HEALTH TECH ACADEMY

Surgical Skills I: Planning A Case, Opening, and Start of Surgery

Surgical Skills

Lesson Objectives

1. List and define common terms used in surgical technique
2. Discuss the elements of a case plan
3. Explain surgical objectives and how they can be grouped into types
4. Discuss the purpose of preoperative case preparation
5. Describe the correct procedure for performing a count
6. Discuss the guidelines for preventing lost and retained items

Introduction

- **Surgical technologist**
  - Provides surgical case management during the perioperative phase
- **Phases of case management**
  - Preoperative
  - Intraoperative
  - Postoperative

Surgical Terms
(Slide 1 of 2)

- **Amputate:** Cut off a Limb
- **Anastomosis:** Connection of channels of the body, such as intenstines or blood vessels
- **Anastomose:** The Act of making an Anastamosis
- **Approximate:** act of bringing together or closer
- **Blunt dissection:** separation of tissue with non-sharp instruments, may even use fingers
- **Debridement:** removal of damaged tissue or foreign objects from a wound
- **Dog ear:** fold of tissue protruding above the skin
- **Debulk:** remove all or most of a substance, such as with a tumor or lesion
- **Dissect:** cut or separate tissues
- **Elevate:** to bring upward or closer to the surface
- **Excise:** to remove tissue with a cutting instrument
- **Expose:** to open
- **Exposure:** To enable precise viewing of an anatomical area.

Surgical Terms
(Slide 2 of 2)

- **Exteriorize:** to make external
- **Ligate:** to tie off a blood vessel, so blood cannot flow
- **Resection:** to remove tissue or part/all of an organ
- **Surgical field:** The entirety of the sterile surgical area, including the draped patient, surgical wound, and the sterile back table and other tables/equipment
- **Surgical wound** : The incision make for the surgery
- **Undermine:** cutting the fibrous septae that connects the skin to underlying fascia
- **Visualize, direct visualization:** to be able to view. direct vision is done with light, through the surgeons eyes, loupes, microscope or endoscope. Indirect visualization uses an imaging format, such as X-ray, CT scan, etc. A surgeon may use the term "direct vision" to describe looking directly with their eyes/loupes and using no equipment – although not technically correct.

Watch the "Surgical Terminology" Video for an explanation of common surgical terms/procedure, suffixes and prefixes

Surgical Terminology Video

Surgical Terminology Video

Summary of Video:

Processes:

- -ectomy=Removal,
- -otomy=Incision, -sect=To cut,
- -ostomy=Make a hole,
- -plasty=Repair,
- -pexy=Fixation,
- -rrhaphy=Suturing,
- -desis=Surgical Union,
- -clysis=Irrigation,
- -centesis=Removal of Fluid,
- -tripsy=Crushing,
- -puncture=Puncture,
- Per-/Dia-=Going through,
- -opsy=Examination,
- -metry=To Measure,
- -scopy=To View,
- -graphy=Process of Recording,
- -gram=Recording

Instruments:

- Echo-/Sono-/Phono-=Sound,
- Electro-=Electrical,
- -scope=instrument for viewing,
- -tome=Instrument for Incision,
- -meter=Instrument for Measurement

Grafts:

- Auto-=Self,
- Allo-=Other Human,
- Xeno-=Different Animal,
- -graft=Graft

Anticipatory Skills of ST

- **Ability to anticipate, or predict, needs of the surgeon during case management**
  - One of the most important skills of the surgical technologist
  - Gathered supplies from surgeon's preference card
- **Anticipatory skills**
  - Can be basic to refined as the surgical tech gains more experience
  - Experience is gained by working with a variety of surgeons and by first scrubbing an a rray of surgical procedures

Watch the video on "Surgical Anticipation and Instrument Passing" for better understanding!

Surgical Anticipation and Instrument Passing

Surgical Anticipation and Instrument Passing

Summary of the Video:

- Why is it important for a ST to anticipate
- What are the four steps of anticipation
- How to conduct instrument passing

Elements of a Case Plan

- Name of the operative procedure
- Type of procedure, open or minimally invasive
- Preoperative diagnosis as stated in the record
- Anesthesia planned
- Patient BMI or weight category
- Patient age
- Mobility problems
- Sutures, surgical staples, or tissue adhesives
- Position and incision or entry site
- Skin prep and draping required
- Instruments needed, including “specials”
- Imaging required, including equipment
- Pneumatic, electric, electronic equipment required
- Implants planned, type, specifications if known
- Drains needed
- Dressings
- Patient destination after surgery, such as PACU, ICU, discharge

