ADT and Cardiovascular Risk in Prostate Cancer: ESC Cardio-Oncology 2026

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> Androgen deprivation therapy (ADT) is a cornerstone of prostate cancer management, yet its association with increased cardiovascular morbidity and mortality presents a significant clinical dilemma.1 The immediate takeaway from discussions at ESC Cardio-Oncology 2026 is the reinforced necessity for comprehensive cardiovascular risk assessment and management in all patients initiating ADT, alongside careful consideration of treatment duration and intensity.

KEY TAKEAWAYS

- The Pivot: ADT's established role in prostate cancer is increasingly balanced against its cardiovascular safety profile.
- The Data: ADT is associated with increased risks of myocardial infarction, stroke, and sudden cardiac death.
- The Action: Implement baseline and ongoing cardiovascular risk stratification and management for all patients receiving ADT.

Androgen deprivation therapy (ADT), encompassing gonadotropin-releasing hormone (GnRH) agonists, GnRH antagonists, and bilateral orchiectomy, effectively reduces androgen levels, thereby inhibiting prostate cancer growth.1 This therapeutic approach is indicated for various stages of prostate cancer, including metastatic, locally advanced, and high-risk localised disease, and as neoadjuvant or adjuvant therapy with radiation.2 While ADT demonstrably improves progression-free and overall survival in specific patient populations, its systemic effects extend beyond the prostate, notably impacting cardiovascular health.3

Prostate cancer is the second most common cancer in men globally, with a significant proportion of patients requiring ADT at some point during their disease course. The increasing life expectancy of prostate cancer patients, coupled with the prevalence of cardiovascular disease in older men, underscores the clinical importance of understanding and mitigating ADT-associated cardiovascular risks. The intersection of oncology and cardiology, termed cardio-oncology, has emerged as a critical field to address these complex patient needs, focusing on preventing, monitoring, and treating cardiovascular complications arising from cancer therapies.

The mechanisms linking ADT to increased cardiovascular risk are multifactorial. Androgens play a protective role in cardiovascular physiology, influencing lipid metabolism, glucose homeostasis, endothelial function, and myocardial contractility.4 ADT-induced hypogonadism can lead to adverse metabolic changes, including increased visceral adiposity, insulin resistance, dyslipidaemia (elevated triglycerides and low-density lipoprotein cholesterol, reduced high-density lipoprotein cholesterol), and hypertension.5 These metabolic derangements accelerate atherosclerosis and

increase the risk of thrombotic events. Furthermore, ADT may directly affect myocardial function, contributing to QT interval prolongation and an increased risk of arrhythmias.6

Clinical Considerations and Risk Mitigation

Multiple observational studies and meta-analyses have consistently reported an elevated risk of cardiovascular events in patients receiving ADT. A meta-analysis of 16 studies, for example, showed a significantly increased risk of myocardial infarction (relative risk [RR] 1.21, 95% CI 1.10-1.33) and sudden cardiac death (RR 1.20, 95% CI 1.07-1.34) in patients treated with GnRH agonists compared to controls.7 The risk appears to be dose- and duration-dependent, with longer durations of ADT associated with greater cardiovascular morbidity.8 These studies often involve large cohorts of men with prostate cancer, comparing those receiving ADT to those undergoing other treatments or active surveillance. Methodologies typically include retrospective analyses of administrative databases, prospective cohort studies, and systematic reviews with meta-analyses, allowing for the aggregation of evidence across diverse patient populations and healthcare settings.

The ESC Cardio-Oncology 2026 discussions highlighted the importance of a multidisciplinary approach to managing these patients. Prior to initiating ADT, a thorough cardiovascular risk assessment is essential, including evaluation of traditional risk factors such as hypertension, diabetes, dyslipidaemia, smoking status, and pre-existing cardiovascular disease.9 For patients with established cardiovascular disease or multiple risk factors, optimisation of these conditions is paramount. This may involve intensification of anti-hypertensive, lipid-lowering, and anti-diabetic therapies, as well as lifestyle modifications.10 Patient populations at particular risk include older men, those with a history of myocardial infarction, stroke, or peripheral artery disease, and individuals with poorly controlled metabolic syndrome components.

The choice of ADT agent may also influence cardiovascular risk. GnRH antagonists (e.g., degarelix) have shown a potentially more favourable cardiovascular safety profile compared to GnRH agonists (e.g., leuprolide, goserelin) in some studies, particularly in patients with pre-existing cardiovascular disease.11 A phase III trial comparing degarelix with leuprolide in patients with prostate cancer and a history of cardiovascular disease reported a lower incidence of major adverse cardiovascular events (MACE) with degarelix (HR 0.44, 95% CI 0.24-0.80, P=0.008).12 This differential effect may stem from the distinct mechanisms of action: GnRH agonists initially cause a testosterone surge before desensitizing the pituitary, while GnRH antagonists induce an immediate and sustained suppression of testosterone without a surge. However, further large-scale, prospective trials are needed to definitively establish differential cardiovascular risks among ADT agents across diverse patient populations.13 Limitations in current evidence include the observational nature of many studies, potential confounding by indication, and heterogeneity in patient characteristics and cardiovascular event definitions.

During ADT, ongoing monitoring for cardiovascular events and metabolic changes is crucial. This includes regular assessment of blood pressure, lipid profiles, glucose levels, and body weight.14 Early intervention for emerging cardiovascular risk factors can mitigate long-term complications. For patients with high cardiovascular risk, consideration of intermittent ADT regimens, where appropriate for oncological control, may also help reduce cumulative cardiovascular exposure.15

For extensive clinical guidance across diverse oncology specialities, including prostate cancer and its treatment considerations, refer to the Oxford Handbook of Oncology.

CLINICAL IMPLICATIONS

The persistent cardiovascular burden associated with androgen deprivation therapy demands a more integrated approach to prostate cancer care. It is no longer sufficient for oncologists to focus solely on PSA levels and tumour response; the metabolic and cardiac consequences of ADT are too significant to be treated as secondary concerns. The data, particularly regarding GnRH agonists, compels a proactive stance on cardiovascular risk mitigation, moving beyond mere awareness to active intervention.

For clinicians, this means a mandatory baseline cardiovascular risk assessment, not as a checkbox exercise, but as a foundation for a tailored management plan. The potential for GnRH antagonists to offer a safer profile in high-risk cardiac patients, as suggested by some evidence, warrants careful consideration in prescribing decisions. Pharmaceutical companies developing these agents should be encouraged to invest in larger, dedicated cardiovascular outcomes trials to provide definitive data, rather than relying on post-hoc analyses or subgroup findings. This would provide clinicians with the robust evidence needed to make truly informed choices.

Patients undergoing ADT deserve comprehensive care that addresses their whole health, not just their cancer. This requires clear communication from their care team about the cardiovascular risks, the importance of lifestyle modifications, and the need for ongoing monitoring. The onus is on the healthcare system to facilitate multidisciplinary collaboration between oncology, cardiology, and primary care to ensure these patients receive coordinated and effective management of both their cancer and their cardiovascular health. Without this, we risk trading one life-threatening disease for another, a compromise that is increasingly unacceptable given current medical knowledge.

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