Objectives

- To identify root causes for missing instrumentation
- To discuss the training and education needs for OR and SPD personnel to improve communications
- To identify problem solving methods to reduce instrument loss

NEED

- OR personnel and SPD staff can invest significant time each day searching for lost instruments.
- Reports from larger facilities have estimated that staff spends 20-30 hours per day performing this type of unproductive activity.
- The estimated expense for lost instruments can cost an average 500-bed hospital well over $200,000 annually (2002).
  - This loss can account for as much as 30% of a facility’s total instrument budget.
  - Imagine the costs today!

Causes of Missing Instruments

- Poor or lacking communications between OR and SPD and within SPD
- Operations; insufficient instruments, lack of processes
- Lack of training and competencies for SPD staff
- Administrative Issues

Fire Drill Time

- OR calling for instrument(s)
- Not in SPD
- Not in OR
- WHERE CAN THEY BE??????

Communications

- How are communications between the OR and SPD?
- Telephone call? Email? Both? Regular meetings?
- Do all requests get documented in SPD (i.e. phone log)?
- Are the communications accurate and specific?
  - "Hold all my trays if anything is missing. I will order the needed items".
  - Next day, "Where is Dr. Smith's tray? The patient is on the table, we need it now!"
  - What do you mean you did not process it?
Missing Instruments – Where Are You?

- OR contends the instruments were sent to SPD—now they are lost
- SPD claims they never received them
- WHO IS TO BE BELIEVED????
- We spent hours blaming one another and no one is SOLVING the problem!!!!

Operations

- Documentation - usual method is count sheet.
  - Should be available and used for all sets/devices.
  - Variety of methods; Excel sheet, Word, tracking system.
  - Include instrument company name and catalog # in description (also alternate mfr. if acceptable).
  - Include acceptable substitutions.
  - These details are critical to the correct construction of an instrument set and will assist in identifying instruments for replacement, when necessary.

Operations

- For critical items (tray should not be prepared if the item is missing) identify with * or other means to alert SPD staff.
- Always use proper names for instruments.
- If ‘nicknames’ are necessary, still use proper name with ‘nickname’ in parentheses (i.e. Cobra retractor AKA ‘Mother-in-Law retractor’).

Operations - Count Sheets

- Need policies and procedures to ensure count sheets remain accurate and current.
  - Who is authorized to make changes?
  - Is documentation of the change(s) sent to the OR?
  - Are old count sheets removed?
  - Are the dates of changes noted on the sheet.
  - What is the process for changing multiple alike trays?

Count Sheets

- Using count sheets or tray lists promotes accountability and prevents delays in surgery because of missing instruments.
- Markers with permanent, non-toxic ink should be used to write on count sheets or tray lists.
- As instruments are placed on the set, enter the quantity.
- Avoid placing instruments on set FIRST then “drawing a line” down the entire count sheet or entering the quantities at the end. THIS IS HOW ERRORS ARE MADE.
Count Sheets Inside Sets

- A very small FDA-sponsored study revealed little evidence of toxicity from count sheets placed inside sets (Lucas, et al., 2009), but limited types of toners and only one type of paper were used.
- The study did not evaluate whether debris from the paper remains on the instruments or builds up inside the sterilizer chamber.
- Study did recommend that methods be used to prevent transfer of ink from the count sheet to the surgical instruments or container.

Count Sheets Inside Sets

- Can use a surgical towel, autoclaveable bag, etc.
- There is no documentation that placement of the count sheet on the outside of the container limits any toxicity concerns.

AORN Guideline for Packaging (2015)

- “The health care organization should weight the risks vs the benefits of placing a non-validated product (count sheet) in instrument trays against the need for inventory control and instrument count procedures.”

Count Sheets

- It is important for processing personnel to verify the accuracy of the number and type of instruments placed in the set.
- Inaccurate counts can delay cases in the OR because of the need to obtain another set (which will increase the workload of processing personnel) or to locate a sterile replacement instrument.
- The OR staff depends on processing personnel to provide them with a clean, sterile, and accurate set of instruments; otherwise, the delivery of patient care can be delayed or compromised.

