Efficiency, Quality and Patient Safety in the Perioperative Arena

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Introduction
Effective management of the operating rooms requires establishment of systems and processes that are efficient, consistent, fair and that can be monitored and measured for performance. These should be cost effective and should maximize revenues. To effect changes leadership, shared vision, team enhancement and consensus building are a must along with ambitious but realistic expectations.

Establish Goals and Objectives
Primary objectives of effective OR management are threefold: 1) Safety: of patients and staff, 2) Quality: provide best possible patient care and a pleasant workplace, thus improving satisfaction among patients, staff, and surgeons, 3) Efficiency: increase market share, attract new business, negotiate better contracts, and the bill and collect efficiently to enhance revenues while decreasing costs by efficient OR utilization and effective staff and materials management.

Provide Leadership
- OR manager must be a senior level executive who has first hand experience and an intimate knowledge of OR setting, experience in administration, knowledge of information systems, and preferably some training in business management. An effective manager will display leadership qualities, organizational skills, flexibility, receptiveness to new ideas, interpersonal skills and skills in conflict resolution.
- Anesthesiologists have a presence in the OR and have the best understanding of the complete perioperative process. They can make decisions that need to be based on medical judgment, the knowledge of surgery and individual surgeons. Further, in most hospitals, anesthesiologists who are seen as facilitators and have leadership skills already function as clinical directors and can be readily recruited into this role.

Establish Job Description and Governance
- Responsibilities of the OR manager or Medical Director of Perioperative Services (MDPS) will include Fiscal, Materials and Personnel Management; establishing Policy and Procedures; providing a safe and pleasant workplace and Strategic Planning.
- OR constituents that the MDPS would likely oversee are the surgeons, anesthesiologists, nurses, administrators, OR technicians, CRNA’s, PA’s, residents, anesthesia technicians, laboratory personnel, housekeeping, schedulers, and admitting services.
- The OR manager will chair or serve in a meaningful role on the OR committee.
- He/she will be responsible for monthly/quarterly/yearly reports, allocation and reallocation of block time and effective OR resource utilization.
- To be effective, the OR manager must have commitment from the hospital, obtain cooperation between anesthesiologists, surgeons and nursing and report directly to the hospital leadership.

Negotiate Compensation for the OR Manager
Growing number of physicians are receiving compensation from hospitals or multi specialty groups for serving as OR directors although database of such compensation is scant at best. The compensation may be in the form of a salary or a salary plus bonus, and is often prorated for those contributing less than 100% of their time to this effort. Compensation may be negotiated based on compensation of physician executives in other comparable positions. The American College of Physician Executives (ACPE) and American Medical Group Association (AMGA) annually report physician executive salaries based on their survey (www.cejkasearch.com/compensation). Alternatively, cost may be assigned to this activity based on estimated revenues generated per FTE physician in the group. Based on the MGMA/ASA Survey, 2005 Report, the median medical revenues per FTE physician after operating and non physician provider costs range from $360,817 to $409,991 (ASA Newsletter, Mar 2006, Vol 70: No.3)

Operational Issues

Create a Realistic Elective Schedule
Elective OR schedule is the template on which the OR functions are based. An accurate real time based schedule helps predict staffing, availability of equipment, and correct instruments, and results in a smooth running OR.
An inaccurate schedule that is frequently changed and tampered with additions, cancellations, and substitutions on the day of surgery sends the entire system into disarray and is very costly.

- Block scheduling should be based on utilization and should be readjusted periodically based on needs.
- Block Release Time: at an agreed upon time (48-72 hrs in most hospitals and longer in ambulatory surgery centers, surgi centers) prior to date of surgery, the blocked time should be released. Optimum block release time will vary among facilities based on their ability to book other cases in the vacated slots.
- An accurate schedule must list accurate and realistic start time and end time for each case based on historic data that is constantly updated. Additional procedure/surgeons should be listed. Cases should not be booked “to follow”.
- Scheduling requires a knowledgeable OR scheduler and scheduling software that is easy to use, has visual grids, can list multiple procedure and can be customized.

Prepare on the Day Before Surgery.

- The schedule should be reviewed, errors rectified and potential problems identified at this time including rooms that will run late, the need for OR staff after 3PM or 5PM and potential gaps where add-on cases can be accommodated. The OR list can be used to order supplies and instrument trays the night before surgery.
- The documentation must be complete the day before surgery. Web based or other electronic documentation systems facilitate this process. Incomplete paperwork is a common cause of morning delays in the operating room. Cases with incomplete documentation the day before surgery should not be booked as the first case in any operating room.
- Eliminate unnecessary laboratory tests and consolidate paperwork.

