppression medication combinations used are different at centers worldwide, across age groups and between organ transplant types (i.e. liver, kidney heart, etc). In general, medication plans include an initial induction medication (given at time of transplant) to "reset" your immune system, followed by a life-long medication to continually protect your new liver. Despite different medication combinations used between centers, tacrolimus remains the most commonly used medication in all transplant types as we know it prevents rejection well. In general, all anti-rejection medications are relatively well tolerated but are known to have long term side effects.

Despite improvements in immunosuppression management, rejection still can happen to many patients. When rejection occurs, its treatment depends on the type of rejection and severity, but usually involves a course of a medication class known as "steroids". Management of rejection is specific to each patient and their particular rejection episode, so different rejections episodes might be treated with different medications and could require changes to the patient's overall medication combination.

Improvements in the field of liver transplantation have been continuously made since liver transplants were first performed by Dr. Thomas Starzl in the 1960s. Along with medical and surgical developments, a better understanding of the immune system has led to improved outcomes and long-term survival. Due to increasing awareness of long-term medication side-effects, the development of safe and effective medication combinations now represents the most important element in post-transplant care.

Immunosuppressive plans used for initiation (induction) and continued treatment of rejection for children that have received a liver transplant typically includes a combination of the medications described further in this section. Since each patient's care is individualized, it is important for each patient to follow their own medical team's recommendations and listen to their doctor's medical advice as much as possible.



This information should not replace medical advice from your doctors or medical team. We encourage our readers to follow their transplant team's medical advice and reach out to their doctors and medical team for further recommendations.

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DEFINITIONS:

- **Immunosuppression:** when our immune system's ability to fight infections and other diseases is decreased. Can be caused by medications but also by diseases like Acquired Immunodeficiency Syndrome (AIDS) and certain malignancies (cancers), for example.
- **Immune system:** complex system that protects our body from outside invaders such as infections. When the body senses foreign substances that could potentially injure our body, the immune system works to recognize and get rid of them.
- **Transplant:** medical procedure in which an organ or tissue is removed from one person's body (donor) and placed in the body of a different person (recipient). This is done to replace a damaged or missing organ.
- **Rejection:** process in which a transplant recipient's immune system recognizes and attacks the transplanted organ or tissue. While it can be serious, it doesn't mean that the patient will lose the transplanted organ or tissue. One of the most common causes of rejection is medication non-adherence or non-compliance (i.e. Not taking medications as prescribed).
- **Induction:** potent immunosuppressive medication given at the time of transplant to rapidly decrease the recipient's immune system's ability to recognize and attack the transplanted organ.
- **Steroid:** or corticosteroid, is a potent immunosuppressive and anti-inflammatory medication used to prevent the body from rejecting a transplanted organ. It is also used to treat certain forms of arthritis, severe allergies, asthmas, as well as skin, blood, kidney, eye, thyroid and intestinal disorders. The most used type of steroid is called Prednisone. These class or medications are not to be confused with anabolic steroids, which are typically used for muscle building.

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