Surgical Case Plan Categories

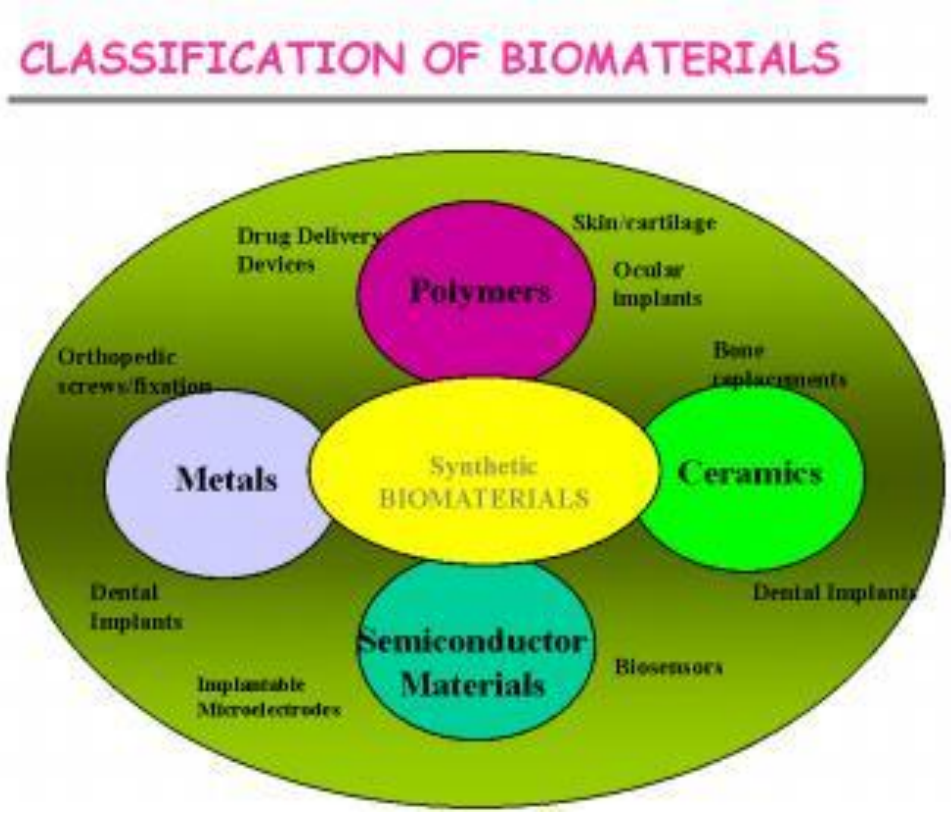
- **Combines**
  - Knowledge of a procedure
  - Surgical techniques
- **Surgical categories**
  - Diagnostic
  - Repair
  - Removal
  - Reconstruction

Implant Surgery
(Slide 1 of 2)

- Medical implants replace or enhance body functions.
- **Planning for Implant Surgery**
  - Branded Systems: Orthopedic and specialty implants often require specific sets.
  - Case Preparation: Information on implant type aids in planning.
  - Equipment Availability: Ensure all necessary instruments are ready for surgery.
- **Synthetic Implants**
  - Criteria for Success: Compatibility, sterility, safety, tissue coverage, and stability.
  - Examples: Artificial heart valves, pacemakers, and artificial joints.

Implant Surgery
(Slide 2 of 2)

- **Implant Materials**
  - Polylactic Acid (PLA): Used in orthopedic and maxillofacial surgery.
  - Porous Polyethylene: Allows tissue and vascular ingrowth, used in facial reconstruction.
  - Methylmethacrylate: Bone cement for securing prosthetics, mixed in a closed container.
  - Silicone and Silastic: Inert and durable materials used in various forms.
  - Vascular Grafts: Made from synthetic materials like Dacron and PTFE.
  - Metals and Alloys: Stainless steel, vitallium, titanium, and PEEK polymer used in orthopedics.



Tissue Grafts

- Tissue from patient, donor, or animal to replace lost tissue.
- **Sources:**
  - From tissue banks or patient's body.
- **Allograft**
  - Human tissue graft, tested for infections.
- **Autologous Autograft**
  - Tissue from patient's body to another site.

