

Operating Room Key Requirements Emphasize Perioperative and Anesthesia Care

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The operating room solution market is poised for growth as care delivery organizations move from manual to automated perioperative and anesthesia documentation. Users can mitigate risk in OR product selection by understanding key assessment criteria.

WHAT YOU NEED TO KNOW

Care delivery organizations committed to managing their operating room suites as profit centers, instead of stand-alone departments, must implement complete application solutions with integrated perioperative care. Even if a CDO is not prepared to implement anesthesia or post-anesthesia care unit functionality this year, it should limit evaluations of potential new OR applications to technology providers that support these capabilities now. OR information system technology providers that offer anesthesia and PACU solutions through partnerships must be able to demonstrate integration with their OR application suites. New OR solutions should be evaluated within the framework of the CDO's enterprise computer-based patient record strategy. Interfaces to enterprise scheduling and Web links to schedules in surgeon offices will eventually help maximize OR suite use and clinician productivity. However, this connectivity — especially to remote offices — is still in its infancy. The ORIS market is at a turning point, with clinical automation finally gaining recognition as a must-have capability and with OR scheduling expanding beyond the OR department.

STRATEGIC PLANNING ASSUMPTION(S)

Perioperative solutions will increase from 10 percent market penetration in 2005 to 30 percent by year-end 2007 (0.7 probability).

Anesthesia and post-anesthesia care, integrated with perioperative charting, will be the highest-growth area in OR management software through 2007 (0.8 probability).

ANALYSIS

Gartner creates models and requirements for emerging solutions to facilitate the evaluation of commercial, off-the-shelf applications in the healthcare market. These models also include technology provider viability assessments (see Note 1). Here, we present our model for the OR information system (ORIS) market. We explain why care delivery organizations (CDOs) should invest in OR application suites, and we provide key evaluation criteria.

Market Drivers

Nearly all U.S. hospitals have automated their OR administrative functionality. Software applications that automate surgical procedure and resource scheduling, case kit preparation, inventory management, bar coding and charge capture are well-entrenched. Conversely, penetration of clinical applications is poor. Today, only 10 percent of hospitals use perioperative charting applications, and even fewer have implemented anesthesia and PACU documentation. Fortunately for patients and CDOs, this scenario is changing. Perioperative solutions will increase from 10 percent market penetration in 2005 to 30 percent by year-end 2007 (0.7 probability). Market drivers fueling this growth include:

- **Cost:** Up to 40 percent of a CDO's total costs are associated with surgical care.
- **Revenue:** On average, CDOs derive 60 percent of overall revenue from OR services.
- **Underuse:** Empty OR suites are a lost revenue opportunity. OR suite use rates as low as 68 percent in some CDOs highlight the need for maximizing the use of each suite.

These market drivers emphasize the need for clinical automation in the OR. CDOs should now begin to re-evaluate their OR applications and manual processes, such as paper-based nurse charting and nonautomated surgeon dictation. The long-term OR strategy should include

implementation of an OR solution in which core administrative functions (scheduling, inventory and charge capture) are integrated with clinical functions (perioperative charting and anesthesia).

Key Criteria for Evaluating OR Application Suites

To assist CDOs in assessing the diverse OR application suites marketed by niche organizations and CPR technology providers, we have established five key criteria.

1. Complete Administrative and Clinical Functionality. Most technology providers' OR product lines consist of core administrative functionality, along with perioperative charting for nurses, physician documentation and order management. Some technology providers market anesthesia and PACU applications. CDOs should evaluate application suites that combine administrative and clinical functionality as an integrated solution in which all modules share a common system architecture and database.

OR Administrative Functions

- Procedure scheduling for patients, surgeons, anesthesiologists, OR suites, equipment and other required resources
- Downloading of patient information from hospital registration system, master person index (MPI) or enterprise master person index (EMPI)
- Procedure preparation, including surgeon preference cards and case kit assembly
- Charge capture as supplies are used, including support for bar-coding technology
- Inventory management that alerts users to low supply volumes and that generates requisitions for reordering supplies
- Interfaces to both the materials management system and patient accounting system or to the enterprise resource planning (ERP) solution
- Revenue cycle management reporting, including OR use, cost and revenue tracking by case and procedure type, and revenue and cost tracking by surgeon
- Regulatory compliance, implant tracking and U.S. Joint Commission on Accreditation of Healthcare Organizations reporting

