



“Enhanced Recovery Protocols in Cardiac Surgery: Implications for Nursing Practice”

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Abstract: Enhanced Recovery Protocols (ERPs) have emerged as innovative, evidence-based strategies to improve surgical outcomes, shorten hospital stays, and enhance patient satisfaction. While first introduced in colorectal surgery, these structured care pathways are now being increasingly adapted for cardiac surgery, an area historically associated with complex recovery and prolonged hospitalization. The implementation of ERPs in cardiac surgery focuses on minimizing the stress response, optimizing perioperative care, and promoting early return to baseline function. Nurses are pivotal in all stages of this process, from patient education and risk assessment to intraoperative collaboration, postoperative mobilization, and psychosocial support. This article examines the principles of ERPs in cardiac surgery, elaborates on the roles and responsibilities of nurses in implementing these protocols, and discusses the benefits, challenges, and future directions. By embracing ERPs, nursing practice can transform the landscape of cardiac surgical recovery, ensuring safe, cost-effective, and patient-centered care.

Keywords: *Enhanced Recovery Protocols; Cardiac Surgery; Nursing Practice; Perioperative Care; Fast-Track Recovery; Multidisciplinary Approach; Patient Outcomes.*

Introduction

Cardiac surgery remains a cornerstone intervention for managing severe cardiovascular diseases, including coronary artery disease, valvular heart disease, and congenital cardiac anomalies. Despite advancements in surgical techniques, anesthesia, and critical care, recovery following cardiac surgery is often prolonged and challenging. Patients may experience complications such as infections, arrhythmias, respiratory distress, delirium, or psychological distress. Traditionally, recovery has been characterized by extended stays in the intensive care unit (ICU), slow mobilization, and delayed discharge, which increase the physical and emotional burden on patients while simultaneously straining healthcare resources.

Enhanced Recovery Protocols (ERPs), also termed Enhanced Recovery After Surgery (ERAS), were

developed in the 1990s by Henrik Kehlet and colleagues as a multimodal approach to perioperative care. Their central goal was to reduce the physiological stress response to surgery and accelerate recovery without compromising safety. Initially successful in colorectal surgery, the model has since expanded into multiple surgical specialties, including gynecology, orthopedics, and most recently, cardiac surgery. The adaptation of ERPs to cardiac procedures acknowledges the unique physiological and psychosocial needs of cardiac patients while aiming to improve both short- and long-term outcomes.

For nurses, the shift to ERP-based care represents not just a clinical adaptation but a transformation in professional responsibility. Nurses become active leaders in patient education, advocates of patient-centered care,



coordinators of interdisciplinary collaboration, and guardians of recovery milestones. This review elaborates on the components of ERPs in cardiac surgery and explores the implications of this evolving paradigm for nursing practice.

Understanding Enhanced Recovery Protocols (ERPs)

Enhanced Recovery Protocols are structured, evidence-based care pathways designed to minimize perioperative risks and optimize outcomes. They involve coordinated interventions across the preoperative, intraoperative, and postoperative phases of care. The foundation of ERPs lies in attenuating the physiological stress induced by surgery and anesthesia, preserving organ function, and enabling patients to resume normal activity sooner.

In the context of cardiac surgery, ERPs include several vital components. Preoperatively, interventions involve patient education, optimization of comorbidities, and nutritional and psychological support. Intraoperatively, strategies such as minimally invasive surgical techniques, goal-directed fluid therapy, normothermia maintenance, and optimized anesthesia protocols are emphasized. Postoperatively, protocols focus on early extubation, multimodal pain management, early mobilization, nutritional resumption, and psychosocial rehabilitation.

Nursing practice intersects with each of these stages. Nurses are tasked not only with implementing clinical interventions but also with ensuring continuity of care, tailoring ERP protocols to patient needs, and fostering adherence among patients and families. In essence, ERPs reframe nursing roles from task-based activities toward holistic, outcome-driven practices.

Preoperative Phase: The Nurse's Role

The preoperative stage is critical in preparing patients physically and mentally for the challenges of cardiac surgery. Nurses are uniquely positioned to optimize this phase through education, assessment, and psychological support.