Getting The Schedule Done – Day of Surgery

Protect The Elective Schedule (Keep It Predictable and Reduce Variability)

Some institutions set aside one or two rooms for add-ons and emergencies. This strategy works if add-ons and emergencies will predictably allow utilization of these rooms effectively. In this case, the emergencies get priority and add-ons are booked on a first come-first served basis.

Most institutions, however, cannot afford to have one or two operating rooms staffed and waiting. In this case a clear algorithm must be developed. Any emergency goes to the first available room whereas and elective add-on case goes at the end of the schedule. It is in the case of the so-called “urgent” case that a decision needs to be made on a case to case basis. Examples of this type of case include an ectopic pregnancy, an obstructed bowel, a fracture and an eye injury. Each of the services must be asked to develop guidelines regarding urgency and maximum allowable wait times before surgery for these cases. This information should be common knowledge at the OR desk. This will allow appropriate triage of cases should it become necessary to insert the urgent cases ahead of an elective scheduled case. Author suggests an algorithm that is both fair and effective, the so called ‘bumping policy.’

Bumping Policy

If a surgeon needs to bump a scheduled case for urgent surgery the sequence of selection of the bumped case is: own case→partner’s case→same service case→other case after discussion with the other surgeon.

Start On-Time

The start time should be defined as the time when patient arrives in the OR and is placed on the operating table. The aim should be 90% on-time start for the first cases, and 80% or better for second cases. The morning start sets the pace for the room for the rest of the day. Following are some helpful strategies:

- The patients should be given an appropriate time for arrival the night before.
- “One-stop check in.” The patient admission should be completely processed in one place by the nurse or physician assistant. Avoid multiple transfers.
- Recruit nurses from the PACU to facilitate admission of first cases.
- Bring the patient directly to the operating room. Bypass the holding area. The holding area is good for subsequent cases or placement of epidurals for pain. For most cases, arterial lines and CVP’s, etc., can be placed in the operating room while the urinary catheter is inserted and operative site is prepared.
- Anesthesiologist, nurses, and surgeons should be punctual and work in parallel to improve efficiency.
Keep Turnaround Times Short (Critical in rooms with multiple turnover)

Turnaround time is defined as the interval between the previous patient’s departure from the OR to the next patient’s arrival in the OR, turnaround time (TAT) should be kept at the minimum. It is suggested that TAT for inpatient ORs should be 30 minutes while TAT for ambulatory centers be 15 minutes or less. For minor cases it could be 5-10 minutes. To minimize the TAT, patient preparation for the following case must begin in the preoperative holding area. Intravenous catheter can be placed and an infusion started. Placement of arterial cannula, central venous catheter, Swan-Ganz catheter, and epidural catheter to provide anesthesia for surgery or for pain management can be accomplished in the holding area. Instrument trays can be prepared and ready outside the room to be opened during the turnaround time. Delays in turnaround must be examined and the causative factors remedied.

Decrease Case Times (Best yields are in complex inpatient surgeries)

While avoiding morning delays and maintaining low turnaround times is important for effective running of the schedule, intraoperative delays can wreak havoc on the daily conduct of the OR schedule. A 2 hour case that takes 4 hours will not only delay the subsequent cases, but may result in cases being put on hold. Longer than acceptable case times may be the result of:
■ Slow induction of anesthesia
■ Long patient preparation time
■ Slow surgery (slow surgeon, attending surgeon not present for long sections of the case, too much teaching)
■ Delayed emergence from anesthesia
■ No PACU beds available

Avoid ORs on Hold

Operating rooms that are placed on hold result in a costly waste of time. Ensure availability of
■ Surgeon
■ Anesthesiologist
■ Nurses
■ Equipment
■ Implants
■ Blood
■ Radiology Technician
■ PACU beds

The surgeon’s office must be notified well ahead of time regarding his case. Should the surgeon be unavailable, another case can be substituted in that slot. Anesthesia coverage needs should be anticipated and adjustments made as necessary.

Nursing coverage beyond 3PM and 5PM is generally a problem. Flexible staffing of the OR may help address this problem. The nurses are routinely requested to put in overtime to get the cases done. Overtime is an expensive way to staff the OR. The ratio of registered nurses and OR technicians in the OR may have to be adjusted during the day to provide coverage. According to AORN, this ratio of 2:1 remained unchanged over the last 10 years.

