Important Information for getting started.
PLEASE READ ALL!
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Welcome Perioperative Professionals:

As a new staff member to Perioperative Services, you are about to enter the exciting, fast-paced and challenging path to your career. We provide an environment where motivated staff can develop competency and provide continuous quality patient care throughout the service.

The Perioperative Services of the North Shore Health System’s mission is to be a prominent provider of quality and comprehensive services, using a patient-focused, collaborative, and multidisciplinary approach. We strive to provide a range of services to a diverse population with varied physical, cultural and psychosocial needs. At all times staff are respectful of patients, protective of their rights, while preserving patient dignity. Our purpose is to achieve a level of patient wellness equal or greater than that which the patient experienced prior to their procedure.

Employees are our most valuable asset and therefore, we want you to know that the management and education team will always be available for guidance, direction and assistance on both clinical/personal matters.

Sincerely,

System Perioperative Educators
Congratulations!

Attached you will find your schedule for next week of your orientation of the Perioperative Services Orientation. The subsequent component of your orientation will be arranged by your facility’s educator/preceptor and will be designed based upon your level of experience, baseline assessments, and competency during the initial orientation period.

The Perioperative Services Orientation program starts on Monday at 0800.

Please:

- Wear scrubs- designated color from your site
- Be punctual. Arriving on time is an indication of your professional commitment and it is expected that you will arrive on time each day.
- Silence your cell phone in the mornings before orientation begins.
- Bring:
  - Pen
  - Earphones/Earbuds, and
  - ****A LAPTOP COMPUTER OR IPAD device (if you have one). During the course of your orientation, you are required to complete a series of online modules. These modules can be completed by logging into: Perioperativeeducation.weebly.com on the internet.
  - Please be advised, there are a limited number of individual computer terminals. In order for you to complete the required online content, we strongly recommend you bring your personal laptop/iPad (or comparable tablet device), with the power cord everyday to the orientation program. This will aid in the facilitation and completion of the e-Learning modules you’ll need to review on those days.
  - You may buy or bring lunch

Dress in professional attire (as per Human Resources information) for all orientation/education classes where scrubs are not required.

If you are unable to report for Perioperative Core Orientation, please call the Institute for Nursing (IFN)

718 470 8066 or Human Resources 516 734-7000.

On behalf of the entire health system – welcome aboard!

From,
Perioperative Educators
North Shore Long Island Jewish Health System

If there is concern about emergency class cancellation (ie: snowstorm) visit the Institute for Nursing page on Healthport regularly and check for messages on the Emergency Message Board.
Overview of your Perioperative Orientation experience

Introduction
The Perioperative Core orientation process at North Shore – Long Island Jewish Health System (NSLIJHS) is designed to broaden the knowledge base of newly hired practitioners and develop those skills necessary to ensure safety and quality of the surgical patient. The program is structured around a standardized framework of blended learning strategies and a unit based precepted orientation. The program is based upon the principles of adult learning theory and active learning methodologies. The orientation process is patterned around the orientee and the orientation pathway and is aligned with the Mission, Vision and Philosophy of the NSLIJHS.

Purpose of the orientation pathway
The orientation pathway is the roadmap for the orientation process and its team members. It facilitates the orientation process by serving as the minimum fundamental standard by which all practitioners employed throughout NSLIJHS will be oriented. The orientation pathway tracks competence in addition to learning needs and is designed to assist the orientee in achieving knowledge, skills and attitudes necessary to complete the orientation process. The pathway incorporates a team approach, which includes the Orientee, Preceptor, Manager or Supervisor, and Educator.

PRINCIPLES OF ORIENTATION
1. Individualized:
The NSLIJHS orientation process ensures that ALL practitioners who successfully complete orientation have been given a high quality orientation which is multi-faceted and addresses predetermined and newly identified learning needs of the orientee. Standard competencies for patient care will be assigned and validated throughout the orientation process. Additional learning needs that are identified on an individualized basis by the orientee, Preceptor, Manager or Supervisor, and Educator will be documented and a plan of action will be created to address each learning need. Progress of the orientee will be documented weekly on the orientation pathway.

2. Teamwork:
Through a collective teamwork process, all members of the orientation team will input and steer the orientation experience. It is expected, however that you, the orientee, will drive your orientation experience by communicating your learning needs and planning and seeking opportunities to address your learning needs. Weekly team meetings will occur to discuss goals and objectives for the previous and upcoming week.

3. Goals, Objectives and Competencies: The orientation process is competency driven. Goals should be mutually set. Behavioral criteria for each competency are readily accessible using Healthport, NSLIJHS policies, the AORN Standards and Recommendations 2011 or other competency manual on your unit, and/or the unit educator.

4. Accountability: You are responsible for completing all orientation assignments. It is expected that online and other components to which you are assigned will be completed as assigned and that you will present any questions you may have to your preceptor, manager/supervisor, or educator.

Procedure:
- The orientation pathway is reviewed and documented in on at least a weekly basis.
- At least weekly the Orientee, Preceptor, Manager or Supervisor and Educator review the orientation pathway in order to develop an educational plan for the upcoming week. Learning needs are reviewed, new needs are identified and clinical activities are focused on meeting the learning needs.
- At least weekly, the performance behaviors of the Orientee are reviewed and documented using the measures included in the pathway.
- Variances are documented under the “Team Meeting Report” for each level. The Orientee must be signed off as meeting a negative variance and all action/plan objectives implemented and met for successful completion of orientation.
- Upon completion of orientation, the orientation evaluation will be completed by the both the Manager or Supervisor and the Educator (if appropriate) and reviewed with the Orientee.
Responsibilities of the Orientee:
During orientation, you, the Orientee, have the opportunity to participate in new experiences and learn new skills while refining existing ones. As the learner, you must be pro-active. Identify areas where you feel you need more help and communicate regularly with your preceptor, manager or supervisor, and educator. Recognize your preferred learning style and share all of this information with those involved in your orientation. IT’S YOUR ORIENTATION!