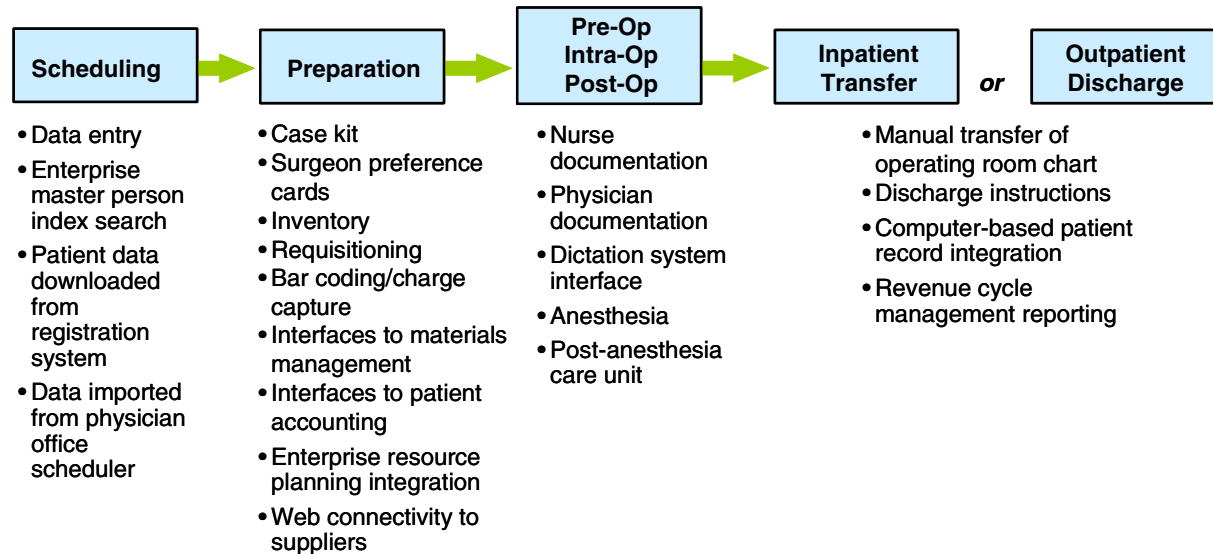
OR Clinical Functions

- Documentation of preoperative and intraoperative care, including online physician documentation, online nurse documentation and orders
- Physician dictation system interface
- Anesthesia care documentation, including medication orders and administration
- PACU documentation
- Incorporation of surgery documentation into enterprise CPRs
- Discharge instructions and e-prescribing or printing/faxing of prescriptions, for same-day surgery

Figure 1 shows the OR administrative and clinical functionality required within four major phases of surgery management — procedure scheduling, case preparation, perioperative care (preoperative, intraoperative and postoperative), and discharge or transfer to an inpatient unit.

Ideally, the functional capabilities in all four phases would be provided as an integrated solution. Today, this model must be considered an emerging solution, because many technology providers have a limited number of clients using clinical modules, such as physician documentation and anesthesia. Additionally, most CDOs have implemented stovepipe OR scheduling and materials management applications, so enterprise OR scheduling is still an emerging trend.

Figure 1. Emerging OR Solutions



Source: Gartner Research (May 2005)

2. Anesthesia and PACU. Technology providers began incorporating perioperative charting software in their ORISs about five years ago. In the past two years, most have also begun to offer physician documentation and order management for surgeons. Although only about 10 percent of hospitals have implemented any perioperative documentation, most CDOs recognize that OR clinical capabilities are essential for providing optimum care. They are also evaluating anesthesia and PACU functionality, often at the request of their anesthesiologists. Technology providers have responded to increased user interest by partnering with anesthesia and PACU specialty software organizations or by developing their own software.

CDOs should evaluate comprehensive product suites that incorporate perioperative charting and anesthesia/PACU. Most technology providers have only a few reference sites using these capabilities. Surgeons, anesthesiologists and nurses should experience the documentation software and user interfaces firsthand. Encouraging clinicians to participate in the requirements definition process also helps increase application acceptance and usage after installation. CDOs should conduct site visits to ascertain the level of integration between the perioperative charting and anesthesia care applications. Many technology providers offer anesthesia and PACU as optional modules. This approach is desirable for CDOs that cannot afford the cost and disruption of implementing all the OR clinical applications at once. Anesthesia and post-anesthesia care, integrated with perioperative charting, will be the highest-growth area in OR management software through 2007 (0.8 probability).