Equipment non-availability (e.g., microscopes, laparoscope, laser) is generally preempted by rearranging the OR schedule ahead of time. However, if a case takes unexpectedly long, the equipment may not be available for another case. Rearranging the order of a surgeon’s own cases may be the easiest, and least disruptive solution to this problem. The patients to follow can then be called in time to come earlier than planned allowing for rearranging of cases.

Occasionally the PACU is full and there are no beds available for discharging patients from the OR. A review of the schedule with the PACU head nurse in the morning will help anticipate the extent of this problem for late morning and afternoon, and plan PACU discharge strategy for the day. All patients who have met PACU discharge criteria must be discharged promptly. All patients planned for transfer to ICU postoperatively should bypass the PACU. If all the hospital beds are full a temporary transfer of PACU patients to the holding area where one nurse can monitor up to 8 patients who are ward-ready helps to free up beds in the PACU. Beyond this, the hospital admissions office and a hospital administrator must be consulted and if it is likely that no more beds will be available, some of the OR list will have to be postponed. It is much better to make this decision early so that the patients can be informed before they leave home and the surgeons can be informed in time.

PACU discharge criteria should be established to allow faster passage through PACU. For patients who meet PACU discharge criteria upon emergence in the OR, PACU can be bypassed.
Short stay units
Short stay units designated for 24 hour admissions for cases like laparoscopic cholecystectomy, robotic radical prostatectomy, microdisectomy, mastectomies or ambulatory surgeries requiring admission will help decant the PACU.

Information Systems (IS)
Before investing in a new IS, list all functions that you need. IS should provide:
- Time base scheduling that allows customization and is user friendly.
- Clinical information, including PAT, anesthesia charting, intraop nursing record.
- Patient tracking (workflow), OR utilization.
- Interfacing with coding and billing accounting, medical records, pharmacy, laboratories, materials management, QA.

Data Management
- OR Management should be data driven and evidence-based. The data should be accurate, relevant and timely. The only thing worse than having “no data” is having “incorrect data”. Avoid the pitfall of implementing corrective policy based on inaccurately interpreted data. Identify source of data and check assumptions made in calculations. Check raw data if necessary.
- Operational Data that should be reported monthly includes: on-time starts; turn around times; case times actual versus scheduled; cancellation rates; emergency and add-ons/by service/surgeon; room utilization/rooms running report; OR utilization; block utilization by service/surgeon; out of block surgery by service/surgeon and staff utilization and overtime.

Finance
Reduce costs of staffing and supplies
- Plan appropriate and flexible staffing; reduce overtime.
- Decrease inventory and standardize equipment
- Reduce waste of equipment and supplies

“Allocating money and resources to improve and advance your facility is not cost, it is investment.”

Enhance Revenues
- Increase OR cases by improving satisfaction and generating new business
- Improve payer mix by effective recruitment and negotiated contracts.
- Improve billing, coding and collection for existing business.
- Monitor the contribution margins for surgeons, surgical procedures and services.

Quality Improvement
- Monitor accuracy of start times (1st/subsequent cases); turnover times; ORs on hold; cancellation on day of surgery; perip length of stay; satisfaction of patients, surgeons, and staff.
- Track inappropriate admissions, perioperative tests, C-sections, surgery (terminal/DNR patients), wait time for patients, wait time for surgeons, inventory, and equipment.
- Benchmarking is a useful tool for quality improvement; sources include private companies, consultant groups, insurers, and operating room management outfits.
- Use internal benchmarking
- Monitor equipment use; document waste; monitor use vs. charge capture.
- Use Community standards and share experience with other hospitals; case duration in comparable hospitals; cost per case in local area; define common problems; develop joint projects.
- Use uniform performance improvement methodology: PRIDE; PDCA; 10 steps; CQI, Six Sigma, LEAN.
Satisfaction Surveys – Patient/Employee/Surgeons

Information sought should be carefully determined, survey methodology should be adhere to standards, expert help should be obtained, and information obtained should be critically examined. Pilot surveys may be necessary.