When you receive your orientation pathway:
- Review the entire packet and familiarize yourself with the orientation pathway, the goals, objectives and competencies, and familiarize yourself with performance standards here at NSLIJHS.
- Identify your own personal learning needs and strategies to achieve daily goals. Communicate these needs and strategies to your Preceptor daily and your Manager or Supervisor and Educator at least weekly.

Responsibilities of the Preceptor, Manager or Supervisor, Educator:
- Review and set competency goals and performance behaviors at least daily.
- Seek out and plan experiences for your Orientee to demonstrate the behaviors listed in the pathway.
- At the end of each week, schedule a team meeting to review the pathway for the present and upcoming week.
- Document orientee progress and review the learning goals on the pathway.
- Sign off each competency as ‘met’ when the orientee has demonstrated the critical elements of that competency.
- Document variances in the “Team Meeting Report” and implement and ultimately sign off on all action plan objectives. This is a requirement for completing orientation.
- Upon completion of orientation, retain the pathway in the Orientee’s personnel file.
Listed below is a set of professional expectations. These expectations are an integral part of your professional commitment and performance. It is expected that you will review and adhere to these expectations throughout your career with the NSLIJHS.

Thank you.
Institute for Nursing
North Shore Long Island Jewish Health System

**PROFESSIONAL EXPECTATIONS**

I have reviewed and understand the professional expectations of NSLIJHS.

Print name_______________________ Signature ______________________ Date ______

| Professionalism/ Engagement/ Execution | • Shows up on time consistently, ready to work and focused  
• Usually demonstrates proper care of equipment  
• Demonstrates professionalism and honesty |
| --- | --- |
| Integrity/Service Excellence/ Caring/ Patient First | • Acts as a role model for others  
• Promotes honesty and integrity with patient and health system information  
• Demonstrates that the art of care is caring, service and compassion |
| Engagement /Adaptability | • Focused and energized on the work  
• Shows passion for the job |
| Participation/Teamwork Accountability/Ownership | • Shows respect and compassion to others on a consistent basis, regardless of background and appearance  
• Supports and takes personal interest in coaching and mentoring others  
• Assesses job scenarios to determine strengths and opportunities for improvement for self and others  
• Inspires others to collaborate together as a team and adds to group cohesiveness  
• Takes responsibility for problem resolution |
| Performance Excellence/ Technical/Analytical Skill | • Pursues excellence with passion and promotes quality  
• Urgency- Acts quickly to meet patient needs, deadlines and priorities |
North Shore LIJ Health System
Course Description and Syllabus

**Title:** Perioperative Orientation Program

**Course Description:** Candidate will be oriented to the standards of peri-operative patient care at the NSLIJHS Perioperative Services. The multiple roles of the peri-operative professional will be examined as well as the phases of the peri-operative nursing process. Candidates will define their current competencies and future development needs to practice and master the peri-operative professional role.

**Learning Outcomes:** Full participation in the course will enable each candidate to:
- Define the *key foundational methods* used in peri-operative nursing
- Identify the *hazards in the operating room and management of hazards*
- Understand patient assessment and communication for the surgical patient
- Identify the *core competencies* required for peri-operative nurse.
- Acquire hands on experience in the actual OR setting through simulation and workshops
- Discuss patient safety concerns and initiatives in the perioperative setting.
- Apply infection control practices

**Course Expectations:**
- Learning the material in this course involves hearing the lecture, reviewing materials, actively participating in workshops and simulation and completing required assignments.
- **We will not accept late assignments** as we will go over all answers in class on the day an assignment is due.
- You must complete all assignments in person during class or online. If you must miss a class, please contact your educator in advance to make alternative arrangements.
- **There are no make-up exams.** If you must miss an exam, please contact your educator as far in advance as possible to discuss alternate arrangements. Any special arrangements for exams or submitting assignments will be made entirely at the educator’s discretion.

**Suggested References:**
# Course Outline and Assignments

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<th>Date</th>
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<tr>
<td>Site</td>
<td>420 Lakeville Road  Periop Room 242</td>
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<td>Time</td>
<td>8:00 AM-4:00 PM</td>
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<td>Topics</td>
<td>- Welcome orientees</td>
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<td>- SCIP</td>
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<td>- Consents</td>
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<td>- Patient Assessment</td>
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<td>Assignments Due</td>
<td>1. Print/Review Welcome Packet online which includes the medication and instrument handout.</td>
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<td>2. Complete selected modules online with posttests due Friday.(last day of Orientation) Perioperativeeducation.weebly.com</td>
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<td>3. Complete selected modules on iLearn which is found on Healthport due by Friday</td>
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<td>Time</td>
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<td>Topics</td>
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<td>- Wound Classification</td>
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<td>- Medication and Specimen Safety</td>
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<td>1. Complete selected modules online with posttests due Friday.(last day of Orientation) Perioperativeeducation.weebly.com</td>
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<td>2. Complete selected modules on iLearn which is found on Healthport due by Friday</td>
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<td>Topics</td>
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<td>- Aseptic Technique</td>
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<td>- Prepping</td>
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<td>- Surgical Counts</td>
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<td>- Sterilization</td>
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<tr>
<td>Assignments Due</td>
<td>1. Complete selected modules online with posttests due Friday.(last day of Orientation) Perioperativeeducation.weebly.com</td>
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<td>2. Complete selected modules on iLearn (refer to directions to register for classes) which is found on Healthport due by Friday</td>
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**Self- Learning Modules**

**Directions:**

Please log on to: [Perioperativeeducation.weebly.com](http://perioperativeeducation.weebly.com)

Click onto Self Learning modules tab and you will see the required slm’s that will need to be completed by the last day Friday (AM) of orientation. Link provided will take you directly to the webpage.

[Perioperativeeducation.weebly.com](http://perioperativeeducation.weebly.com)

Here is where you can review the courses prior to Core class and you can also print out your answer sheet for the self learning modules. (See course syllabus calendar). See example below.

**Perioperative Core Orientation**

![Perioperative Core Orientation](image)

*Instructions for Self-Learning Modules*

Please complete all the self-learning modules (SLM) by the last day of orientation. You are required to take a post assessment after you have read and reviewed the contents of the SLM. The post assessment will be done and scored electronically. Click on the button to take each module post test. If you have any questions, please email your educator.

