In the modern age of heart valve replacement, biologic valves and transarterial/apical valve replacement increasingly have been used, mainly due to the required chronic oral anticoagulation necessary with mechanical valve replacement. In this issue of the Journal, Johnson and colleagues have continued their series of superb reports on mechanical valve replacement using the St Jude Medical mechanical valve prosthesis, this publication out to 30 years of follow-up. Despite excellent outcomes, low incidence of valve-related events, and unquestioned durability, this experienced group has lowered the use of the St Jude Medical mechanical valve from 61% to 24%, echoing the common trend. This decreased mechanical valve replacement use flies in the face of limited long-term (ie, >20 years) data on biologic valve replacements and even less on transarterial/apical valve replacement used for the treatment of intrinsic valve disease or biologic valves replacement structural valve degeneration. In fact, in 2001 Khan and colleagues, in a report on the Cedars Sinai cumulative valve experience over 20 years, noted that for the first 10 years following surgery, valve-related events were greater in mechanical valve replacements related to anticoagulant-related hemorrhage and thromboembolism in this and other reports reflect a greater incidence of these valve-related events due to the Kaplan–Meier curves then crossed and valve-related events were more common in biologic valve replacements and even less on transarterial/apical valve replacement used for the treatment of intrinsic valve disease or biologic valves replacement structural valve degeneration. In fact, in 2001 Khan and colleagues, in a report on the Cedars Sinai cumulative valve experience over 20 years, noted that for the first 10 years following surgery, valve-related events were greater in mechanical valve replacements related to anticoagulant-related hemorrhage and the Kaplan–Meier curves then crossed and valve-related events were more common in biologic valve replacements related to structural valve degeneration. Importantly, Johnson and colleagues found no wear-related valve failure with the St Jude Medical mechanical valve, similar to our report of 25 years’ follow-up covering more than 30,000 patient years. The extraordinary durability, particularly as the general population is living longer and having fewer resources, becomes increasingly important.

Reoperation for structural valve degeneration can be conducted with low and so-called “acceptable” mortality. Publications attesting to such, however, do not address, in detail, postoperative morbidity, cost, nor the loss of quality of life during the recovery period, which can be prolonged in older patients 15 to 25 years after initial valve replacement. A valve-in-valve option may only be available for larger size biologic valves replacements. In addition, there also exists a substantive number of patients who for a variety of reasons are not felt to be candidates for reoperation due to coexisting morbidity, and thus their medical condition remains unserved.

The increasing use of biologic valve replacements is predominantly due to chronic oral anticoagulation necessary for mechanical valves. The data for valve-related events, particularly, the most common in mechanical valve–replacement patients, anticoagulant-related hemorrhage and thromboembolism in this and other reports reflect a greater incidence of these valve-related events due to greater target international normalized ratios and the use of prothrombin time as an appropriate measure of adequate chronic oral anticoagulation in the earlier years of valve usage and in not attending to modern technologic improvements. It has been long known that the more time spent within the target international normalized ratio range, the fewer valve-related events, but the use of home international normalized ratio monitoring to maintain presence in this range has lagged in the United States for patients with mechanical valves and those in atrial fibrillation; yet, home monitoring of blood glucose is commonly prescribed in patients with diabetes. Furthermore, several reports have recommended lower target international normalized ratios than currently recommended. Newer and reversible anticoagulants have been developed, but trials in mechanical valve–replacement patients have been limited. García-Rinaldi and colleagues, for example, have followed nearly 200 patients treated only with aspirin and
clopidogrel. The event rate was quite low, and those patients with events were either clopidogrel-resistant or had been removed from the drug. Opportunities abound for research to further reduce valve-related events in mechanical valve–replacement patients and maximize the extraordinary durability of the St Jude Medical mechanical valve documented in this report. More effort should be expended to investigate the issues raised herein, absolving patients from the risk of reoperation for structural valve degeneration.

References