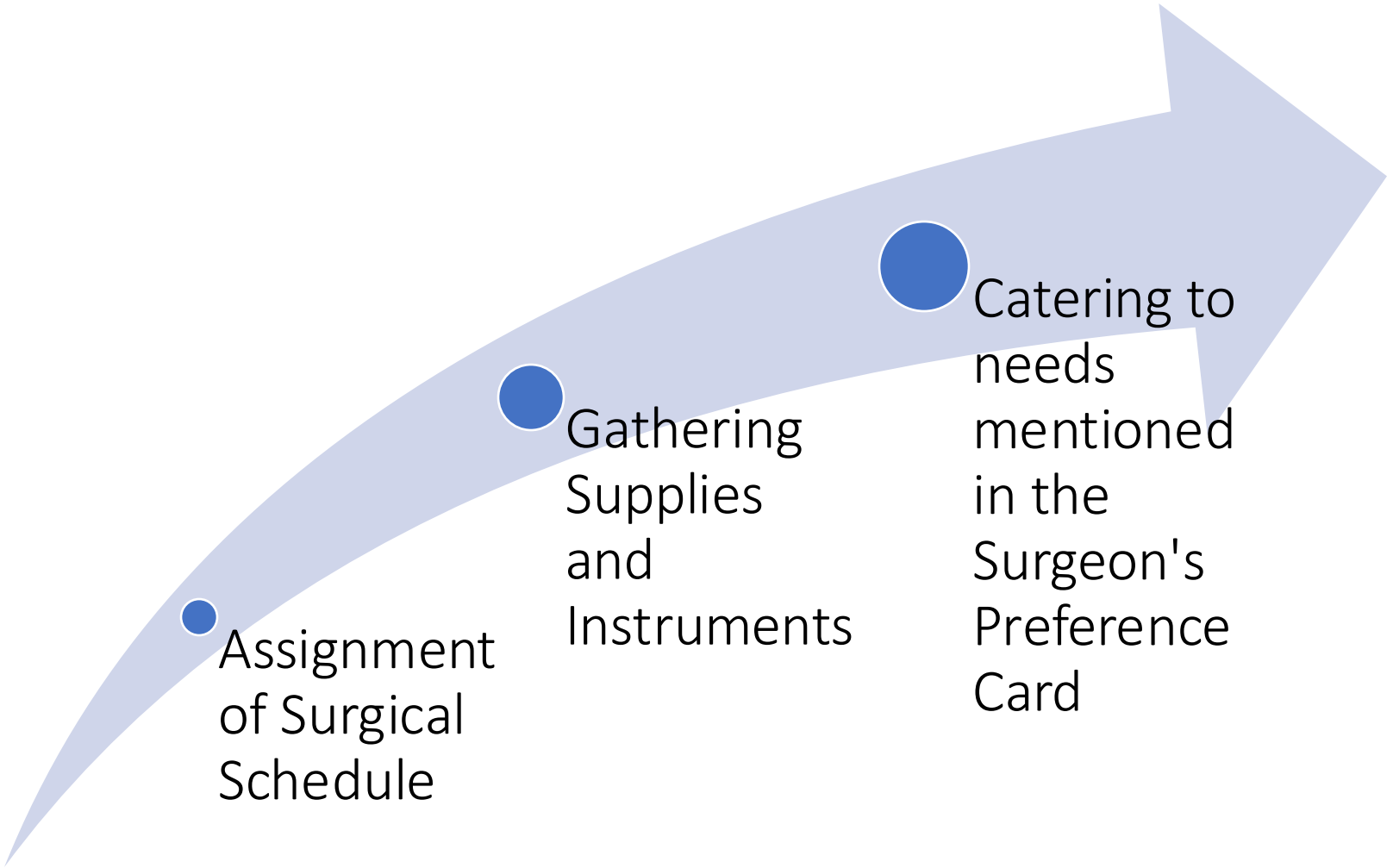
Examples of Tissue Grafting

- **Skin Graft**
  - Purpose: Replace damaged skin to prevent infection and fluid loss.
  - Options: Traditional autografts or other biological materials.
- **Porcine Dermis**
  - Use: Temporary cover for full-thickness injuries.
  - Types: Sheets or rolls, frozen, fresh, or dried.
- **Amniotic Membrane and Umbilical Cord**
  - Applications: Biological dressing for burns, ulcers, wounds, and vascular surgery.
  - Types: Amnion and chorion membranes, fresh, frozen, or dried.

More Examples of Tissue Grafting

- **Engineered Skin Substitutes**
  - Purpose: Cover large defects and wounds.
  - Features: Barrier to infection, pain reduction, scar prevention.
- **Bone Graft**
  - Purpose: Structural support and new bone growth.
  - Types: Autologous, allogenic, composite, demineralized bone matrix, ceramic materials, graft composites.

