Alternate models for optimal cardiovascular and thoracic critical care from a resident's perspective

Carlos Omar Encarnacion, MD

See related commentary on pages 290-1.

While attending the 11th annual FACTS-Care meeting, I had the pleasure of participating on a panel of residents discussing various issues in providing optimal cardiovascular and thoracic critical care and how those issues affect patient care and the learning process. As a second-year integrated cardiothoracic surgery resident at the Medical College of Wisconsin, providing optimal care in the intensive care unit (ICU) is currently a process in active learning for me. My contribution was discussing the different ICU models: closed, open, and comanaged.

The closed ICU model is used at one of the smaller hospitals within our system where we rotate. In this model, the critical care team assumes complete care of the patient on admission to the ICU, excluding the surgical team from management decisions. Although this model assures a consistent approach because it is always the same managing team, the potential contributions by the surgical team are overlooked. As a result of this one-sided approach, disagreements on optimal patient management between the ICU team and surgical team often arise. As a cardiothoracic surgery resident, I do not find this model optimal for academic enrichment.

In comparison, an open model allows for any physician to admit to the ICU, with or without an ICU consult. Often an ICU consult is obtained, allowing both teams to have input but not necessarily in an organized fashion. Multiple teams writing multiple orders for conflicting treatment plans leads to significant frustration among ICU and surgical teams, a view shared by most panel participants. Because of the minute-to-minute care often required of these patients and the operating room duties required by the surgical team, patient care can suffer. In either of these scenarios, learning is poor and patient care is suboptimal.

In a comanaged ICU model, both primary and ICU teams contribute to patient management decisions in an

Carlos Omar Encarnacion, MD

organized manner. Rounds are done in the morning, with all managing teams represented; everyone contributes their thoughts, and a treatment plan is arrived at. A comanaged ICU allows minute-to-minute management by the on-site ICU team while also taking advantage of the insight of the surgical team. For this system to work, however, communication is critical. The designation of a team leader is crucial, and it is most often the ICU attending who assumes this role. This model fosters a smooth work flow, allowing optimal learning and improved patient care. Most panel participants stated that the comanaged model was preferred because of the shared patient care responsibility and the academic benefits. This model, however, was not in place at all the panel participants' institutions. The overall consensus of the critical care specialists and surgeons present was that a comanaged model is preferred in an academic environment.

In a profession where the unexpected can occur at a moment's notice, it is important to have a team that is vigilant regarding the patient at all times. Unfortunately, the surgical team cannot be in multiple places at once, and patient safety becomes an issue. There have been several studies conducted on ICU staffing models, most recently in *Chest*, in which the authors stated that the best staffing model remains unknown.¹ It is believed that staffing strategies will continue to change due to increasing shortages of intensivists and increasing trainee duty hour limitations and that physician extenders will be required to help offset these limitations.¹

A pressing question as a trainee is, "Will this affect our training and capability of providing optimal critical care?" I can only speak from my experiences to date with each of

From the Cardiothoracic Surgery Residency, Division of Cardiothoracic Surgery, Medical College of Wisconsin, Milwaukee, Wis.

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Address for reprints: Carlos Omar Encarnacion, MD, Division of Cardiothoracic Surgery, Cardiothoracic Surgery Resident, Medical College of Wisconsin, 9200 W Wisconsin Ave, Milwaukee, WI 53226 (E-mail: cencarnacion@mcw.edu).

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these ICU models. In my program, the cardiovascular ICU uses the comanaged model. As part of the surgical team, I find morning rounds with the ICU team to be crucial and to allow multiple perspectives to be shared. This allows maximal education and optimal patient care. Studies reporting resident's opinions have shown that residents feel less "out of the loop" and have improved job satisfaction with the comanaged model.² Our program provides several rotations in the cardiovascular ICU dedicated to critical care education throughout our junior resident

years. With these critical care experiences, I believe that we will be able to integrate into a multidisciplinary team taking care of critically ill cardiovascular and thoracic patients and provide optimal critical care.

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EDITORIAL COMMENTARY

Cardiac critical care: Balancing educational goals with optimal patient care

Kanwal K. Kumar, MD, MSc, FRCSC,^a and Rakesh C. Arora, MD, PhD, FRCSC^{a,b}

See related editorial on pages 289-90.

As highlighted in previous reviews, there is a need for an "evolution" in the care of the perioperative cardiothoracic patient.^{1,2} The primary objective of such care should be clinical vigilance to prevent irreversible complications and facilitate timely recovery after a cardiothoracic procedure.³ In his article in this issue of the *Journal*, Encarnacion⁴ has correctly identified some of the pertinent issues related to closed, open, and comanaged models with respect to patient-focused care. While there may be some debate regarding just who should optimally be involved,⁵⁻⁷ there is evidence that a focused multidisciplinary team in specialized units, such as the cardiothoracic intensive care unit (ICU), contribute to the achievement of optimal postoperative care.⁸⁻¹¹

We have previously reported our center's approach to patients after cardiac surgery, which evolved as our institution

changed from a closed, mixed surgical ICU to a dedicated, specialized cardiac surgery "24 hours a day/7 days a week" in-house consultant-comanaged model of care.⁹ With this model of care, we found positive results with respect to decreased need for blood transfusions, reduction in mechanical ventilation, and shortened hospital stay.^{8,9} Encarnacion⁴ has also, however, identified an equally important issue, that of determining which ICU physician staffing model is most beneficial with respect to cardiothoracic trainee experience. Whereas previous reports may have identified an ICU physician staffing model that can optimize patient care, that model was not necessarily created with the trainee acting as an essential part of the multidisciplinary team.

Encarnacion's comments also raise the issue of the ideal residency training model to allow future cardiac surgeons to be competent in both the intraoperative and perioperative aspects of patient care.⁴ In "traditional" training programs, after the completion of a general surgery residency, an individual would then complete a cardiothoracic fellowship. During this 2- to 3-year period, the individual would have to become "competent" in adult and pediatric cardiac surgery in addition to thoracic surgery. It is clear that there is the potential for very little time to focus on perioperative cardiac care. In Canada, the "integrated" cardiac training program, in which individuals enter the 6-year cardiac surgery stream after medical school, has been a successful model of training

From the ^aCardiac Sciences Program, St Boniface Hospital, Winnipeg, Manitoba, Canada; and the ^bDepartment of Surgery, University of Manitoba, Winnipeg, Manitoba, Canada.

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Address for reprints: Rakesh C. Arora, MD, PhD, FRCSC, Cardiac Sciences Program, 369 Tache Ave, CR 3012, St Boniface General Hospital/I.H. Asper Clinical Research Institute, Winnipeg, Manitoba, Canada R2H 2A7 (E-mail: rakeshcarora@gmail.com).

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