[Download File](hazards_in_the_surgical_area.2012.pdf)

[Download File](patient_education_learning_module.pdf)
Instructions for completing modules on iLearn
Self-Enrolling into iLearn Periop Core Courses

You are required to complete modules on iLearn. Go onto Healthport via RAP and log onto Healthport. Please refer to instructions below.

Click on the Catalog Tab

Click NSLIJHS catalogue and choose your hospital site
Search for the course. Once you have found it, click on it.

Click on “Select All” and Click “Enroll”
You should then see a confirmation from iLearn that the employee has been enrolled.
Perioperative Core Orientation Classes are held at 420 Lakeville Road in training rooms in Suite 242 (2nd floor) 718-470-7178
Parking is available – behind the building. Alternate Parking is available across the street at I-Park.
Please do not park in the front area of the 420 Building or in the 410 Building Parking Lot.
NOTE: YOUR GPS MAY DIRECT YOU TO AN ALTERNATE DESTINATION
SO FOLLOW THE DRIVING INSTRUCTIONS BELOW

Directions to Patient Safety Institute (PSI)
(Center for Learning and Innovation) 1979 Marcus Avenue – Suite 101, Lake Success, 516-396-6150
and
Institute for Nursing (IFN)
420 Lakeville Road, New Hyde Park NY 718-470-8066

FROM THE WEST VIA L.I.E.:
(for Grand Central Parkway follow the “From the South via the Cross Island Parkway” directions below)
Take the LI.E (495) to exit number 33- toward LAKEVILLE RD/COMMUNITY DR., Merge onto S SERVICE RD., go 0.10 miles: Turn
RIGHT onto LAKEVILLE RD., go 0.74 miles:
For PSI: Turn LEFT onto MARCUS AVE. go 0.16 miles: Turn RIGHT into FOUNTAINS AT LAKE SUCCESS complex
For IFN: Go straight on Lakeville Rd over Marcus Avenue. IFN is at 400 Lakeville Rd (please note parking message below)

FROM THE EAST VIA THE L.I.E.:
(for Northern State Parkway follow the “From the South via the Meadowbrook Parkway” directions below)
Take the LI.E (495) to exit number 34 – NEW HYDE PARK RD., stay straight to go onto N SERVICE RD. go 0.48 miles and Turn LEFT onto NEW HYDE PARK RD. Continue for 0.90 miles and turn RIGHT onto MARCUS AVE.,
For PSI: proceed 0.31 miles (second traffic light) Turn LEFT into FOUNTAINS AT LAKE SUCCESS complex
For IFN: Turn left at Lakeville Rd. IFN is at 400 Lakeville Rd (please note parking message below).

FROM THE SOUTH VIA CROSS ISLAND PARKWAY/Northern State Parkway:
Take the CROSS ISLAND PKWY N toward WHITESTONE BR. Merge onto GRAND CENTRAL PKWY E via exit number 29E toward EASTERN L I. Go 1.68 miles, and GRAND CENTRAL PKWY E becomes NORTHERN PKWY E. continue 0.63 miles and take exit number 25- toward LAKEVILLE RD/NEW HYDE PARK/GREAT NECK.
For PSI: At the light turn LEFT onto MARCUS AVE. Continue 0.40 miles. Turn RIGHT into the FOUNTAINS AT LAKE SUCCESS.
For IFN: At the light turn RIGHT onto MARCUS AVE. Turn left onto Lakeville Rd. IFN is at 400 Lakeville Rd (please note parking message below).

FROM THE SOUTH VIA MEADOWBROOK PARKWAY
Take the MEADOWBROOK PKWY N. to the NORTHERN PARKWAY WEST exit (merge) on the LEFT toward NEW YORK. Merge onto NORTHERN PKWY W. and continue for 5.41 miles. Take the NEW HYDE PARK RD SOUTH exit- exit number 26S- toward NEW HYDE PARK. Turn SLIGHT RIGHT (merge) onto NEW HYDE PARK RD. Continue for 0.67 miles and turn RIGHT onto MARCUS AVE.
For PSI: proceed 0.31 miles (second traffic light) Turn LEFT into the FOUNTAINS AT LAKE SUCCESS complex.
For IFN: Turn left at Lakeville Rd. IFN is at 400 Lakeville Rd (please note parking message below).

FROM NORTERN BLVD.:
Take NORTHERN BLVD. To COMMUNITY DR. Turn SOUTH onto COMMUNITY DR. Continue South toward the L.I.E., and turn
RIGHT onto the NORTH SERVICE RD. Continue for 0.29 miles, and turn LEFT at the first traffic light onto LAKEVILLE RD.
For PSI: Continue for 0.81 miles and turn LEFT onto MARCUS AVE. Continue for .55 miles. Turn RIGHT into the FOUNTAINS AT LAKE SUCCESS complex
For IFN: Go straight on Lakeville Rd over Marcus Avenue. IFN is at 400 Lakeville Rd (please note parking message below)

BY LONG ISLAND RAILROAD:
The closest station is New Hyde Park (About 10 minutes by taxi).

BY BUS:
The N25 bus, which stops at LIJ and North Shore University Hospital, brings you to Union Turnpike, just around the corner from our facilities. The N26 bus which stops at North Shore University Hospital will also bring you to Marcus Avenue.
PSI: 1979 is the only black mirrored building on the far left, South, East Corner. PSI is located on the 1st floor level floor in suite 101.
****Parking when visiting the IFN****:

***DO NOT park on the grounds of the 400, 410, 420 Lakeville Road complex.***
Since parking permits are required, cars parked on the grounds of the 400, 410, 420 Lakeville Road complex will be stickered and removed at owners expense.

Park across the street at the Center for Ambulatory Medicine parking entrance 2A/2B. There is ample parking there. Then walk across Lakeville Road to the 420 building.

**BY Subway and Bus:**

"E" or "F" train to Union Turnpike (Kew Gardens) station. Use last car of the train and leave the station via the 78th Ave exit. Take the City Line Q46-(LIJ Hospital/Lake Success) bus to the last stop at the LIJ Medical Center, (40 mins).