Operations

- There must be accountability for instrumentation throughout the use cycle
- OR, SPD and all personnel must be accountable for instrumentation
- There is no black hole......the instruments are going someplace!

Instruments in Syringe Container in the OR
Instruments From Laundry - 1 Week

Where Do these Belong?

Instrument on Floor in Materials

Instrument Inventory

- The average OR surgical instrument inventory is $1.5 million dollars therefore, healthcare facilities MUST make the time to manage this inventory.
- With today's technology, this amount can exceed $3 million

Instrument Loss

- Instrument loss is a major financial burden for a healthcare facility.
- Every department using surgical instruments is responsible for accounting for instruments at the end of a procedure.
- There should be a process to ensure that each using department is accountable and can document that all instruments were returned to SPD.
- Instrument loss can also be attributed to mishandling

Regulations and Standards

- New Jersey State Health Department licensing standards (2004) 8:43G-8.1 Central service policies and procedures
- Methods for processing reusable medical devices shall conform with the following or revised or later editions, if in effect, incorporated herein by reference:
  - The Association for the Advancement of Medical Instrumentation (AAMI) requirements, “Good Hospital Practice: Steam Sterilization and Sterility Assurance.” ST 46
  - Replaced with ST-79 in 2006
6.3 Care and handling of contaminated reusable items at point of use

Contaminated reusable items should be handled as little as possible at the point of use. Soiled items should be immediately contained and transported to the decontamination area or soiled utility area, where cleaning procedures can be accomplished away from patient care. In many health care facilities, however, immediate containment, transportation, and cleaning might not be feasible, so gross soil should be removed at the point of use.

Soil should be removed by a method that does not promote cross-contamination; a disposable sponge moistened with water (not saline) should be used to wipe gross soil from instruments. Gauze sponges and similar items used in the cleaning process are contaminated and should be handled, contained, and discarded according to the health care facility’s policy for infectious wastes.

Gross soil is removed as soon as possible in order to:
(a) reduce the number of microorganisms on the item,
(b) reduce the nutrient material that might support microbial growth,
(c) reduce the potential for environmental contamination by aerosolization or spillage, and
(d) minimize damage to devices from such substances as blood, saline, iodine, and radiological dyes or from the subsequent vigorous cleaning processes needed to remove encrusted material.

AORN: Recommended Practices: Care of Instruments

- Instruments should be kept free of gross soil during surgical procedures
- Blood and body fluids can cause pitting of instruments
- If blood left to dry it can be difficult to remove
- Preparation for decontamination should begin at the point of use.
  Removing gross soil and moistening soil at the point of use improves the efficiency and effectiveness of decontamination.

- When instruments are comprised of more than one piece, they should be opened, disassembled and arranged in an orderly fashion within the original set configuration.
- Microsurgical instruments should be segregated into specialty containers (to prevent damage)
- Instruments should be treated with an instrument cleaner (e.g. enzyme foam) before transport
- All instruments used in case should be accounted for at the end of the procedure (for inventory control)

- At end of case, place instruments in specific container, spray with enzyme foam or gel
- If protective container, place items in designated location to protect from damage in transport
- Do not stack unless in rigid container
- Avoid exposure to saline and bleach
- Clean ASAP after case

Operations

- Instrument counts in the OR - AORN recommends all instruments be counted for inventory control purposes (AORN RP Counts)
- Count sheet should note the total number of instruments on set to facilitate OR counts
- Need system of accountability/tracking to identify preparer of set in SPD
  - Tracking system
  - Name or ID# on package

Operations

- All assembled sets should be complete and all instruments functional.
- Need a P&P to direct SPD what to do if an item is missing from a set and a replacement is not available.
- Call the service leader? OR manager?
- What if they are not available or do not get back to you?
- Cannot leave the decision up to SPD.