Preoperative Case Preparation



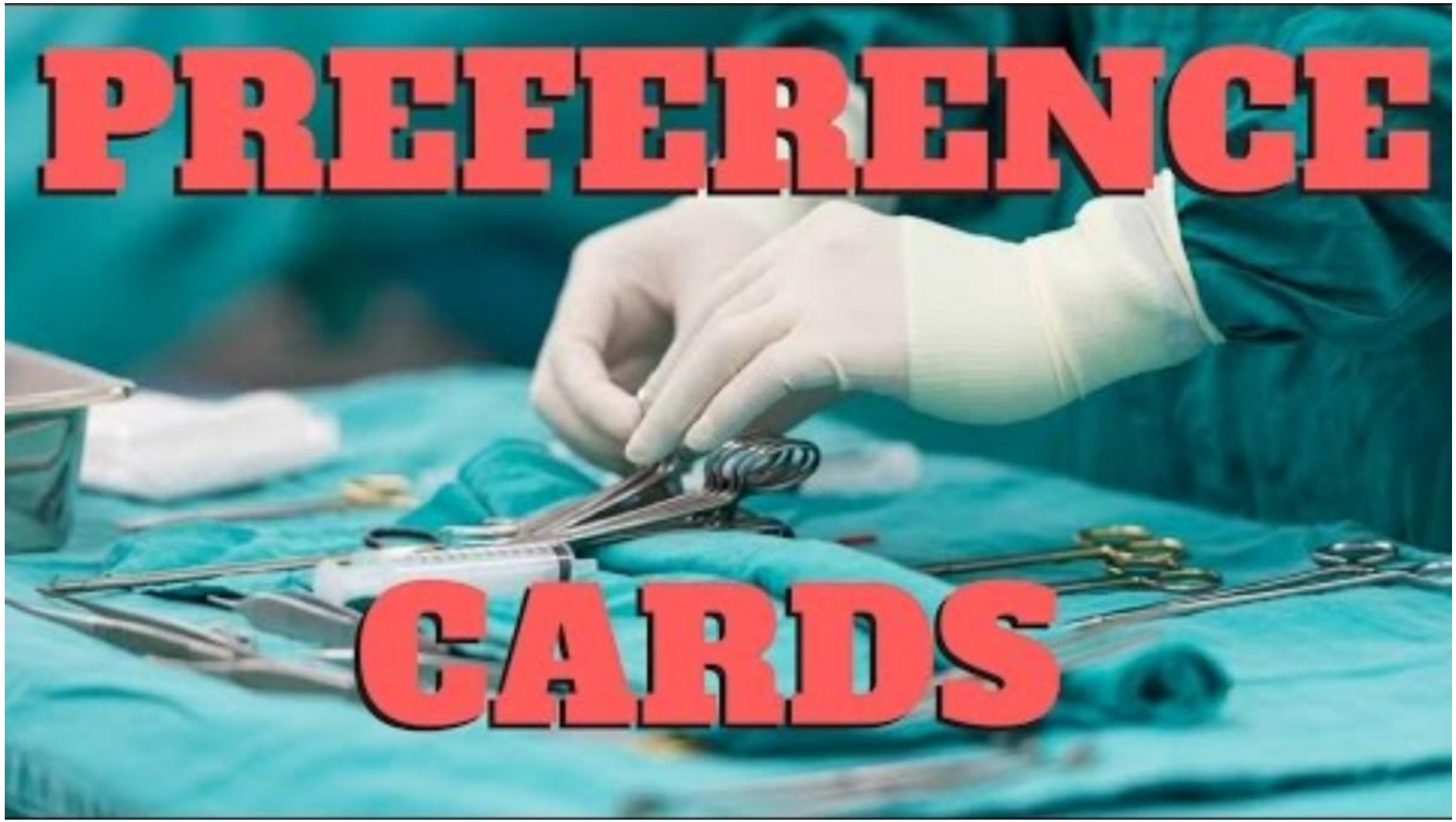
Reviewing Surgeon’s Preference Card

- Instruments
- Special equipment
- Glove and gown size
- Skin prep and draping routine
- Medications
- Sutures and dressings
- Assembling supplies and instruments

- May also be called "Pick List" - this refers to what SPD will "pick" on the case cart

Watch the "Preference Cards" Video for an overview of how to use these

Preference Cards Video



Preference Card Video

Summary of Video:

- Hospital based preference cards vs. Your own "preference cards" or notes
  - Your own notes are always the best resource
- Open Supplies: Will be used, open on the field
- Hold/PRN Supplies: expensive or not always used items. Wait to open until needed
- Instruments: Some may be listed as "hold/PRN" as they will not always be needed
  - For minimally invasive procedures, the trays for conversion to open should be available
- Positioning and Prep: may also include draping techniques
- Equipment

