Article Summary

Rotation 8: Family Medicine

Palmer SC, Tendal B, Mustafa RA, Vandvik PO, Li S, Hao Q, Tunnicliffe D, Ruospo M, Natale P, Saglimbene V, Nicolucci A, Johnson DW, Tonelli M, Rossi MC, Badve SV, Cho Y, Nadeau-Fredette AC, Burke M, Faruque LI, Lloyd A, Ahmad N, Liu Y, Tiv S, Millard T, Gagliardi L, Kolanu N, Barmanray RD, McMorrow R, Raygoza Cortez AK, White H, Chen X, Zhou X, Liu J, Rodríguez AF, González-Colmenero AD, Wang Y, Li L, Sutanto S, Solis RC, Díaz González-Colmenero F, Rodriguez-Gutierrez R, Walsh M, Guyatt G, Strippoli GFM.

Sodium-glucose cotransporter protein-2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists for type 2 diabetes: systematic review and network meta-analysis of randomised controlled trials. BMJ. 2021 Jan 13;372:m4573. doi: 10.1136/bmj.m4573. Erratum in: BMJ. 2022 Jan 18;376:o109. doi: 10.1136/bmj.o109. PMID: 33441402; PMCID: PMC7804890.

This systematic review and network meta-analysis aimed to evaluate the effectiveness of sodium-glucose cotransporter-2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists in managing type 2 diabetes, focusing on cardiovascular and renal outcomes. The analysis included 764 randomized controlled trials with 421,346 patients, comparing SGLT-2 inhibitors and GLP-1 receptor agonists with placebo or standard care in adults with type 2 diabetes over 24 weeks or longer.

Key Findings: Both SGLT-2 inhibitors and GLP-1 receptor agonists demonstrated significant benefits in reducing all-cause mortality, cardiovascular mortality, non-fatal myocardial infarction, and kidney failure. High-certainty evidence supports these effects. However, some notable differences emerged between the two drug classes:

- **SGLT-2 inhibitors** were more effective at reducing hospital admissions for heart failure.
- **GLP-1 receptor agonists** had a greater effect in reducing non-fatal stroke.

In terms of adverse effects, SGLT-2 inhibitors were associated with a higher risk of genital infections, while GLP-1 receptor agonists might cause severe gastrointestinal events, though evidence for the latter was of low certainty. Additionally, both drug classes might contribute to weight loss, but again, this was based on low-certainty evidence. There was little or no effect on other complications of diabetes, such as limb amputation, blindness, neuropathy, or health-related quality of life.

Absolute Risk Reduction: The benefits of these medications were highly dependent on individual patient risk profiles. For instance, in patients at very low cardiovascular and renal risk, the absolute benefits were smaller, while for those at very high risk, the benefits were more pronounced. For example, in high-risk patients, SGLT-2 inhibitors resulted in 3 to 40 fewer deaths per 1000 patients treated over five years.

Clinical Implications: The study underscores the importance of tailoring treatment based on the cardiovascular and renal risk profile of individual patients. Both drug classes offer substantial benefits in preventing cardiovascular and renal complications in patients with type 2 diabetes, but the choice between them should be guided by the specific risk factors and adverse effect profiles. This review directly informs BMJ Rapid Recommendations, emphasizing the clinical utility of these findings.

In conclusion, SGLT-2 inhibitors and GLP-1 receptor agonists provide significant cardiovascular and renal protection in type 2 diabetes patients, with variations in their effects on heart failure and stroke, as well as different adverse event profiles. The results offer a foundation for personalized diabetes management, considering individual risk factors.