The North Shore Towers Express Bus to and from Manhattan operates 7 days a week and stops at Union Turnpike and 260th and 265th St a few blocks from The Zucker Hillside Hospital and also stops at the Medical Center bus stop on Lakeville Road. For Schedule information and Manhattan stops, call Queens Surface Corp. at (718) 445-3100.

Metropolitan Suburban Bus Authority (Queens and Nassau)

**Route N26** Jamaica to Manhasset via Hillside Ave, Lakeville Road, New Hyde Park Road, Community Drive:

**Eastbound** - Buses depart Jamaica (165th St/Jamaica Bus Terminal) at 7:07am terminating at Great Neck LIRR Station and at 7:44am and 7:57am (terminating at Community Drive, Manhasset). At other times, take Route N22/22A Jamaica - Roosevelt Field - Hicksville and transfer to Route N25 Lynbrook - Great Neck at New Hyde Park Road and Hillside Ave, New Hyde Park.

**Westbound** - Buses depart Community Drive, Manhasset, at 4:30pm and 4:40pm and terminate in Jamaica (165th St/Jamaica Bus Terminal). At other times, take Route N25 Great Neck - Lynbrook and transfer to Route N22/22A at Hillside Ave and New Hyde Park Road, New Hyde Park.

**Route N25 Lynbrook** - Great Neck via New Hyde Park Road:

For MSBA schedules please call (516) 766-6722.

**Train**

Port Washington Branch - to Great Neck Station; Metropolitan Suburban Bus Authority (MSBA) Route N25 to the Medical Center

Port Jefferson Branch Main Line to New Hyde Park Station; MSBA Route N25 to the Medical Center

Hempstead Branch - to Stewart Manor Station; MSBA Route N25 to the Medical Center

For LIRR information call (718) 217-5477.
For MSBA schedules please call (516) 766-6722.
MEDICAL TERMINOLOGY FOR SURGICAL PROCEDURES

OBJECTIVES

- Identify the roles of the four types of word parts in forming medical terms.
- Analyze unfamiliar medical terms using your knowledge of word parts.
- Define the commonly used prefixes, word roots, combining forms, and suffixes.
- Pronounce medical terms correctly using the “sounds-like” system.
Four Types of Word Part

- Word roots
- Combining forms
- Suffixes
- Prefixes

Word roots

- Basic meaning of the term
- Usually, but not always, indicate the involved body part
- Act as the foundation of most medical terms.
- May also indicate color shown, in their combining forms
- A word root cannot stand alone. A suffix must be added to complete the term
- The rules for the use of creating a combining form by adding a vowel apply when a suffix beginning with a consonant is added to a word root
- When a prefix is necessary, it is always placed at the beginning of the word.

Word Root/Combining Body Part

Combining forms are word roots with a vowel at the end so that a suffix beginning with a consonant can be added.

Combining Vowels

A combining vowel may be needed between the word root and suffix to make the medical term easier to pronounce.

The letter O is the most commonly used combining vowel. When a word root is shown with a back slash and a combining vowel, such as cardi/o, this format is referred to as a combining form (cardi/o means heart)

Rules for Combining Vowels

1. A combining vowel is used when the suffix begins with a consonant. (Example: neur/o (nerve) is joined with the suffix-plasty (surgical repair), the combining vowel o is used because-plasty begins with a consonant.

Neuroplasty (NEW-roh-plas-tee) is the surgical repair of a nerve (neur/o means nerve and –plasty means surgical repair).
2. A combining vowel is *not used* when the suffix begins with a vowel (a, e, i, o, u). (Example: neur/o (nerve) is joined with the suffix –itis (inflammation), no combining vowel is used because –itis begins with a vowel.

Neuritis (new- RYE-tis) is inflammation of a nerve or nerves (neur means nerve and –itis means inflammation).

**Rules For Using Combining Vowels**

1. A combining vowel is always used when two or more root words are joined. (Example: gastr/o (stomach) is joined with enter/o (small intestine), the combing vowel is used.

Gastr/o; however when the suffix –itis (inflammation) is added, the combining vowel is not used with enter/o because –itis begins with a vowel.

Gastroenteritis (gas-troh-en-ter-EYE-tis) is an inflammation of the stomach and small intestine (gastr/o means stomach, enter means small intestine, and –itis means inflammation).

Cyan/o means blue
-Cyanosis (sigh-ah-NOH-sis) is a blue discoloration of the skin caused by lack of adequate oxygen (cyan means blue and –osis means condition).

Erythr/o means red
-Erythrocytes (eh-RITH-roh-sights) are mature red blood cells (erythr/o means red and cytes means cells).

Leuk/o means white
-Leukocytes (LOO-koh-sights) are white blood cells (leuk/o means white and –cytes means cells).

Melan/o means black
-Melanosis (mel-ah-NOH-sis) is any condition of unusual deposits of black pigment in different parts of the body (melan means black and –osis means condition).

Poli/o means gray
-Poliomyelitis (poh-lee-oh-my-eh-LYE-tis) is a viral infection of the gray matter of the spinal cord that may result in paralysis (poli/o means gray, myel means spinal cord, and –itis means inflammation).

**Suffixes**

A suffix is added to the end of a word root or it's combining form to complete the term. Suffixes usually, but not always, indicate the procedure, condition, disorder, or disease
For Example:
Tonsill/o means tonsils.
A suffix is added to complete the term and to tell what is happening to the tonsils.
Tonsilitis (ton-sih-LYE-tis) is an inflammation of the tonsils (tonsill means tonsils and –itis means inflammation).

A tonsillectomy (ton-sih-LECK-toh-mee) is the surgical removal of the tonsils. (Tonsill means tonsils and –ectomy means surgical removal).

### Suffixes Meaning “Pertaining To”

Some suffixes complete the term by changing the word root into an adjective (a word that describes a noun).

Many of these suffixes are defined as “pertaining to”.

Example:
Cardiac (KAR-dee-ack) is an adjective that means pertaining to the heart. (cardi means heart and –ac means pertaining to).

