

CARDIAC SURGERY RECOVERY UNIT (CSRU)

THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA *Objectives of Training and Specialty Training Requirements in Anesthesia*

Specific Objectives in CanMEDS Format

ROTATION OBJECTIVES

Residents completing the Cardiac surgery recovery Unit (CSRU) should achieve competence in the management of routine postoperative care for Coronary Bypass Graft patients and valve replacement and/or repair (aortic, mitral). In addition, they should gain familiarity with complex cardiac cases involving patients with multiple comorbidities.

At the completion of training, the resident will have acquired the following competencies and will function effectively as:

Medical Expert

- The resident will demonstrate knowledge of the basic sciences as applied to the critical postoperative period following cardiac surgery:

A. *Physiology and Anatomy*

The resident is expected to:

- Describe the normal coronary anatomy and variants, and normal cardiac physiology and the effects of disease states on the normal physiology.
- Describe the anatomy and physiology of cardiac valves, left ventricle, right ventricle, atria, major cardiac vessels, and circulatory system
- Describe the normal conduction pathways of the heart and its clinical significance in disease
- Describe the altered respiratory physiology of the immediately postoperative ventilated patient with significant surgical incisions and pain (sternotomy, large abdominal incision)
- Describe common physiological changes occurring in the postoperative period and the impact these have on end organ function. (neurologic, renal, cardiac, hepatic, gastro-intestinal).

B. *Pharmacology*

The resident should know:

- Heparin, antiplatelet agents dosages and anesthetic implications
- Protamine for heparin reversal , along with side effects and complications
- Anti-fibrinolytic agents, mechanisms of action and indications

- The use of blood products (PRBC, FFP, platelets, cryoprecipitate) and blood alternatives (albumin, starch) as well as transfusion reactions and complications.
- Coagulation drugs currently available (DDAVP, activated factor 7a) their indications, contraindications, dosages and complications
- Commonly used vasodilators, vasoconstrictors, and their indications, dosages, and side effects.
- Anti-arrhythmic agents for prophylaxis and treatment of post-operative atrial fibrillation, SVT and ventricular arrhythmias
- Pharmacology of perioperative risk reduction strategies (lipid lowering agents, B-blocker's, aspirin)

C. *Monitoring*

The resident will:

- Be able to interpret EKG for ischemia, infarction, arrhythmias and paced rhythms. They will recognize the limitations, and the sensitivity/specificity of EKG as an ischemia monitor.
- Be able to acquire skills of arterial and central venous cannulation, peripheral venous cannulation, rewiring central venous access, PA catheterization; interpret CVP and data from PA catheter (PAP, PCWP, Cardiac output) and know its indications, complications and management.
- Make use of laboratory monitoring of the coagulation system (PTT, INR, Fibrinogen) as applied to the postoperative cardiac patient.
- Have the ability to assess the adequacy of mechanical ventilation using clinical parameters (pt size & weight, peak & plateau ventilatory pressures, mode of ventilation in conjunction with patient LOC, tidal volume, rate) and laboratory arterial blood gas analysis including the determination of patients ability to wean from mechanical ventilation.
- Be able to recognize the parameters used to assess postoperative blood loss, and options to treat blood loss including medical and surgical alternatives.
- Know the significance of temperature management in the postoperative period
- Appreciate the indicators of volume status in the special circumstances of post-operative cardiac patients including the findings from invasive monitors, TEE and clinical indicators (urine volume).

D. Clinical Assessment & Management

The resident will:

- Be able to complete a detailed history, physical exam, order appropriate laboratory and ancillary investigations and provide a management plan for a patient admitted to the CSRU.
- Be able to manage the medical and the first stages of surgical postoperative bleeding.
- Be able to identify criteria for intubation, extubation. Be able to wean patients from the ventilator adjusting the modes of ventilatory support.
- Be able to correct common derangements in metabolic and electrolyte disturbances in the postoperative cardiac patient
- Know the basic principles of cardiac support devices including IABP and extracorporeal membrane oxygenation.
- Know the common pathophysiology and management of patients admitted to a cardiac critical care setting with complications of:
 - Coronary artery disease, acute myocardial ischemia and infarction, complications of myocardial infarction and thrombolytic therapy
 - Valvular heart disease and valve replacement or repair
 - Shock and the use of volume resuscitation, vasodilators/constrictors, ionotropes
 - Emergencies requiring ACLS
 - Cardiac tamponade
 - Aberrant conduction, dysrhythmia, sudden acute and sub-acute ventricular and supra-ventricular arrhythmia
 - Pacemakers & the indications for and applications of the various modes of temporary pacing
 - Pneumo/hemothorax
 - Pulmonary edema, Pneumonia, CHF
 - COPD, asthma, sleep apnea in the ventilated patient
 - Heparin induced thrombocytopenia and heparin resistance
 - Neurologic sequelae post CPB procedures
 - Gastrointestinal complications
 - Renal failure and its management
 - Diabetes and endocrine control



Communicator

The resident will be able to:

- Obtain accurate and relevant history and perform a detailed physical examination using effective listening skills.
- Explain the status of the patient and expected progress to his/her family.
- Communicate patient information and outline a management plan to the attending in a professional manner.
- Communicate management plan effectively in both routine and emergency situations to critical care team (ICU nurse, RT).
- Discuss management issues of patients and planned treatment course during morning hand over rounds with other residents and fellows.

Collaborator

The resident will:

- Recognize the need to utilize other specialists for the care and management of the critical patient.
- Collaborate with surgical team in the shared management of patients.
- Respect roles and input of allied health care members.
- Work effectively as member of CSRU team.

Leader

The resident will be able to:

- Manage the CSRU to improve patient flow and safety.

Health Advocate

The resident will:

- Provide care that minimizes risk of perioperative complications to patients (DVT prophylaxis, ASA, sterile procedure, etc.).

Professional

Residents must:

- Always demonstrate respectful and compassionate behavior toward patients and their families.
- Remain calm and organized in stressful or emergency situations.
- Demonstrate professional interactions with colleges, consultants, allied health care and surgical teams.
- Be punctual and prepared each day.

Evaluation



There will be an individual interview with the block coordinator at the end of the rotation. Resident feedback is used to improve teaching techniques and rotation specific objectives.

Reviewed: June 2012, Dr. Granton