Preparing Nonsterile Equipment

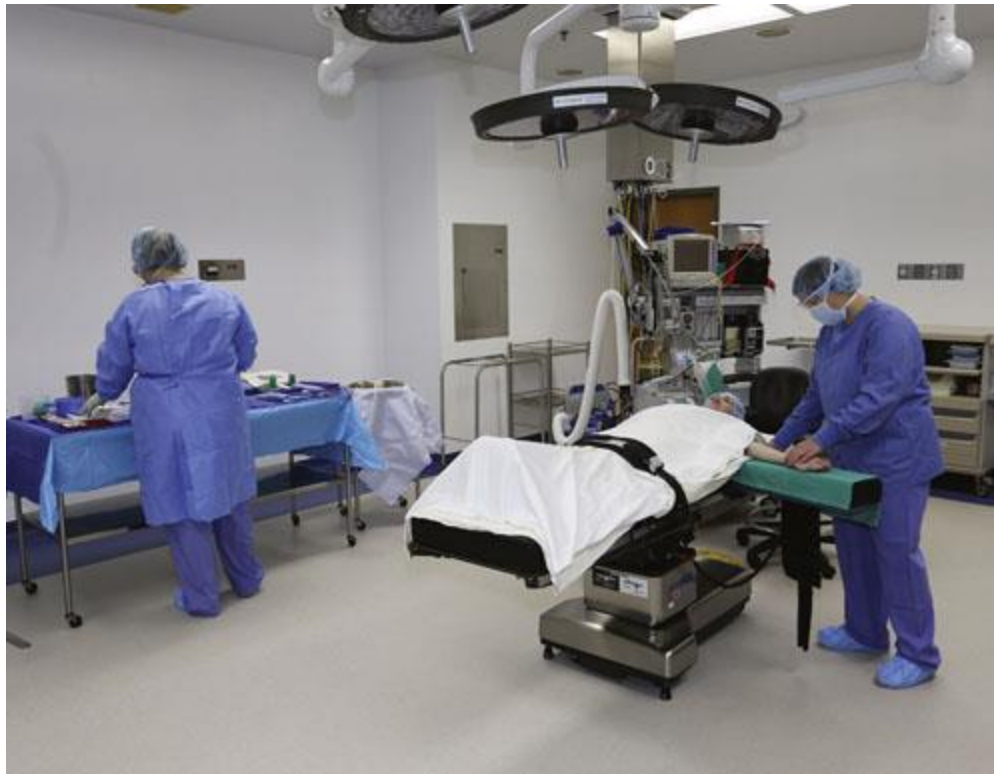
Essentials of the nonsterile room setup

- Arrangement of furniture
- Prevention of contamination
- Sterile field is 12 inches from nonsterile areas
- OR table: OR bed setup by Circulator with sheets and positioning equipment
- Suction connected
- Imaging output data present
- Power sources for powered instruments
- Specialty equipment in OR:
    - Ultrasounds, imaging, etc
    - Drills, Generators, etc
    - Microscopes
    - Robot

Opening a Case

- Sterile instruments and equipment are opened using sterile technique to prevent their contamination

- **Guidelines for Opening a Case**
  - Maintain a safe distance from sterile surface
  - Place trash in appropriate receptacle
  - Break sealed tape
  - Open items with inner wrapper aseptically
  - Place heavy items on a small table
  - Open instrument containers aseptically
  - Open sharps during setup
  - Never gown and glove from the back table



Setting up a Case/Sterile Setup

- **Expand Working Area**: Drape Mayo stand early, add towels for cushioning and protection.
- **Specialty Setups:** Use lint-free nonwoven materials for microsurgery, ophthalmic, or ear surgery.
- **Additional Workspace**: Arrange before setup; multiple tables close to back table for continuous sterile field.
- **Opening Instruments**: Check external process indicator, seals, and latches; lift inner tray away from outer container.
- **Sterilization Indicators:** Verify inside trays before handling; nonsterile if indicators not detected.
- **Efficient Handling**: Minimize shifting items; establish zones on back table for specific equipment.
- **Waste Disposal:** Use provided waste bag for wrappers and suture ends; do not discard in kick bucket.

Intraoperative Case Preparation

- Done after preoperative case preparation is completed and patient is received
- **Priority preparation**
  - Towels, gowns, gloves, drapes
  - Light handles, suction tubing, ESU pencil and holster
  - Starting instruments
  - Sponges, sutures, sharps
  - You now have all the priority equipment you need to start a case. Everything else is “secondary preparation”

Intraoperative Case Management

General Principles

- Intraoperative activity of the surgical technologist
  - Surgical technologist should constantly compare the anatomy and pathol ogy being seen to what should be expected
  - Observe details of anatomy, pathology, and procedure
  - Passing instrument proficiently and keep instruments clean
  - Anticipates actions and needs 2 to 3 steps ahead
  - Pays attention to entire OR environment
  - Communicates effectively with all members of the surgical team
  - Prepared for differences in surgeons' approaches
  - Problem-solve instruments and equipment
  - know basic anatomy

Intraoperative Communication

- **Verbal communication**
  - Occurs between all members of the surgical team
  - Majority of intraoperative verbal communication takes place within sterile field
  - ST should speak loud and clear
- **Nonverbal communications**
  - Hand signals are often used to keep talking to a minimum
  - Hand signals replace verbal requests if the patient is not under general anesthesia

Mayo Stand Setup

- Used for placement of frequently needed instruments and supplies
- Setup varies
- Select method best for you
- Standardized setup may exist at individual facilities
- Keep your Mayo neat and orderly

Solutions and Drugs

- Irrigations – May be distributed after the start of the case
- Label and measure irrigations
- Use basins or a temperature-controlled basin
- Medications on the field are labeled