### Suffixes Meaning “Pertaining To”

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Some suffixes complete the term by changing the root into a noun. (A word that is the name of a person, place or thing.)

Other suffixes in this group are defined as noun endings.
Example:
Cranium (KRAY-nee-um) is the portion of the skull that encloses the brain (crani means skull and –um is a noun ending).
Some suffixes have a general meaning of “abnormal condition or disease.”

Example:
-osis means an abnormal condition or disease.
Gastrosis (gas-TROU-sis) means any disease of the stomach (gastr means stomach and –osis means abnormal condition)

-ago
-esis
-ia
-iasis
-ion
-ism
-osis

Pathology (pah-THOL=oh-jee) means the study of disease, and the suffixes related to pathology describe specific disease conditions. (path means disease and –ology means study of).

-algia means pain and suffering

-dynia also means pain.
Gastrodynia (gas-troh-DIN-ee-ah) also means pain in the stomach (gastr/o means stomach and –dynia means pain).

-itis means inflammation.
Gastritis (gas-TRY-tis) is an inflammation of the stomach (gastr means stomach and –itis means inflammation).

-malacia means abnormal softening.
Arteriomalacia (ar-tee-ree-oh-mah-LAY-shee-ah) is the abnormal softening of the walls of an artery or arteries.
(arteri/o means artery and –malacia means abnormal softening). Notice that –malacia is the opposite of –sclerosis.

-megaly means enlargement.
Heptomegaly (hep-ah-toh-MEG-ah-lee) is the abnormal enlargement of the liver.
(hepat/o means liver and –megaly means enlargement).

-necrosis means tissue death.
Arterionecrosis (ar-tee-ree-oh-neh-KROH-sis) is the tissues death of an artery or arteries.
(arteri/o means artery and –necrosis means tissue death).

-sclerosis means abnormal hardening.
Arteriosclerosis (ar-tee-ree-oh-skleh-ROH-sis) is the abnormal hardening of the walls of an artery or arteries.
(arteri/o means artery and –sclerosis means abnormal hardening).

-stenosis means abnormal narrowing.
Arteriostenosis (ar-tee-ree-oh-steh-NOH-sis) is the abnormal narrowing of an artery or arteries.
(arteri/o means artery and –stenosis means abnormal narrowing)

Identify a procedure that is performed on the body part identified by the word root.

-centesis is a surgical puncture to remove fluid for diagnostic purposes or to remove excess fluid.
Abdominocentesis (ab-dom-ih-noh-sen-TEE-sis) is the surgical puncture of the abdominal cavity to remove fluid.
(abdomin/o means abdomin and –centesis means a surgical puncture to remove fluid.)

-graphy means the process of producing a picture or record.
Angiography (an-jee-OG-rah-fee) is the radiographic (x-ray) study of the blood vessels after the injection of a contrast medium.
(angi/o means blood vessels and –graphy means the process of recording).

-gram means a picture or record.
An angiogram (AN-jee-oh-gram) is the film produced by angiography
(angi/o means blood vessels and –gram means a picture or record).

-plasty means surgical repair.
Myoplasty (MY-oh-plas-tee) is the surgical repair of a muscle (myo means muscle and –plasty means surgical repair).

-scopy means visual examination.
Endoscopy (en-DOS-koh-pee) is the visual examination of the interior of a body cavity or organ by means of an endoscope. (endo means within and –scopy means visual examination).

### The Double R Suffixes

Suffixes beginning with two Rs, which are often referred to as the double “RRs”, are particularly confusing. They are grouped together here to help you understand the word parts and to remember the differences.

- **rrhange** and **−rrhagia** means bleeding, bursting forth, or abnormal or excessive flow. A hemorrhage (HEM-or-idj) is the loss of a large amount of blood in a short time. (hem/o means blood and −rrhage means bursting forth of blood).

- **rrhaphy** means surgical suturing to close a wound and includes the use of sutures, staples, and surgical glue. Myorrhaphy (my-OR-ah-fee) is the surgical suturing of a muscle wound. (my/o means muscle and −rrhaphy means surgical suturing).

- **rrhea** means flow or discharge and refers to the flow of most body fluids. Diarrhea (dye-ah-REE-ah) is the flow of frequent loose or watery stools. (dia- means through and −rrhea means flow or discharge).

- **rrhexis** means rupture. Myorrhexis (my-oh-RECK-sis) is the rupture of a muscle (my/o means muscle and −rrhexis means rupture).

### Prefixes

Prefixes usually, but not always, indicate location, time, number, or status. A Prefix always comes at the beginning of a word. A prefix is added to the beginning of a word to influence the meaning of that term.

- **Natal** (NAY-tal) means pertaining to birth. (nat means birth, and −al means pertaining to). Example: Prenatal (pre-NAY-tal) means the time and events before birth (pre-means before, nat means birth, and −al means pertaining to).

- **Perinatal** (perh-ih-NAY-tal) refers to the time and events surrounding birth (peri-means surrounding, nat means birth and −al means pertaining to). This is the time just before, during, and just after birth.
Postnatal (pohst-NAY-tal) refers to the time and events after birth (post- means after, nat means birth and –al means pertaining to)

Contrasting and Confusing Prefixes

Some prefixes are confusing because they are similar in spelling but opposite in meaning

Ab- means away from.
Abnormal means not normal or away from normal.

Ad- means toward or in the direction of.
Addiction means drawn toward or a strong dependence on a drug or substance.

Dys- means bad, difficult, painful.
Dysfunctional means an organ or body part that is not working properly.

Eu- means good, normal, well, or easy.
Euthriod (you-THIGH-riod) means a normally functioning thyroid gland.

Hyper- means excessive or increased.
Hypertension (high-per-TEN-shun) is higher than normal blood pressure.

Hypo- means deficient or decreased.
Hypotension (high-po-TEN-shun) is lower than normal blood pressure.

Inter- means between or among.
Intersitial (in-ter-STISH-al) means between, but not within, the parts of a tissue.

Intra- means within or inside.
Intramuscular (in-trah-MUS-kyou-lar) means within the muscle.