AORN

- By the time instruments are received in SPD and the sets are opened and disassembled for cleaning, the trash has long since left the OR.
- SPD personnel should NOT count instruments in the decontamination area:
  - Increases the likelihood of an exposure to bloodborne pathogens as a result of a puncture injury (and is thus inconsistent with OSHA requirements).
  - Increases the workload in the decontamination area, delaying processing and increasing instrument turnaround time.
Operations

- It is the responsibility of each using department to ensure that instruments are not damaged or lost.
- Instrument sets should be kept together at the end of the case/procedure and placed back into their respective containers or baskets.
- Reduces the time that personnel must spend looking for instruments and making up sets.

Potential Savings

- Estimates that a 300-bed hospital can save $500,000 annually in time savings, increased productivity by clinical and SPD staff, error prevention and decreased instrument repair replacement costs.

Protection of Instruments

- Specialty instruments should be placed in specialty container/tray to protect from damage.
- Cost of container will be covered by minimal damage/repair instrument costs.

Specialty Containers
Operations

- In SPD, it is important to ensure that instruments are placed into the correct sets after the cleaning, decontamination, and assembly processes.
- Instruments might be separated for the cleaning process, there should be a system for identifying which instruments are for which sets.
  - Individual baskets can be numbered
  - Waterproof tags
  - Colored chip can be placed in the baskets to indicate which instruments belong together (e.g., all baskets containing chips of the same color belong together when removed from the washer–decontaminator).

Operations

- For any products used to keep sets together, the manufacturer should be consulted to ensure that they are water-resistant and validated for use in mechanical ultrasonic machines and washers.

Sample Incomplete Set Label

Operations

- Whenever items are missing from a set, the outside of the set should be labeled to alert OR personnel, who might wish to use another set or to see if a single wrapped replacement is available.
  - Can be a preprinted label, or it can be provided on the autoclave tape.
  - A list of missing instruments should be maintained so that when an instrument is found or a replacement is obtained, it can be added to the tray or set to which it belongs.

Operations

- Need a P&P to identify who to contact in the OR when a critical item is missing
  - (Should be identified on count sheets as a critical item)
- Document the communication to the OR; should be verbal and written communication.
- Document the action to be taken (put up tray; leave tray undone)
- Who will order the replacement instrument?
- Whose budget will be changed for the replacement?

Operations

- Establish a process to replenish the backup instrument inventory to par levels, which included allotting space for vendor-specific items.
- Do you have back-up instruments, or does the OR have to open up an entire set to get back-up instruments?
- Institute an instrument collection system at each assembly station.
- Ensure all “extras” put away.
Operations
- All complaints from the OR should be followed-up and feedback given in writing.
- All OR sets/trays should be numbered (if multiples of like trays) to enable staff to identify specific sets.
  - To track throughout process (e.g. sterilization)

There should be a system for documenting missing instruments and for following up with using departments.
- Use as a PI project to track progress.
- Materials Mgmt. can provide cost data to identify the actual cost of lost instruments.

Missing Instruments
- Identify financial impact of instrument loss and abuse of instruments.
  - monitor costs for replacements
  - monitor costs for repairs
- Document replacements on Log and report weekly.
- Share this information with OR and SPD departments and senior management.

Missing Instruments Form
<table>
<thead>
<tr>
<th>DATE</th>
<th>DEPT</th>
<th>OR NO. OF TRAY/SET</th>
<th>ITEM MISSING</th>
<th>REASON MISSING</th>
<th>Catalog#</th>
<th>Item Cost</th>
<th>Name of OR Called</th>
<th>Action to Take</th>
</tr>
</thead>
</table>

Accountability
- Need a system of traceability for all individuals who handled the instruments
  - OR (for damage/loss issues)
  - SPD – for quality issues
    - Decontamination
    - Prep and Packaging
    - Sterilization
    - Distribution

Sets Returned to SPD with Missing Instruments
- Immediately notify the OR
- Do not get into the blame mode; instead each department should actively look for the item.
- Any sets taken out of circulation because of items missing MUST be communicated to OR and SPD in writing and posted.
- Policy should define how long to wait before the missing item is ordered (e.g. 48-72 hours).
Key Quality Issues

- OR Responsibilities
  - Keeping sets together - don't mix up trays at the end of procedures
  - Match trays with the baskets
- Determine responsibilities for each department in this process.
- Establish a joint process to ensure instruments do not get mixed up.
- Keep instruments clean during procedure.
- Spray with enzyme foam before sending to SPD.