Completing the Setup

- Organize remaining supplies
- Protect the sterile setup once completed from contamination
- You may take additional steps to prepare future steps- such as preparing the drapes

Watch the "Surgical Field Setup" Video for a walkthrough of setting up a case with counting

Surgical Field Setup Video

Surgical Field Setup Video

Summary of Video:

- Open your sterile field and supplies onto the field
- Open Instrument trays
- Open your gown/gloves on a separate table
- Scrub, then gown/glove yourself
- Drape each table, Bring instruments to table
- "Touch it Once" for speediest setups

Counts

- **Purpose** – Prevent items from being retained in the patient

- **Counted items**
  - Soft goods
  - Sharps
  - Instruments
  - Miscellaneous small items

- **Person Responsible for the count**
  - Circulator
  - Surgical technologist

When to Count

- **When to perform counts**
  - **Initial Counts:** This is the establishment of the surgical counts. This must be completed prior to incision
  - **Closing Counts:** This should begin once the first closure suture is being used
  - **Final Counts:** This should begin when the final layer of tissue (skin) begins to be closed
- **Other Times to Count:**
    - **Closure of a Cavity within a Cavity:** Ex. When closing the uterus on a c-section, an additional count should be performed to ensure nothing is left inside this cavity
    - **Change of Shift:** When changing team members, a change of shift count should be performed, so long as this is an appropriate time in the operation

Count Procedure and Documentation

- Sharps should always be counted. Softs/sponges should be counted when there is a surgical wound. Instruments should be counted with the incision is large enough to retain an instrument (Abdomen, Chest, etc). For minimally invasive procedures, an initial count should include everything that would be required for the procedure to convert to "open"
- Count each item individually, do not group into 2's or more
- Items should be visualized by both the Scrub and Circulator
- Completely separate sponges
- Count Instruments by their tip
- Any added item must be updated on the count sheet/board
- Items should never be subtracted
- The circulator will maintain the count documentation. This may be a sheet or a board in the OR

Lost and Retained Items

- **Problems Caused by Lost Items**
  - Increased risk to patients
  - Raised cost
  - Increased stress

- **How items are lost**
  - Inappropriate use of sponges
  - Surgical technologist not keeping track of counted items
  - Cluttered or disorganized field
  - Improper or no count completed

Searching for Lost Items

- Notify surgeon – always do this first!
- Look in all trash and waste receptacles
- Shift equipment on the back table
- Examine the floor and under the OR table
- Look between the surgeon and the patient
- Use a magnetic roller
- Use x-ray study to identify retained items

- **Note:** Sponges are more damaging when retained, as metal instruments are inert. A retained sponge can cause a life-threatening infection when it breaks down. As sponges are packed in a surgical wound during a procedure and carry a high risk, this is why they are counted first.