Sub- means under, less, or below.
Subcostal (sub-KOS-tal) means below a rib or ribs.

Super-, supra- mean above or excessive.
Supracostal (sue-prah-KOS-tal) means above or outside the ribs.

Pronunciation Hints Look/Sound-Alike Terms and Word Parts

One confusing part of learning medical terminology is dealing with words and word parts that look and sound much alike.
**Ateri/o, ather/o, and arthr/o**

- **Ateri/o** means artery. Endarterial (end-’ar-TEE-ree-al) means pertaining to the interior or lining of an artery. (end- means within, arteri means artery, and –al means pertaining to)

- **Ather/o** means plaque or fatty substance. An athroma (ath-’er-OH-mah) is a fatty deposit within the wall of an artery. (ather means fatty substance and –oma means tumor).

- **Arthr/o** means joint. Arthralgia (ar-’THRAL-je-ah) means pain in a joint or joints (arthr means joint and –algia means pain).

**Ectomy, ostomy, and otomy**


- **Ostomy** means to surgically create an artificial opening. A colonostomy (koh-LAHS-toh-mee) is the surgical creation of an opening between the colon and the body surface (col means colon and –ostomy means artificial opening).

- **Otomy** means cutting into or a surgical incision. A colostomy (koh-LOT-oh-mee) is a surgical incision into the colon (col means colon and –otomy means surgical incision).

**Look/Sound-Alike Terms And Word Parts**

**Fissure and Fistula**

A Fissure (FISH-ur) is a groove or crack-like sore of the skin. The term also describes normal folds in the contours of the brain.

A Fistula (FIS-tyou-lah) is an abnormal passage usually between two internal organs, or leading from an organ to the surface of the body.

**Ileum and Illium**

The Ileum (ILL-ee-um) is part of the small intestine. (Remember, ileum is spelled with an e as in intestine)

The Ilium (ILL-ee-um) is part of the hip bone. (Remember, ilium is spelled with an I as in hip).

**Infection and Inflammation**
Infection (in-FECK-shun) is the invasion of the body by a pathogenic (diease producing) organism. The infection may remain localized or may be systemic (affecting the entire body).

Inflammation (in-flah-MAY-shun) is a localized response to an injury or destruction or tissues. The cardinal signs (indications) of inflammation are (1) redness (erythema), (2) heat (hyperthermia), (3) swelling (edema), and (4) pain. These are caused by extra blood flowing into the area as part of the healing process. The suffix –itis means inflammation. However, it also is often used to indicate infection.

<table>
<thead>
<tr>
<th>Look/Sound-Alike Terms And Word Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laceration and Lesion</td>
</tr>
<tr>
<td>A laceration (lass-er-AY-shun) is a torn, ragged wound.</td>
</tr>
<tr>
<td>A lesion (LEE-zhun) is a pathologic change of the tissues due to disease or injury.</td>
</tr>
</tbody>
</table>

**Mucous and Mucus**
Mucous (MYOU-kus) is an adjective that describes the specializes mucous membranes that line the body cavities.

Mucus (MYOU-kus) is a noun and is the name of the fluid secreted by the mucous membranes.

**Myc/o, myel/o, and my/o**

**Myc/o** means fungus
Mycosis (my-KOH-sis) means any disease caused by a fungus
(myc means fungus and –osis means abnormal condition)

**Myel/o** means bone marrow or spinal cord
Myelopathy (my-eh-LOP-ah-thee) is any pathologic change or disease in the spinal cord
**Myel/o** means spinal cord, or bone marrow, and –pathy means disease).

**My/o** means muscle.
Myopathy (my-OP-ah-thee) is any pathologic change or disease of muscle tissue
(my/o means muscle and –pathy means disease).

**-ologist and –ology**

**-ologist** means specialist.
A gerontologist (jer-on-TOL-oh-jist) is a specialist in diagnosing and treating diseases, disorders, and problems associated with aging
(geront means old age and –ologists means specialist)

**-ology** means the study of.
Neonatology (nee-oh-nay-TOL-oh-jee) is the study of disorders of the newborn (neo- means new, nat means birth, and –ology means study of).

**Palpation and Palpitation**

Palpation (pal-PAY-shun) is an examination technique in which the examiner’s hands are used to feel the texture, size, consistency, and location of certain body parts.

Palpitation (pal-pih-YAY-shun) is a punding or racing heart.

**Prostate and Prostrate**

Prostate (PROS-tayt) refers to a male gland that lies under the urinary bladder and surrounds the urethra.

Prostrate (PROS-trayt) means to collapse and be lying flat or to be overcome with exhaustion.

**Pyel/o** means renal pelvis (which is part of the kidney)
Pyelitis (pye-eh-LYE-tis) is an inflammation of the renal pelvis. (pyel means renal pelvis and –itis means inflammation).

**Pylo** means pus.
Pyoderma (pye-oh-DER-mah) is any acute, inflammatory, pus-forming bacterial skin infection such as impetigo. (py/o means pus and –derma means skin)

Pyr/o means fever or fire.
Pyrosis (pye-ROH-sis) also known as heartburn, is discomfort due to the regurgitation of stomach acid upward into the esophagus. (pyr means fever or fire and –osis means abnormal condition).

**Supination and Suppuration**

Supination (soo-pih-NAY-shun) is the act of rotating the arm so that palm of the hand is forward or upward.

Suppuration (sup-you-RAY-shun) is the formation or discharge of pus.

**Triage or Trauma**

Triage (tree-AHZH) is the medical screening of patients to determine their relative priority of need and the proper place of treatment.
Example: Emergency personnel arriving on an accident scene must identify which of the injured require care first and determine where they can be treated most effectively.

Trauma (Traw-mah) means wound or injury
These are the types of injuries that might occur in an accident, shooting, natural disaster, or fire.

Viral and Virile

Viral (VYE-ral) means pertaining to a virus
(vir means virus or poison and –al means pertaining to)

Virile (VIR-ill) means possessing masculine traits.