Patient Education and Counseling form the backbone of preoperative nursing responsibilities. Patients scheduled for cardiac surgery often experience significant anxiety due to fear of the procedure, potential complications, and lifestyle changes afterward. Nurses provide detailed explanations about the surgical process, postoperative expectations, potential risks, and recovery milestones. By demystifying the experience, nurses alleviate anxiety and empower patients to engage actively in their recovery. Education also includes guidance on breathing exercises, mobilization expectations, and self-care post-discharge, thus establishing a foundation for adherence to ERP measures.

Risk Assessment and Optimization are essential in tailoring ERPs to individual patients. Nurses assess comorbid conditions such as diabetes, obesity, chronic lung disease, and hypertension, which can influence surgical outcomes. Interventions such as smoking cessation counseling, blood sugar control, weight management, and prehabilitation exercises are facilitated by nursing staff in collaboration with other specialists. Nurses also ensure that laboratory evaluations, imaging, and preoperative checklists are completed on time, reducing the risk of last-minute cancellations and delays.

Psychological Support is often overlooked but crucial in preparing patients for surgery. Anxiety and depression are prevalent among cardiac patients, potentially affecting recovery outcomes. Nurses employ therapeutic communication strategies, provide reassurance, and refer patients to counseling services when needed. By addressing mental health needs preoperatively, nurses contribute to improved postoperative adaptation and reduced incidence of complications such as delirium.

Intraoperative Considerations and Nursing Collaboration

During the intraoperative phase, the direct nursing role may appear secondary to the surgeon and anesthesiologist; however, nurses play a pivotal role in



ensuring patient safety, continuity of care, and adherence to ERP goals.

Maintenance of Normothermia is a key ERP component, as hypothermia during surgery is associated with coagulopathy, increased infection risk, and prolonged recovery. Nurses monitor core body temperature and support the use of warming devices and fluid warmers to maintain normothermia.

Infection Prevention strategies, including appropriate skin preparation, prophylactic antibiotics, and strict adherence to aseptic techniques, are heavily dependent on nursing vigilance. Circulating and scrub nurses ensure compliance with infection control protocols, reducing the incidence of postoperative surgical site infections and sepsis.

Communication in Multidisciplinary Teams is another critical responsibility. Intraoperative nurses act as coordinators, ensuring that surgeons, anesthesiologists, perfusionists, and other staff are aligned in their roles and aware of patient-specific ERP objectives. This collaboration ensures smooth transitions across the surgical timeline, minimizing errors and delays.

Postoperative Phase: Core Nursing Responsibilities

The postoperative phase of ERPs in cardiac surgery is where the most visible benefits are realized, and where nursing interventions have the most profound impact.

Early Extubation and Respiratory Care are central ERP goals. Prolonged mechanical ventilation is linked to ventilator-associated pneumonia, delirium, and longer ICU stays. Nurses closely monitor respiratory function, collaborate with anesthesiologists for extubation readiness, and support patients in transitioning to spontaneous breathing. They also encourage the use of incentive spirometry, deep breathing exercises, and chest physiotherapy to prevent atelectasis and other pulmonary complications.

Pain Management is critical in facilitating mobilization and recovery. Nurses assess pain using standardized tools and implement multimodal analgesic strategies, including

opioids, non-opioid medications, and regional techniques when applicable. Proper pain control allows patients to engage in physiotherapy and ambulation, directly supporting ERP objectives.

Early Mobilization challenges the traditional practice of prolonged bed rest after cardiac surgery. Nurses encourage patients to sit, stand, and ambulate within 24 hours post-surgery, depending on clinical stability. Mobilization prevents deep vein thrombosis, muscle deconditioning, and pulmonary complications while improving patient confidence in recovery.

Nutritional Support is another critical focus. Traditional protocols often delayed oral intake until gastrointestinal function was fully restored, but ERPs promote early initiation of feeding. Nurses assess tolerance to oral intake, encourage nutrient-dense meals, and coordinate with dietitians to ensure adequate caloric and protein intake for healing.

Psychosocial Support remains essential in the postoperative period. Cardiac surgery can trigger significant emotional distress, including anxiety, depression, and body image concerns. Nurses provide ongoing counseling, connect patients with peer support groups, and facilitate family involvement in care, promoting holistic recovery.

Nursing Implications of ERPs in Cardiac Surgery

The adoption of ERPs in cardiac surgery carries broad implications for nursing practice.

