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Designs that Make a Difference: The Cardiac Universal Bed Model

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CARDIOVASCULAR CARE: AN EMERGENT & DYNAMIC INDUSTRY

Cardiovascular services represent the most profitable and strategically important service line for any acute care hospital. Therefore, the need to focus on the efficiency, appearance, and customer satisfaction that can be derived through a progressive facility design in cardiovascular services is clear. A competitive advantage can be derived through physical space that supports redesigned care delivery, centralization of services, cross sharing and specialization of staff, and patient and family amenities. This can be accomplished through a redesigned patient care unit or a new wing or Heart Center dedicated exclusively to cardiovascular services.

A nationwide trend is emerging as health care executives are organizing and integrating cardiovascular services as distinct service lines to better compete in their markets, operate more efficiently, and heighten the level of service to the customer. This means of differentiation for CV care is the next step in the evolution of service lines and centers of excellence as organizations heighten their response to escalating competition and reimbursement pressures. Heart hospital development corresponds to the popular 'focused factory' approach in health care: an evolution to customer-based facilities and delivery models designed to serve and market to a distinct patient population.¹ And this trend is underscored by the almost \$2 billion spent in cardiac-related facility construction over the past two years.²

Among these building costs are funds spent specifically on developing the Cardiac Universal Bed (CUB), an innovative care delivery model that manages patients in one setting from procedure through discharge, while flexing staff coverage, equipment, and expertise to match patient acuity. As organizations look for new ways to 'bypass' the competition in appearance, efficiency, and convenience, progressive facility design and components like the CUB are becoming more strategically important to both hospital administrators and their physician counterparts.

Several factors are compelling traditional acute care hospitals to consider new models for cardiovascular service delivery, including market pressures to reduce costs, technological advances, and higher expectations from healthcare consumers who are more educated to standards of care, thanks to the internet and web-based information sources. Accordingly, new cardiac facilities are focusing on superior aesthetics and patient amenities.³ CUB rooms in particular are designed to minimize the stark, sterile, high-tech ICU appearance, using high

quality wood paneling, natural light, and even framed artwork to decrease patient anxiety and promote recovery in a comfortable setting.

SPECIALIZED CARDIOVASCULAR CARE

CUB room designs vary widely with a distinctly organized service line positioned and strategically tied together to enhance customer appeal, convenience, and access. A CUB can be an aggressive and innovative approach for developing and integrating cardiovascular programs, and applying a branding initiative as a means to gain market share.

No matter the situation, healthcare providers are beginning to realize the need to focus cardiovascular services as a distinct and important service line. As a result, CV care has commanded the attention and concern of the industry nationwide.

THE CUB—A UNIQUE APPROACH TO CARE DELIVERY

The CUB is typically a central component of specialized care delivery that underscores unique attention to cardiovascular patient welfare. Initial building and equipment costs for a universal, or "one-stop," unit requires both hardware and telemetry capability. However, the savings in long-term operating costs and revenue opportunities readily offset this investment through decreased length of stay, rapid room turnover, increased room utilization, and efficient patient throughput.

CUB room size varies according to state regulations and available space to transition the critically ill as well as the recovering patient. Space for sophisticated equipment such as ventilators, intra-aortic balloon pumps, and dialysis machines also must be anticipated. Some facilities have designed CUB rooms of over 400 sq. ft to allow space for a family lounge, staff work station, and bathroom facilities. The CUB suite at DuBois Regional Medical Center in DuBois, Pennsylvania shown below illustrates how the addition of wood tones and hideaway cabinetry can create a safe yet very patient-centered setting by disguising highly technical equipment when not in use.

CUB design must address the critical needs of the acute period and accommodate the need for privacy during the later stages of recovery. Although breakaway glass doors typically used in critical care settings offer the most room visibility, they compromise patient privacy. Some hospitals have opted for rooms with large windows and doorways equipped with blinds that can be drawn for patient privacy when needed. Others have installed windows that become opaque with the

flip of a switch. Most hospitals are making the investment in private bathrooms and shower space for their CUB rooms; some are economizing on cost and space by sharing shower facilities among several CUB patients.

STAFFING AND ACUITY

Assuring that the nursing staff is assigned according to patient acuity is the key to maintaining operational efficiency. The approaches drawn upon by hospitals are diverse and range from utilization of historic patient volumes with adjustment for census fluctuations to reliance upon complex acuity tools that assess monitoring requirements, ventilator dependency, presence of vasoactive infusions, and hemodynamic stability.

