Despite improvements in cardiopulmonary bypass (CPB) technique, anesthesia and intensive care, preoperative renal dysfunction still represents a significant and potentially lethal complication after cardiac operations causing high mortality, morbidity and high cost.

Following CPB, 10-30% of patients develop transient decline in renal function, 7-8% develop acute renal failure 1-4% of them requiring dialysis, and mortality from renal failure up to 60%.

The main reasons for impairment of renal function are an acute tubular necrosis. A number of recent preventive strategies and approaches that minimize renal dysfunction during cardiac surgery have been described to improve renal outcome.

One strategy is to use some techniques for renal protection which includes:

- Avoidance of CPB which become one of the most popular techniques, as off-pump coronary revascularization.
- Early and aggressive hemofiltration is associated with better than predicted survival in postoperative acute renal failure.
- Using an optimal hematocrit concentration during cardiopulmonary bypass
- Full monitoring including cardiac output.

Other strategy is to avoid harmful drugs, uses of vasodilator drugs to induce good renal perfusion and to protect the kidneys from free radicals due to surgeries or CPB.

The controversy surrounding the effectiveness of dopamine and/or furosemide in the prevention of postoperative acute renal failure is not new, although both substances continue to be widely used in prevention of perioperative renal injury; recently so many important papers have confirmed the absence of any renal protective effect of either drug after cardiac surgery. Mannitol still needs large randomized trials after cardiac surgery and it must be given before ischemic episode to be effective. Fenoldopam is a recent dopaminergic drug with so many advantages over dopamine, approved by FDA and has a renoprotective effects especially in high risk patients during cardiac surgery.