Operations

- Systems - Need a system of identification of sets; make sure baskets have tags or if missing are replaced.
- Don't use tape on containers
- Mayo trays should be marked with non-toxic indelible marker and darkened as needed.

Tray Standardization

- Seven step process
- Helps to facilitate handling of instruments and reduces time to perform counts.
- Have PI Committee involved.
- Form ad-hoc committee to focus on this one issue.

Does Your Returned Cart Look Like This? - Mission Impossible?

Operations

- Standardize/downsize trays - will make counting easier at end of case!
- Do not permit surgeon specific trays - creates poor utilization of expensive instrumentation
  - Package surgeon specific items separately.
  - Need method to identify these items.
  - If using instrument marking tape, it must be applied and properly maintained.
- Container systems - need to be maintained in good condition.

Tray Standardization

1. Education
2. Communication
3. Perform instrument inventory
4. Review all sets
5. Education
6. Communication
7. Continuous Process Monitoring
Step # 1 - Form Review Committee
- OR
- SPD
- Clinical coordinator for General Service
- Specialty clinical coordinators (when their services reviewed)
- OR Educator

Step # 2 - Establish Guidelines
- Keep Minutes
- Determine goals/objectives
  - reduce costs, inefficiencies
  - eliminate unnecessary instrumentation on sets
  - eliminate unnecessary sets
  - obsolete instrumentation?

Establish Guidelines
- New services being developed?
- Implementing case carts?
- Additional instruments/sets needed?
- Unacceptable level of flash sterilization?
- Establish time lines for assignments
- Keep staff members and surgeons informed

Establish Guidelines
- No changes can be made to sets without approval of Committee during and after the review process
- Establish regular meeting dates to keep project on schedule
- Establish time frames for all tray evaluations to ensure input from staff, surgeons and SPD personnel

Establish Guidelines
- Determine order in which each services’ trays will be reviewed
- Determine responsible individuals from OR and SPD who will actually execute the plan, and provide for the needed education and communication throughout the process
Step # 3 - Perform Inventory

- You can't measure the effectiveness of your project unless you know where you began!
- Opportunity to know what you have in quantity and value.

Surgical Instrument Inventory

- Determine who will perform the inventory
  - facility employees
  - outside contractor
  - instrument manufacturer

Surgical Instrument Inventory

- If performing your own inventory
  - Usually performed on weekend (Saturday and/or Sunday)
  - Need to involve SPD
  - Schedule additional personnel in OR and SPD for opening, rewrapping and re-sterilization of all opened items

Surgical Instrument Inventory

- Do not assume all sets alike
  - If you have 13 major trays, each tray should be opened and inventoried
  - Check for accuracy in type of instrument
  - Check for condition of instruments
    - pitting, cracked box locks, rusting, etc...

Surgical Instrument Inventory

- May want to inventory, re-wrap and re-sterilize some sets for emergencies
  - label on tape “inventoried”
- Use inventory sheets to record quantities
  - If not available, develop to save time
- May want to perform by specialties

Surgical Instrument Inventory

- If using outside contractor or instrument manufacturer
  - still need additional OR personnel to monitor process and re-wrap sets
  - still need SPD personnel to re-wrap sets and/or sterilize sets
- Need to verify that all instrumentation was counted
Surgical Instrument Inventory
- Develop catalog with listing and dollar value for each set
- Include extra instrumentation for each service
- Try to computerize this data
- Keep data current - additions/deletions ongoing

Step #4 - Review All Instrument Sets
- Start with general service
- Start with most frequently used tray
- Computerized data may help
- Only instruments being used 75-80% of the time should remain on the set
  - package others as extras

Review All Instrument Sets
- Is set obsolete?
  - Is the surgeon still on staff?
  - Is the procedure still performed?
  - Need to plan for revisions on Ortho cases
- Can the set be combined with another set?
  - i.e.; hysterectomy trays and major trays with hysterectomy instruments as extras