Top five attributes for surgeon satisfaction
- On-time starts
- Short turnaround time
- Anesthesia availability
- Quality anesthesia providers
- Good equipment

Top five attributes for employee satisfaction
- Professional respect
- Employee recognition
- Friendly workplace environment
- Effective communication
- Partnership in performance

Top five attributes for patient satisfaction
- On-time starts
- Quick, easy I.V. catheter placement with minimal pain
- No postoperative nausea
- Adequate pain control
- Surgeon’s postoperative visit to the family

According to the 2007 survey conducted by Press Gainey®, satisfaction rates among healthcare employees and physicians significantly determine the extent to which the patient expectations will be met.

Plan for manpower shortage of OR personnel

There exists presently a shortage of Anesthesiologists CRNA, OR Nurses, OR Technicians and Pharmacists. Creating a pleasant work environment should be the foremost goal of the OR leadership to retain and recruit professional staff. “Sign on bonuses” is a tempting quick fix. It encourages a mindset to leave as soon as a better offer comes along.

Review Allied Services that can Improve OR Efficiency and Patient Safety
- Blood Bank
- Pharmacy
- Radiology Support
- Lab Support
- Point of Care Testing

National Patient Safety Goals 2009
- Improve the accuracy of patient identification
- Improve effectiveness of communication among caregivers
- Improve safety of using medications
- Reduce the risk of health care-associated infections
- Accurately and completely reconcile medications across continuum of care
- Reduce the risk of patient harm resulting from falls
- Improve patient care handoffs
- Encourage patient’s active involvement in their own care as a safety strategy.
- Hospital identifies safety risk in its patient population.

Universal Protocol
- Pre-procedure verification
- Site marking
- Timeout
Improving Patient Outcomes (SCIP, NYSSIP, PQRI)

Adopting systems approach can improve patient outcomes by instituting quality of care initiatives, such as:

- Appropriate use of perioperative β-blockers
- Antibiotic prophylaxis
- Prevention of deep vein thrombosis
- Perioperative normothermia (applies to all surgeries starting October 2009)
- Glycemic control in perioperative period
- Obstructive Sleep Apnea Protocols
- Standardization of equipment, pharmaceuticals, processes, practices and policy.
- Relative performance of your hospital in patient satisfaction and surgical quality measures, visit: www.hospitalcompare.hhs.gov.

Other Considerations

- Surgeon and staff safety (double gloving, blunt needles, safe zones on surgical field for instrument hand off, etc.)
- Team building and team empowerment
- Patient safety (audible alarms, reading/net surfing in the OR, distractions, noise pollution)
- Professional conduct policy (disruptive behavior, sexual harassment, error reporting, disclosures)
- Compliance (Joint Commission, CMS, DOH, NIOSH, OSHA, NFPA, )
- Fire safety and OR emergency evacuation drills

Significant for Anesthesiologists in 2009

Of all the Quality Measures listed above, the following hold a special significance for anesthesiologists in 2009:

- Normothermia (SCIP-inf-10). Starting October 1, 2009-for all patients, regardless of age, undergoing surgical procedures under general or Neuraxial anesthesia of greater than or equal to 60 minutes measure-temperature equal to and greater than 36 degrees C. within 30 minutes prior to or 15 minutes after anesthesia end time
- Thromboprophylaxis
- Prophylactic antibiotic administration
- Obstructive Sleep Apnea screening and management protocols
- Professional Conduct Policy
- Changes in anesthesia evaluation standards
  - PC.03.01.03. EP 10: A time frame is added to the preanesthesia evaluation to say the evaluation must be completed and documented by an individual qualified to administer anesthesia within 48 hours prior to surgery or anesthesia.
  - PC.03.01.07. Two requirements are added for postanesthesia evaluation:
    - EP 7. The evaluation is completed by an individual qualified to administer anesthesia within 48 hours after surgery and anesthesia.
    - EP 8. The evaluation is completed in accord with law, regulation, and policies and procedures approved by the medical staff.

OR’s of the Future

Examples:

- Consider emerging technology
- New OR designs with recessed surgical lights
- Wireless environment
- Global transmission from the OR
- Patient of the future – preparation, expectation
- Time frames of technological development

“A man with one watch knows what time it is, a man with two watches is not sure”
(Resources for Training & Information)

1. American Society of Anesthesiologists - Certificate in Business Administration
2. American College of Physician Executives (acpe.org)
3. American Association of Clinical Directors (aacd.org)
6. OR Manager - monthly newsletter, Boulder, CO.
10. Anesthesia Patient Safety Foundation Newsletter (www.apsf.org)
11. ASA practice management courses
15. IHI.org