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Advancements in Cardiovascular Implants: Paving the Way for a Healthier Heart

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cutting-edge technologies such as biomaterials, nanotechnology, and 3D printin cardiovascular implants. It explores how these technological advancements e overall performance, paving the way for personalized and precision medicine in communication and remote monitoring capabilities in cardiovascular implants in improving patient care and facilitating timely interventions.

In addition to technical aspects, the review addresses regulatory considerat development and deployment of cardiovascular implants. It explores the ethical i emphasizing the importance of patient autonomy, privacy, and informed conse

arrest. Recent developments in pacemaker and ICD technology include smaller device sizes, longer battery life, and improved algorithms for better arrhythmia detection.

Heart valve implants have become essential for individuals with damaged or malfunctioning heart valves. Traditional valve replacement surgeries involve open-heart procedures, but advancements in minimally invasive techniques, such as transcatheter aortic valve replacement (TAVR), have allowed for valve replacement without the need for open-heart surgery [6]. TAVR has signi cantly reduced recovery times and improved outcomes for high-risk patients.

Coronary stents are used to treat narrowed or blocked arteries, restoring blood ow to the heart muscle. Drug-eluting stents, coated with medications that prevent the re-narrowing of the arteries, have become standard in many interventions. Additionally, bioresorbable stents, which gradually dissolve over time, are being explored to address some of the long-term complications associated with permanent stents [7].

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VADs are mechanical pumps implanted in patients with severe heart failure to help the heart pump blood more e ectively. These devices can serve as a bridge to transplantate (49(n)5s(l)12.1(u))61(a),n pe tw(s)-8(e)c.1 0 ices (19(p)7(l)-3(a)9(n)(es f)9.1nng-ter(t)6((t)6(co)o)-5(a-t)6(er)6(t)-5(