Whether applying a point-based acuity system to make assignments or a policy outlining nurse-patient ratios according to pre-determined parameters, re-validation of the tools is necessary to adequately capture real-time workload and contribute to positive clinical outcomes. Regrettably, utilization of an Hours per Patient Day (HPPD) productivity standard on a day-to-day basis fails to capture the changes in patient condition that are common in the post open heart population. Therefore, the charge nurse responsible for staffing must be educated to the organization's budgetary expectations and have sufficient exposure to the unit's operations to assure sufficient staff is scheduled without incurring budgetary variances that compromise the financial viability of the program.

In one experience, a facility utilizing a complex acuity tool system sought to determine how patients were distributed between telemetry and ICU units. The goal was to identify where staffing could be maximized based on the acuity level of patients. This facility determined that 82% of their telemetry patients require a lower level of care as compared to the 18% of telemetry patients who need more complex or ICU care.

As such, one unique issue that arises in a CUB unit is the tendency of staff to revert to ICU ratios of 1:2 regardless of patient acuity. The opportunity exists based on the above example to adjust the nurse: patient ratios and maximize staffing to account for the low acuity telemetry population.

Flexibility in the CUB model is achieved as patients improve their condition allowing nurses to care for additional patients as well as ensuring appropriate staffing if, unexpectedly, a higher level of care is required. To ensure buy-in, it is important to involve nurses in staffing guideline

development based on acuity mix, and provide a concrete rationale for scheduling decisions.

In many organizations a new universal bed unit's staff is a blend of critical care and telemetry-trained staff. Cross training is a priority to promote staff development, efficiency, and accommodation of changes in levels of care. The staff members that have been educated to the CUB concept frequently become involved in the education of peers and adapt to a patient assignment that differs significantly from their previous role. Critical care nurses have welcomed the opportunity to care for the patient throughout the entire stay and report satisfaction with the experience. Telemetry staff rapidly adapts to the additional acuity and become proponents of the new delivery model.

WHY IMPLEMENT THE CUB CONCEPT?

The incentives for the development of a CUB unit vary from market to market, including fierce regional competition and the need to capture or secure the cardiac patient base. The strategic decision to invest in dedicated space for innovative features like the CUB generally focuses on blending facility and technology dollars to produce significant long-term, return on investment.

"National Trends in Cardiac Universal Bed Utilization," a joint research project completed in the fall of 2002 by Corazon Consulting in collaboration with Ohio State University Medical Center, was designed to provide administrators with current trends and 'best practice' statistics related to human resource management, financial outcomes, facility design, and clinical practice for cardiac patients cared for via the CUB. OSUMC is incorporating the CUB Model into its Ross Heart Hospital slated to open Spring 2004. In studying hospitals across the country using this progressive model, all respondents would chose to use the CUB again, because they believed the universal, one-stop care delivery enhances quality and allows them to compete in their markets.

Patient Benefits: The study revealed the greatest benefit obtained from a CUB is patient satisfaction. In fact, 67% rated the hospitalization experience higher than non-CUB competitors. The CUB approach to facility design in cardiovascular services eliminates multiple transfers and mirrors the LDRP obstetrical model by decreasing the fragmentation of care and the potential for error inherent in the traditional, multi-step recovery process, where a patient moves through an ICU with subsequent transfers to lower levels of care until discharge. Earlier studies have shown that such transfers evoke adverse physiological and emotional responses from a majority of cardiac patients. Although many are relieved that they no longer require ICU care, they are equally distressed about transferring to a lower level of nursing care. Patients have reported that the transfer from the ICU was an abrupt change in level of care without a smooth transition.⁵ Often, patient satisfaction and recovery is higher in a CUB unit due to care and environmental issues that enhance the patient's psychosocial as well as physiologic recovery. Continuity in nursing care builds trust and a strong patient-nurse relationship and patients receive a higher intensity of care and state confidence in the caliber of staff skill they experience.

The physical environment also raises patient comfort and satisfaction and lowers the episodes of postoperative confusion that are more common in the typical ICU environment.⁶ With family support strongly impacting patient recovery,⁷ open and extended visitation is highly desirable, and the CUB room can provide enough space for family members to comfortably visit and stay with their loved one without obstructing staff and physicians.

Clinical Benefits: Patients are likely to fare better clinically because of an ICU nurse's ability to rapidly assess and proactively manage complications as they arise. This increased diligence leads to a quicker resolution of potentially life-threatening situations. The CUB model is well suited to rapidly initiate therapies post cardiac arrest; otherwise, if a patient arrests in a non-ICU setting, the focus is on transferring the patient to a higher level of care—potentially delaying much needed treatments.