Watch the "Surgical Counts" Video for an overview of counting

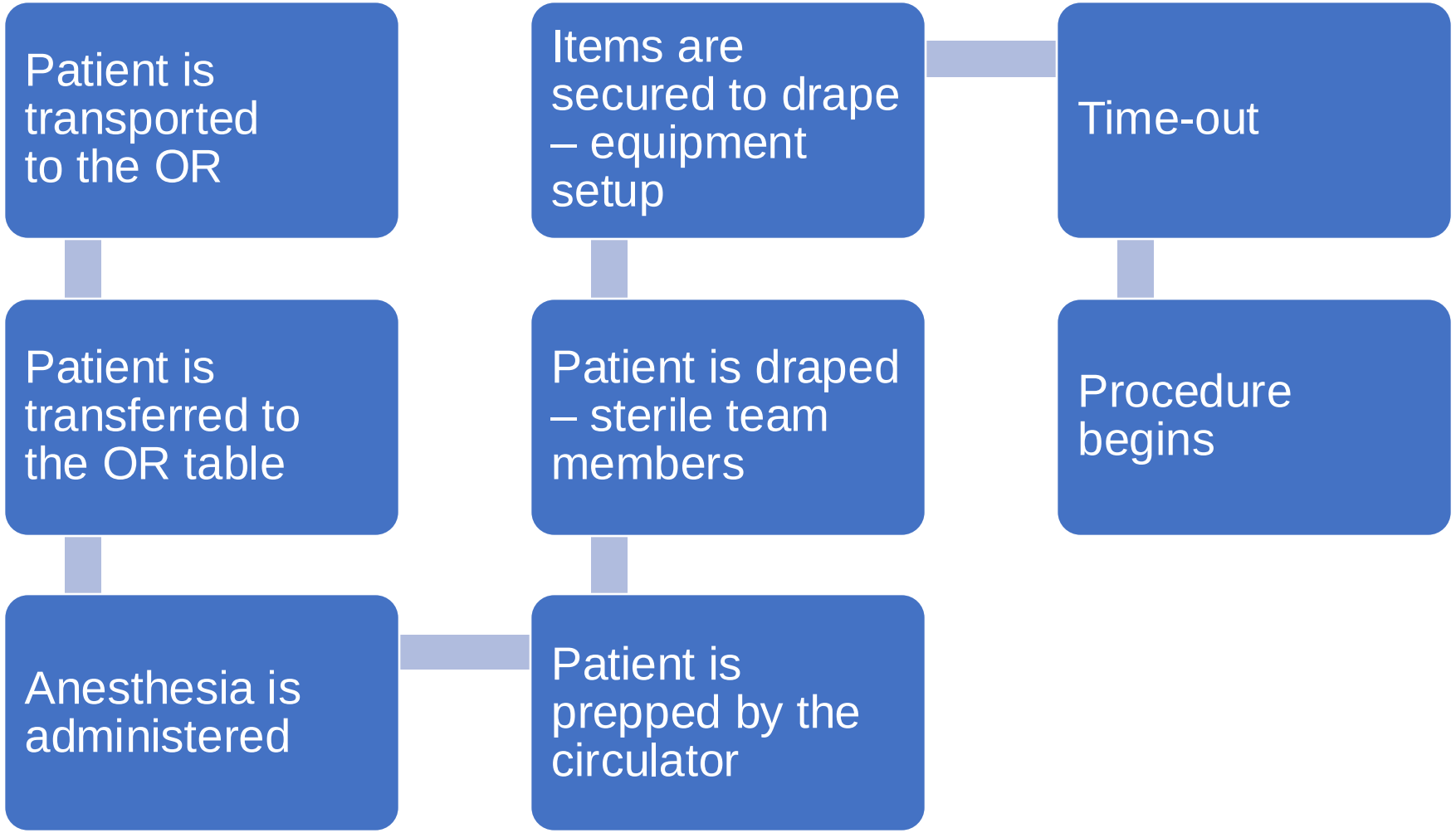
Surgical Counts Video

Surgical Counts Video

Summary of Video:

- Count each item individually, do not group into 2's or more
- Items should be visualized by both the Scrub and Circulator
    - Always show the items you are counting
- Completely separate sponges

Starting the Case



TIMEOUT

- A process used to prevent serious errors in patient identification, wrong site, and wrong surgery.
- Wrong-site surgery accounts for 13.1% of all sentinel events.

- **Identifies:**
  - Correct patient
  - Correct side and site
  - Agreement on the procedure being done
  - Correct position
  - Availability of correct implants and special equipment
  - Availability of laboratory or other test results

Comprehensive Surgical Checklist

Comprehensive surgical checklist

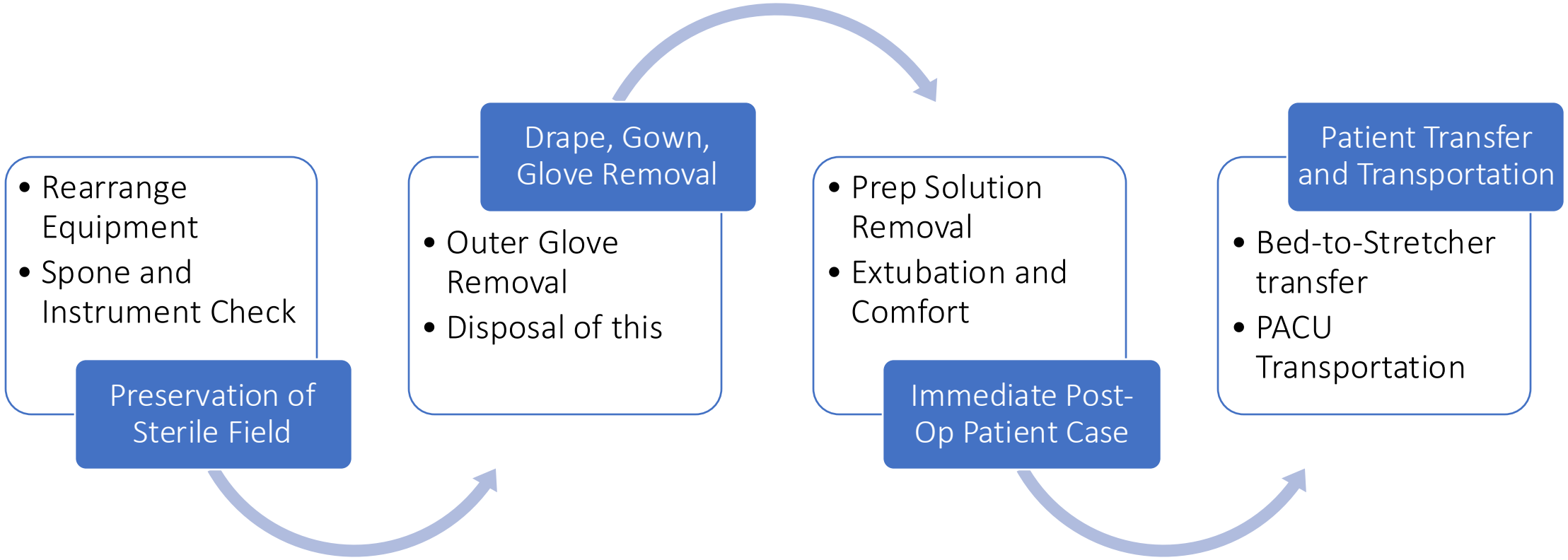
Blue = World Health Organization (WHO) Green = The Joint Commission - Universal Protocol 2016 National Patient Safety Goals Teal = Joint Commission and WHO