Expanded Scope of Practice highlights the evolution of nursing roles from task-oriented care to proactive leadership in perioperative management. Nurses are responsible for preoperative counseling, ERP implementation, patient advocacy, and outcome evaluation, reflecting a more advanced and autonomous practice model.

Interdisciplinary Collaboration is emphasized in ERP implementation. Nurses act as central figures linking surgeons, anesthesiologists, physiotherapists, dietitians, and psychologists, ensuring coordinated care delivery.



This collaboration enhances continuity and efficiency across the surgical continuum.

Patient-Centered Care is another hallmark of ERP-informed nursing. Nurses prioritize shared decision-making, incorporating patient preferences, values, and goals into care plans. This fosters trust, adherence, and satisfaction.

Continuous Monitoring and Quality Improvement represent new opportunities for nursing engagement. By collecting data on recovery metrics, complications, and readmissions, nurses contribute to research, clinical audits, and quality improvement initiatives. This data-driven approach supports ongoing refinement of ERPs.

Challenges in Implementing ERPs in Cardiac Surgery

Despite their benefits, ERPs face several challenges in cardiac surgery, particularly from a nursing perspective.

Resource Limitations are a common barrier. Implementation requires adequate staffing, education, and infrastructure, which may not be feasible in resource-constrained settings. Nurses often face increased workloads and competing priorities that hinder consistent ERP application.

Resistance to Change is another obstacle. Traditional perioperative practices are deeply ingrained, and both healthcare providers and patients may be hesitant to embrace ERP principles such as early mobilization or shortened ICU stays. Nurses often act as change agents, advocating for new practices and educating patients and colleagues about the benefits of ERPs.

Variability in Patient Populations complicates ERP standardization. Cardiac patients often present with complex comorbidities, frailty, or advanced disease, necessitating individualized adaptations. Nurses must balance protocol adherence with patient-specific modifications.

Education and Training Needs also require attention. Successful ERP implementation demands specialized knowledge of pain management, respiratory therapy, nutrition, and psychosocial care. Nurses require ongoing

professional development and institutional support to remain competent in these areas.

Benefits of ERPs in Cardiac Surgery

The benefits of ERP adoption are increasingly evident in the literature. Reduced ICU and hospital lengths of stay are consistently reported, alleviating both patient burden and healthcare costs. Complication rates, including infections, DVT, and delirium, are lower under ERP models, while patient functional recovery and quality of life are significantly improved.

For nurses, these benefits translate into greater professional satisfaction, as patient outcomes improve and recovery milestones are achieved earlier. Patient satisfaction scores are also positively impacted, reflecting the holistic and patient-centered nature of ERP-driven care.

Future Directions and Recommendations

Looking ahead, several recommendations can support the integration of ERPs into cardiac surgery.

First, integration into nursing curricula will ensure that future nurses are equipped with knowledge and skills for ERP implementation. Education should emphasize perioperative physiology, fast-track recovery principles, and patient-centered care models.

Second, the use of technology such as telehealth platforms and mobile health applications can enhance continuity of care. Nurses can remotely monitor recovery, provide counseling, and support adherence to ERP guidelines after discharge.

Third, research opportunities abound for nurses. More nursing-led studies are needed to evaluate ERP interventions in cardiac surgery, particularly in diverse populations and low-resource settings.

Finally, policy development should institutionalize ERP adoption through standardized guidelines and protocols. Nursing leadership is essential in advocating for these changes and ensuring that ERP implementation remains patient-focused and evidence-based.



Summary and Conclusion

Enhanced Recovery Protocols represent a paradigm shift in cardiac surgery, moving away from traditional, conservative recovery pathways toward evidence-based, patient-centered approaches. Nurses are at the heart of this transformation, leading efforts in education, perioperative care, mobilization, and psychosocial support. While challenges such as resource limitations, resistance to change, and training needs exist, the benefits of ERPs—shortened hospital stays, fewer complications, improved patient satisfaction, and reduced costs—underscore their value.

For nursing practice, ERPs provide an opportunity to expand roles, deepen interdisciplinary collaboration, and promote patient empowerment. The successful adoption of ERPs depends on the commitment of nurses as advocates, educators, and innovators. By embracing ERPs, nursing can reshape the future of cardiac surgery recovery, ensuring safer, faster, and more holistic care for patients.

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