Cost Benefits: Lower complication rates with the CUB model set the stage for cost efficiencies driven by decreases in length of stay, especially when compared to the traditional multi-step process. According to the 2002 Corazon survey of hospitals with CUB units, ALOS for CABG surgery patients who were managed in a CUB process averaged 5.6 postoperative days compared to 6.5 post-op days reported by the Society of Thoracic Surgeons during the same time period.^{8,9} And, eliminating patient transfers in the CUB model drives cost efficiencies through savings in labor, disposable supplies, and pharmacy costs that we estimate at \$300 or more for each patient transfer.

Physician Benefits: An intense level of collaboration readily occurs between doctors and nurses working in a heart hospital or CUB unit. Physician trust and confidence in the nursing professional is heightened with this model of cardiac care. A closely-knit team is cultivated since the cardiac surgeons and cardiologists interact with a smaller number of staff dedicated to patient care throughout the post-operative stay. The correlation between clinical excellence and the intensity of team efforts has been reported by other studies that demonstrate a decrease in mortality and length of stay when the patient care area promotes a higher level of collaborative practice between nursing professionals and physicians.¹⁰ The CUB unit also enhances physician convenience, since patients are centralized and doctors are able to conduct rounds efficiently.

Staff Benefits: Hospitals with CUB units report higher staff retention including a decrease in nurse 'burnout' from the stress associated with exclusively caring for critically ill patients. CUB nurses report satisfaction in experiencing the entire recovery process with varying patient acuity levels.

While the universal bed set in a dedicated heart hospital challenges staff acceptance, traditional clinical standards, and the cost structures of established care delivery models in developed programs, developing this innovative delivery model can offer improvement in customer loyalty, market advantage, profitability, and staff satisfaction.

LOOKING TOWARDS THE FUTURE

Building new or reconstructed physical space for a heart program is a substantial commitment and change process by the organization. The strategic decision to invest in cardiovascular services in this way should be justified by a thorough feasibility study and followed with a solid business plan. Throughout the planning process, hospital and physician leadership should evaluate the impact of maintaining a status-quo position within a dynamic marketplace for cardiovascular services, while other providers press forward.

It is certainly not a building alone that will secure a strong market position, but such a move can establish the foundation for aggressive marketing strategies, integrated branding initiatives, and proactive structures that align the facility with today's competitive requirements. Organizations with a sound business plan are best

prepared to make a bold, but also wise move to adapt to the next generation of cardiovascular care delivery models. Providing the structures that support innovative, high quality services can strengthen competitive advantage for cardiovascular programs while affording the best care possible. Advances in the industry have paved the way for changes; managing the patient through a rapid recovery process in specialized space is critical to market leadership. As the CUB concept gains popularity for new and established programs that seek to innovate and compete, as with any pioneering solution, those poised for growth and development in these new directions can be the first to dramatically shift competitive forces in their favor.

¹ Herzlinger, Regina. *Market Driven Health Care: Who Wins, Who Loses in the Transformation of America's Largest Service Industry*. Cambridge: Perseus Books, 1997.

² The Advisory Board Company. "Impact of Building a Freestanding Heart Center." *Health Care Advisory Board Marketing and Planning Watch* (October 9, 2002).

³ Katz, David, M.D., J.D. "Enterprise in Transition." *Cardiovascular Roundtable Annual Membership Meeting*. Chicago, Illinois. November 2002.

⁵ Leith, Beverly, A. "Patients' and Family Members' Perceptions of Transfer from Intensive Care." *Heart and Lung* 28.3 (1999): 210-18.

⁶ Blaacher, R.S. "The Psychological and Psychiatric Consequences of the ICU Stay." *Eur Acad. Of Anesthesiology* 14 (1997): 45-47.

⁷ The Ohio State University Medical Center, Corazon Consulting. "Cardiac Universal Bed Survey." Fall 2002.

⁸ *Society of Thoracic Surgeons*. 5 September 2002. www.sts.org.

⁹ *Ibid*. The Ohio State University Medical Center, Corazon Consulting.

¹⁰ Baggs, Judith G., et al. "Association Between Nurse-Physician Collaboration and Patient Outcomes in Three Intensive Care Units." *Critical Care Medicine* 27.9 (1999): 1991-98.



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Corazon Consulting, LP, a national leader in specialized consulting services for cardiovascular program development from strategic business planning through clinical implementation.



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Corazon combines business planning, market and financial analysis, feasibility studies, clinical operations, Heart Hospital design, best practice benchmarking, and staff education for newly established or existing cardiovascular programs.

Corazon is a 2003 Ernst & Young Entrepreneur of the Year Company.



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