3. Enterprise CPR Strategy. Integrating the ORIS with the enterprise CPR should be an essential part of a CDO's strategy. Enterprisewide management of patient outcomes more readily occurs when all care documentation is available within the CPR. Creating and maintaining separate OR records for each patient are also inefficient from an operational standpoint.

Capturing all aspects of perioperative care is essential to managing the OR as a profit center instead of a stand-alone department. When a single view of clinical information is maintained for each patient, the most up-to-date information is available to clinicians in all care settings within the enterprise. After surgery, patients who are not discharged are typically transferred to critical or acute care units. Although clinicians in these settings may not always need the perioperative care notes, the information may be valuable in future surgeries and admissions. When an OR patient is subsequently treated at another entity within an integrated delivery network, physicians in owned hospitals and clinics can access a more complete care record.

4. Enterprisewide OR Scheduling Strategy. An enterprisewide OR scheduling strategy helps improve operational efficiency for CDOs with disparate OR scheduling applications in each of their hospitals. Replacing them with an enterprisewide OR scheduling solution reduces the number of overall records maintained, eliminates redundant data entry and facilitates cross-checking of patient information. This strategy also applies to multiple surgeon preference card applications and inventory applications installed throughout a CDO. Additionally, the CDO should interface OR scheduling to enterprise patient registration or an EMPI or MPI, if installed. If registration begins in OR scheduling, the staff can retrieve enterprisewide patient demographic and insurance information and upload any changes to that information within the enterprisewide scheduling system, EMPI or MPI. Information on new OR patients is also uploaded and accessible to users in other departments. Frequently, registration begins elsewhere in the CDO. Patient information flows to the OR scheduler from the enterprisewide registration system, a process that is greatly facilitated by an EMPI.

Web connectivity is becoming a competitive differentiator. Today, few surgeon offices directly access the hospital ORIS. Most communicate with the hospital OR scheduling department by e-mail, telephone or fax. Surgeons, however, would like to efficiently request procedure times online and download/view their own OR schedules at hospitals where they are employed or affiliated. CDOs should consider Web-enabled OR solutions that enable them to offer surgeons secure read-only access to their own schedules from remote offices. They should also evaluate how to improve the process of accepting procedure time requests, checking availability, sending confirmations, and receiving and sending schedule change notifications. ORIS technology providers have few references that can effectively demonstrate this ability. CDOs should therefore assess a vendor's plans or willingness to assist hospitals and practices with such goals.

5. Patient Accounting and Materials Management Interfaces. The volume of supplies and corresponding charges generated within the OR is higher than in most other areas of the hospital. Reliable interfaces between the ORIS and the CDO's patient accounting and materials management systems, or its ERP solution, are essential. Benefits include more-accurate and complete insurance claims and, therefore, faster reimbursement. ORIS technology providers under consideration should have extensive experience interfacing their applications with the CDO's financial and materials management applications. Many CDOs continue to use applications from older hospital information system product lines. CDOs should obtain strong client references for interfaces between the ORIS and the ERP or stand-alone financial and materials management software used in their organizations. Reference sites should ideally use the same software versions and technology platform as the CDO. Because OR charge capture functionality and inventory functionality are well-entrenched, most ORIS technology vendors can provide the names of customers that have successfully created the required interfaces.

Tactical Guidelines

- Select operating room (OR) solutions in which anesthesia and post-anesthesia care unit (PACU) applications integrate or interface with perioperative charting.

- Evaluate OR solutions within the context of an enterprise computer-based patient record (CPR) strategy.
- Replace disparate OR scheduling applications in multiple facilities with enterprisewide OR scheduling.

Key Issues

How will healthcare enterprise application markets be defined and evolve?

How will vendor applications enable healthcare organizations to respond to market demands for increased efficiency, customer service improvements and cost reductions?

Note 1

Technology Provider Viability

Technology provider viability is evaluated relative to financial strength, management strength, market vision, and strategic and tactical execution. These key criteria should be weighted heavily when evaluating application solutions.

Acronym Key

CDO	care delivery organization
CPR	computer-based patient record
EMPI	enterprise master person index
ERP	enterprise resource planning
MPI	master person index
OR	operating room
ORIS	operating room information system
PACU	post-anesthesia care unit

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