Review All Instrument Sets
- Are there duplicates, similarities?
- Are there surgeon-specific trays?
  - surgeons need to “buy into” process
  - need to understand rationale
  - assure their preferences will still be in the room and available for their cases

Review All Instrument Sets
- Create prototype and perform evaluation including surgeons
- Train all personnel using and processing tray
- Develop new inventory sheet
- Develop evaluation tool (form)

Review All Instrument Sets
- Compile data and report results to Ad-Hoc Committee
- If revision approved, notify staff and finalize inventory sheet
- If further revision needed, repeat above process
- Continue until all services reviewed
Review All Instrument Sets
- Number of trays, services and length of project dependent on
  - available personnel in OR and SPD
  - available time
  - computerization of data
  - assistance from other departments (i.e. Purchasing)

Education
- Education is key to the success of this project
- OR and SPD personnel must receive Continuing Education regarding all tray changes
- New inventory sheets not sufficient for training.
- Tray contents as well as instrument configuration on set important and must be standardized.

Education
- Develop educational program for SPD personnel (if not in place) for surgical instruments
- Use textbooks and websites.
- Take photos as reference.
- If using a tracking system download photos of specialty items – these are the problematic ones

Training and Education
- Care and handling of surgical instruments
- Testing of surgical instruments
- Materials and equipment to test instruments
- Testing of insulation on insulated instruments
- Documentation of the testing
- Testing and lubrication of power equipment
- Specialty instruments and devices (e.g. Robotics, loaner sets, etc.)

Education Program
- Include correct methods for decontamination, instrument inspection, tray assembly, sterilization, and the care and handling of sterile supplies.
- Look at your SPD, is it neat and organized or disorganized?
- Do you have “relics” that need to be removed from both the OR and SPD?
- Organize your back-up instruments to make it easier for staff to find the instruments they needed to complete trays.
- Educate staff to keep area organized!

Reference Photos
Reference Photos

Competencies
- Establish competencies for personnel.
- Verify competencies.
- Continue competency with continuing education/training.
- Encourage certification and re-certification.
- There is surgical instrument specialist certification available through CBSPD and IAHCSMM.

Communication
- All processes should be communicated, in writing to all OR and SPD personnel.
- All accomplishments to be documented.
- All savings documented.
- Positive feedback important for continued success of process.

Continuous Process Improvement
- Develop monitors to continuously evaluate processes as they change
  - assists in determining successes, failures
  - Assess impact on patient outcomes
  - Assess cost savings by set/service
    - may encourage more acceptance
    - may identify other areas for improvement

SHOW ME THE MONEY!
- If 30 instruments are removed from a Major Set; average value $40 = $1,200 per set times 15 sets = $18,000
- Use to create new sets, extras
- Avoids purchases

Instrument Damage
- Improper training of personnel using and processing instrumentation
- Misuse of instrument
- Contact with saline, bleach
- Prolonged contact with blood(not processed as soon as possible after use)
- Improper cleaning and chemicals
Instrument Damage
- Incorrect cleaning process/equipment
- Improper processing (packaging, sterilization)
- Improper storage
- Improper repair

Did You Ever Feel Like This?
- Who is to blame for the damage/loss?
- Why are the instrument repair bills so high?
- Why are the instrument repair expenses over budget?

Instrument Damage
- Instruments should last at least 10-15 years or more depending on how they are cleaned, used, handled, and maintained.
- Things happen
  - drop on floor
  - caught on basket in washer
- Be proactive to prevent avoidable damage

To Reduce Damage/Loss
- Develop policies and procedures based upon:
  - Surgical instrument manufacturer's IFUs
  - AORN Recommended Practices
  - AAMI
- Train all personnel in the care and handling of surgical instruments.
- Instrument repair companies also provide this education.