### Operating Room Terminology

**Prefixes: usually indicates site of disease process:**

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Above</th>
<th>AD</th>
<th>AB</th>
<th>Away from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyper</td>
<td>Above</td>
<td>AD</td>
<td>AB</td>
<td>Away from</td>
</tr>
<tr>
<td>Hypo</td>
<td>Below</td>
<td>AD</td>
<td>AB</td>
<td>Toward</td>
</tr>
<tr>
<td>Pre</td>
<td>Before</td>
<td>AD</td>
<td>AB</td>
<td>From</td>
</tr>
<tr>
<td>Retro</td>
<td>Behind</td>
<td>Bi</td>
<td>AD</td>
<td>Two</td>
</tr>
<tr>
<td>Post</td>
<td>After</td>
<td>Bi</td>
<td>AD</td>
<td>In</td>
</tr>
<tr>
<td>Inter</td>
<td>Between</td>
<td>Bi</td>
<td>AD</td>
<td>Two</td>
</tr>
<tr>
<td>Intra</td>
<td>Within</td>
<td>Bi</td>
<td>AD</td>
<td>In</td>
</tr>
<tr>
<td>Anti</td>
<td>Against</td>
<td>Bi</td>
<td>AD</td>
<td>In</td>
</tr>
<tr>
<td>Ante</td>
<td>Before</td>
<td>Bi</td>
<td>AD</td>
<td>In</td>
</tr>
<tr>
<td>A</td>
<td>Without</td>
<td>Bi</td>
<td>AD</td>
<td>In</td>
</tr>
</tbody>
</table>

**Suffixes: Indicates pathology, type of operation or phenomena occurring**

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orrhaphy</td>
<td>Repair of</td>
</tr>
<tr>
<td>Oscopy</td>
<td>Examination of an organ through a telescope/scope</td>
</tr>
<tr>
<td>Ostomy</td>
<td>Creation of an artificial opening or a new opening through the wall of an organ</td>
</tr>
<tr>
<td>Pexy</td>
<td>To fix or suture in place</td>
</tr>
<tr>
<td>Otomy</td>
<td>Cutting into an organ or tissue, making an opening into tissue or organ</td>
</tr>
<tr>
<td>Plasty</td>
<td>Restoration of a lost part or piece of tissue</td>
</tr>
<tr>
<td>Ectomy</td>
<td>Surgical excision of</td>
</tr>
<tr>
<td>Lysis</td>
<td>Freeing of</td>
</tr>
<tr>
<td>Centesis</td>
<td>Puncture to aspirate a cavity</td>
</tr>
<tr>
<td>Desis</td>
<td>Fusions</td>
</tr>
</tbody>
</table>
Word Roots

<table>
<thead>
<tr>
<th>Adeno</th>
<th>Gland</th>
<th>Cholecysto</th>
<th>Gallbladder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepato</td>
<td>Liver</td>
<td>Gastro</td>
<td>Stomach</td>
</tr>
<tr>
<td>Chole</td>
<td>Gall</td>
<td>Entero</td>
<td>Intestines</td>
</tr>
<tr>
<td>Cyso</td>
<td>Urinary bladder</td>
<td>Col</td>
<td>Colon</td>
</tr>
<tr>
<td>Arthro</td>
<td>Joint</td>
<td>Nephro</td>
<td>Kidney</td>
</tr>
<tr>
<td>Hystero</td>
<td>Uterus</td>
<td>Colpo</td>
<td>Vagina</td>
</tr>
<tr>
<td>Salpingo</td>
<td>Fallopian tube</td>
<td>Thoraco</td>
<td>Chest</td>
</tr>
<tr>
<td>Blepharo</td>
<td>Eyelids</td>
<td>Cranio</td>
<td>Brain</td>
</tr>
<tr>
<td>Teno</td>
<td>Tendon</td>
<td>Rhino</td>
<td>Nose</td>
</tr>
<tr>
<td>Cardio</td>
<td>Heart</td>
<td>Dent</td>
<td>Tooth</td>
</tr>
<tr>
<td>Pneumo</td>
<td>Lung</td>
<td>Procto</td>
<td>Anus</td>
</tr>
<tr>
<td>Dermat</td>
<td>Skin</td>
<td>Neuro</td>
<td>nerve</td>
</tr>
<tr>
<td>Jejun</td>
<td>2nd part of intestine</td>
<td>Myo</td>
<td>Muscle</td>
</tr>
<tr>
<td>Lamin</td>
<td>Posterior vertebral arch</td>
<td>Oophor</td>
<td>Ovary</td>
</tr>
<tr>
<td>Mast</td>
<td>Breast</td>
<td>Ophthal</td>
<td>Eye</td>
</tr>
<tr>
<td>Trachel</td>
<td>Neck of uterus</td>
<td>Orchio</td>
<td>Testicle</td>
</tr>
<tr>
<td>Vas</td>
<td>Vessel or duct</td>
<td>Os</td>
<td>Bone</td>
</tr>
<tr>
<td>Pyelo</td>
<td>Pelvis of kidney</td>
<td>Spermato</td>
<td>Sperm</td>
</tr>
<tr>
<td>Ureter</td>
<td>Kidney tube</td>
<td>Ot</td>
<td>Ear</td>
</tr>
<tr>
<td>Pharyng</td>
<td>Throat</td>
<td>Phleb</td>
<td>Vein</td>
</tr>
<tr>
<td>Prostate</td>
<td>Prostatic gland</td>
<td>Lith</td>
<td>stone</td>
</tr>
</tbody>
</table>

