

# METFORMIN IN THE MANAGEMENT OF THE NEW-ONSET DIABETES AFTER TRANSPLANTATION

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**Background:** Advances in immunosuppressive therapy have significantly improved graft survival and overall outcomes after solid organ transplantation. However, metabolic complications, particularly new-onset diabetes after transplantation (NODAT), remain common and are associated with increased cardiovascular risk, graft dysfunction, and mortality. Effective strategies for the prevention and management of post-transplant hyperglycemia are therefore essential.

**Methods:** A narrative review of English-language publications indexed in the PubMed database during the last 10 years was conducted to evaluate the mechanisms of immunosuppressant-induced disturbances in glucose metabolism and to assess the potential role of metformin in the management of post-transplant hyperglycemia.

**Results:** Pharmacological therapy combined with lifestyle modification represents a key approach for glycemic control in transplant recipients. Metformin, widely used as first-line therapy in type 2 diabetes mellitus, has been increasingly considered for patients with NODAT. Through improvement of insulin sensitivity and inhibition of hepatic gluconeogenesis, metformin may counteract hyperglycemic effects induced by commonly used immunosuppressive agents, including calcineurin inhibitors (cyclosporine, tacrolimus), mammalian target of rapamycin (mTOR) inhibitors (sirolimus, everolimus), and glucocorticoids. Additionally, metformin may help limit weight gain associated with chronic corticosteroid therapy.

**Conclusions:** Metformin represents a valuable therapeutic option for the management of post-transplant hyperglycemia and NODAT due to its favorable metabolic profile, low risk of hypoglycemia, and limited interaction with immunosuppressive therapy. Because the drug is excreted unchanged by the kidneys, careful monitoring of renal function is required. Dose adjustment should be guided by estimated glomerular filtration rate, with discontinuation recommended when renal function declines below established safety thresholds.

**Keywords:** organ transplantation, new-onset diabetes after transplantation, immunosuppressive therapy, hyperglycemia, metformin.