Preprocedure check-in	Sign-in	Time-out	Sign-out
In preoperative ready area	Before induction of anesthesia	Before skin incision	Before the patient leaves the operating room
Patient or patient representative actively confirms with registered nurse (RN):	RN and anesthesia professional confirm:	Initiated by designated team member: All other activities to be suspended (except in case of life-threatening emergency)	RN confirms:
Identity ☐ Yes Procedure and procedure site ☐ Yes Consent(s) ☐ Yes Site marked ☐ Yes ☐ N/A by the person performing the procedure RN confirms presence of: History and physical ☐ Yes Preanesthesia assessment ☐ Yes Nursing assessment ☐ Yes Diagnostic and radiologic test results ☐ Yes ☐ N/A Blood products ☐ Yes ☐ N/A Any special equipment, devices, implants ☐ Yes ☐ N/A Include in preprocedure check-in as per institutional custom: Beta blocker medication given ☐ Yes ☐ N/A Venous thromboembolism prophylaxis ordered ☐ Yes ☐ N/A Normothermia measures ☐ Yes ☐ N/A	Confirmation of the following: identity, procedure, procedure site, and consent(s) ☐ Yes Site marked ☐ Yes ☐ N/A by person performing the procedure Patient allergies ☐ Yes ☐ N/A Pulse oximeter on patient ☐ Yes Difficult airway or aspiration risk ☐ No ☐ Yes (preparation confirmed) Risk of blood loss (> 500 mL) ☐ Yes ☐ N/A # of units available _____ Anesthesia safety check completed ☐ Yes Briefing: All members of the team have discussed care plan and addressed concerns ☐ Yes	Introduction of team members ☐ Yes All: Confirmation of the following: identity, procedure, incision site, consent(s) ☐ Yes Site is marked and visible ☐ Yes ☐ N/A Fire risk assessment and discussion ☐ Yes (prevention methods implemented) ☐ N/A Relevant images properly labeled and displayed ☐ Yes ☐ N/A Any equipment concerns ☐ Yes ☐ N/A Anticipated critical events Surgeon: States the following: ☐ Critical or nonroutine steps ☐ Case duration ☐ Anticipated blood loss Anesthesia professional: Antibiotic prophylaxis within 1 hour before incision ☐ Yes ☐ N/A Additional concerns ☐ Yes ☐ N/A Scrub person and RN circulator: Sterilization indicators confirmed ☐ Yes Additional concerns ☐ Yes ☐ N/A RN: Documented completion of time out ☐ Yes	Name of operative procedure: _____ Completion of sponge, sharp, and instrument counts ☐ Yes ☐ N/A Specimens identified and labeled ☐ Yes ☐ N/A Equipment problems to be addressed ☐ Yes ☐ N/A Discussion of wound classification ☐ Yes To all team members: What are the key concerns for recovery and management of this patient? _____ _____ _____ _____ Debriefing with all team members: Opportunity for discussion of – Team performance – Key events – Any permanent changes in the preference card January 2019

The joint commission does not stipulate which team member initiates any section of the checklist except for site marking. The joint commission also does not stipulate where these activities occur. See the universal protocol for details on the joint commission requirements.

AORN SAFE SURGERY TOGETHER

Postoperative Case Management



Read chapter 18 from the e-book

Read Chapter 18 from your E-Book to pass the upcoming quiz from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition.**

Click Here to access Chapter 18!

Watch the Video from Chapter 18 of the E-book

- Watch the video on "Preparing the Operating Room for the Patient" , "Preparation of the Sterile Field" and "Monitoring the Sterile Field" from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition** by logging into your Evolve account
- **Click Here** to access the "Preparing the OR for the Patient" video!
- **Click Here** to access the "Preparation of the Sterile Field" video!
- **Click Here** to access the "Monitoring the Sterile Field" video!

Thank you!

Get ready for your quiz and rest of the activities now. Best of luck!

Congratulations!

Lesson 18 is complete.