

Redefining Diabetes Management: Tirzepatide's Role in Improving Cardiovascular Outcomes

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Abstract

Diabetes, the convergence of type 2 diabetes mellitus (T2DM) and obesity-constitutes a major global health challenge, driving disproportionate cardiovascular morbidity and mortality. In Bangladesh alone, an estimated 14 million individuals live with diabetes (prevalence 13.2%), while 31% of adults have elevated BMI (≥ 25 kg/m²), including 6% with obesity. Conventional antidiabetic therapies emphasize glycemic control; however, persistent residual cardiovascular risk underscores the necessity for interventions targeting the intertwined mechanisms of adiposity, insulin resistance, and cardiometabolic dysfunction.

Tirzepatide, a first-in-class dual agonist of glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptors, represents a paradigm shift in diabetes management. Data from the SURPASS program demonstrate unprecedented reductions in HbA1c (up to -2.5%) and body weight (15-20%), surpassing outcomes achieved with established GLP-1 receptor agonists and insulin. Beyond glycemic and weight control, tirzepatide improves cardiometabolic health through reductions in blood pressure, favorable modulation of lipid profiles, and attenuation of systemic inflammation. Preliminary cardiovascular outcomes further suggest a protective role against major adverse cardiovascular events (MACE), reinforcing its potential as a cardiometabolic disease modifier rather than a glucose-lowering agent alone.

By simultaneously addressing T2DM and obesity, tirzepatide exemplifies an integrated therapeutic strategy aligned with contemporary priorities that emphasize cardiovascular risk reduction alongside glycemic targets. Ongoing large-scale outcome trials, including SURPASS-CVOT, will elucidate its definitive impact on morbidity and mortality. Collectively, tirzepatide advances the therapeutic frontier, offering a transformative approach for patients at the nexus of diabetes, obesity, and cardiovascular disease. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2025;4(Suppl 1): S33]

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