To Reduce Damage/Loss
- Establish competencies for processing of surgical instrumentation
  - at completion of procedure
  - transporting to processing area
  - initial inspection, disassembly, soaking
  - proper cleaning agents
  - proper cleaning methods/equipment

To Reduce Damage/Loss
- Competencies (continued)
  - proper inspection
  - proper testing
  - proper assembly/packaging
  - proper sterilization method
  - proper transportation/storage
To Reduce Damage/Loss
- Need thorough training of all personnel with determination of competency.
- Purchase of specialty containers for microsurgical instruments, endoscopes to prevent damage.
- Provide recommended equipment to inspect, test instruments (i.e. microscope for eye instruments).
- Provide sufficient mechanical equipment for processing.

To Reduce Loss - Operations
- Mislabeled sets can result in loss
  - Label tape before processing set then apply tape.
- Loaner instrumentation issues (loss)
  - Count sheets available from the vendor?
  - Check-in and check-out counts?
  - Checking for damage?

Loaner Items
- When manufacturers’ loan devices during repair, these must be identified and tracked so they can be returned
  - Color code with specific color tape
  - Record serial # of item
  - When it must be returned, post signs with serial # - can easily be identified with tape
  - Document all loaners on Log Form

Administrative Issues
- People (staff)
- Equipment
- Processes

Administrative Issues
- As customer expectations and surgical tray volume grows, the existing SPD organizational structure needs to change.
- When were the SPD Job Descriptions last reviewed/revised?
  - Review and revise the roles and responsibilities for each SPD position to reflect expected practice.
  - Develop new job descriptions that specified accountabilities.
  - Consider a career ladder to give SPD staff more opportunities for advancement within the department.

Administrative Issues
- When did you last review the staffing pattern for SPD?
  - Work volumes and work flow has changed.
  - Consider consolidating staff scheduling and work start times to maximize staff during periods of high volume.
  - Why schedule people when there is no or little work to be done?
  - Schedule staff during peak work times.
Administrative Issues
- Staffing - SPD must have sufficient staffing to service OR
  - Staff productivity should be monitored
  - Determine department productivity/staffing
  - AAMI Productivity module in their Benchmarking program
  - Can also use a manual system. Labor intensive.

Administrative Issues
- Budget - need adequate dollars for SPD staffing and overtime as needed to support the OR
  - Should have one dedicated person (with portable phone) who answers ALL calls from the OR and is responsible to follow-through on request

Administrative Issues
- Need dollars for replacement of broken/lost instruments.
- Need dollars for additional instruments (to permit complete turn around of sets).
- Need supply of back-up instruments in SPD to replace bread-and-butter instruments.
- Who is responsible to order back-ups?

Administrative Issues
- Sufficient storage space in the OR?
- Cannot find items because they are not put away correctly (in OR or SPD?)
- Define missing instrument issues
  - Loaners?
  - Instruments wrapped separately?
  - Doctor's owned instruments?

Insufficient Storage

Administrative Issues
- Booking problems - back-to-back cases without sufficient instrumentation creates chaos for the OR and SPD!
- OR must know turn around time for sets and comply with this - don’t promise surgeons the impossible!
Equipment
- Insufficient processing equipment carries a liability to the patient and facility.
- Impacts on compliance with IFUs.
- May result in instruments being damaged from improper cleaning.
- Staff rushing to process sets can lead to instrument loss or damage as well as taking “short cuts”.
- Need to ensure sufficient processing equipment to comply with IFUs.

Processes
- Need a system of monitoring for compliance with all policies and procedures.
- Many larger facilities now hiring a QA/Education Supervisor for SPD.
- The legalities with compliance with IFUs almost mandates such a position.
- Why have policies if there is no compliance?

Conclusion
- Instruments MUST be accounted for
- OR and SPD must work together to resolve as a TEAM missing instrument issues
- BOTH sides must be accountable

The End
- Avoid the BLAME GAME AT ALL COSTS!!!!

THE END
- When there is a system there is greater efficiencies and less chaos.
- In today’s healthcare environment, every dollar is sacred. We must contain all costs.
- We are responsible for millions of dollars in instruments and need to protect them from damage and loss.
- Everyone wins when we manage instrumentation correctly!

Word of Wisdom
- DISCIPLINE is a choice
- It is simply, consistently choosing the hard right over the easy wrong!
Thank You!