Operations

1. Appendectomy  
   Surgical excision of the appendix
2. Coccygectomy  
   Surgical excision of the Coccyx
3. Condylectomy  
   Surgical excision of a condyle (round prominence at the articular surface of the bone)
4. Cystectomy    
   Surgical excision of a saclike tissue
5. Fistulectomy  
   Surgical excision of a fistula (abnormal communication between two cavities or a hallow organ and the abdominal wall)
6. Ganglionectomy  
   Surgical excision of a ganglion which may be a collection of nerve cells or may manifest the form of a cystic tumor of a tendon sheath
7. Gingivectomy  
   Surgical excision of the gums of the mouth
<table>
<thead>
<tr>
<th></th>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>Hydrocelectomy</td>
<td>Surgical excision of ahydrocele (accumulation of fluid in a saclike cavity especially the tunica vaginalis testis)</td>
</tr>
<tr>
<td>9.</td>
<td>Hysterectomy</td>
<td>Surgical excision of the uterus</td>
</tr>
<tr>
<td>10.</td>
<td>Iridectomy</td>
<td>Surgical excision of the iris of the eye or a portion thereof</td>
</tr>
<tr>
<td>11.</td>
<td>Laryngectomy</td>
<td>Surgical excision of the larynx (voicebox)</td>
</tr>
<tr>
<td>12.</td>
<td>Myomectomy</td>
<td>Surgical excision of the tumors with muscular tissue components, most commonly used to refer to excision of myomas of the uterus</td>
</tr>
<tr>
<td>13.</td>
<td>Oophorectomy</td>
<td>Surgical excision of the ovary</td>
</tr>
<tr>
<td>14.</td>
<td>Pneumonectomy</td>
<td>Surgical excision of the lung</td>
</tr>
<tr>
<td>15.</td>
<td>Stapedectomy</td>
<td>Surgical excision of the stapes, one of the (3) three tiny bones in the middle ear</td>
</tr>
<tr>
<td>16.</td>
<td>Sympathecomy</td>
<td>Excision of the portion of the sympathetic nervous pathway</td>
</tr>
<tr>
<td>17.</td>
<td>Synovectomy</td>
<td>Surgical excision of the membrane lining the joint capsule</td>
</tr>
<tr>
<td>18.</td>
<td>Vasectomy</td>
<td>Surgical excision of the vas deferens (excretory duct of the testicle)</td>
</tr>
<tr>
<td>19.</td>
<td>Vulvectomy</td>
<td>Surgical excision of the vulve (external female genitalia)</td>
</tr>
<tr>
<td>20.</td>
<td>Arthrotomy</td>
<td>Making a surgical opening into a joint</td>
</tr>
<tr>
<td>21.</td>
<td>Cholecystotomy</td>
<td>Making a surgical opening into the gallbladder</td>
</tr>
<tr>
<td>22.</td>
<td>Colpotomy</td>
<td>Making a surgical opening into the vagina</td>
</tr>
<tr>
<td>23.</td>
<td>Commissurotomy</td>
<td>Surgical division of a fibrous band</td>
</tr>
<tr>
<td>24.</td>
<td>Craniotomy</td>
<td>Making a surgical opening in the cranium (skull)</td>
</tr>
<tr>
<td>25.</td>
<td>Laparatomy</td>
<td>Making a surgical opening in the abdominal wall (usually for exploration of the abdominal contents)</td>
</tr>
<tr>
<td>26.</td>
<td>Meatotomy</td>
<td>Making a surgical incision into the tympanic membrane</td>
</tr>
<tr>
<td>27.</td>
<td>Myringotomy</td>
<td>Making a surgical incision into the tympanic membrane</td>
</tr>
<tr>
<td>28.</td>
<td>Oseotomy</td>
<td>Making a surgical opening into the bone</td>
</tr>
<tr>
<td>29.</td>
<td>Thoractomy</td>
<td>Making a surgical opening into the chest</td>
</tr>
<tr>
<td>30.</td>
<td>Vagotomy</td>
<td>Division or partial transaction of the vagus nerve</td>
</tr>
<tr>
<td>31.</td>
<td>Choldeochostomy</td>
<td>Surgical formation of an opening into the common bile duct</td>
</tr>
<tr>
<td>32.</td>
<td>Colostomy</td>
<td>Creating a new opening in the wall of the colon</td>
</tr>
<tr>
<td>33.</td>
<td>Dacrtcystorhinostomy</td>
<td>Formation of a permanent opening between the lumen of the tear sac and nasal cavity</td>
</tr>
<tr>
<td>34.</td>
<td>Gastrojejuostomy</td>
<td>Creating a new opening between the stomach and the</td>
</tr>
<tr>
<td>35. Ileostomy</td>
<td>Surgical opening made into the ileum</td>
<td></td>
</tr>
<tr>
<td>36. Nephrostomy</td>
<td>Making an artificial opening in the kidney</td>
<td></td>
</tr>
<tr>
<td>37. Suprapubic cystostomy</td>
<td>Making an artificial opening in the bladder above the pubic area</td>
<td></td>
</tr>
<tr>
<td>38. Anoplasty</td>
<td>Plastic repair of the anus</td>
<td></td>
</tr>
<tr>
<td>39. Blepharoplasty</td>
<td>Resotartion of the eyelid</td>
<td></td>
</tr>
<tr>
<td>40. Coloplasty</td>
<td>Restoration of the vagina</td>
<td></td>
</tr>
<tr>
<td>41. Otoplasty</td>
<td>Plastic surgery of the external projection of the ear</td>
<td></td>
</tr>
<tr>
<td>42. Salpingoplasty</td>
<td>Restoration of the Fallopian tube</td>
<td></td>
</tr>
<tr>
<td>43. Rhinoplasty</td>
<td>Plastic repair or reconstruction of the nose</td>
<td></td>
</tr>
<tr>
<td>44. Thoracoplasty</td>
<td>Resotartion or surgical repair of the chest</td>
<td></td>
</tr>
<tr>
<td>45. Tympanoplasty</td>
<td>Plastic repair of the tympanic membrane and structure of the middle ear</td>
<td></td>
</tr>
<tr>
<td>46. Z-plasty</td>
<td>Relaxing incision use for correcting contractures made in the shape of a Z</td>
<td></td>
</tr>
<tr>
<td>47. Colporrhaphy</td>
<td>Repair of the vagina-narrowing the vagina</td>
<td></td>
</tr>
<tr>
<td>48. Herniorrhaphy</td>
<td>Repair of the hernia</td>
<td></td>
</tr>
<tr>
<td>49. Perineorrhaphy</td>
<td>Repair of the perineum</td>
<td></td>
</tr>
<tr>
<td>50. Tenorrhaphy</td>
<td>Repair of a tendon</td>
<td></td>
</tr>
<tr>
<td>51. Cystopecty</td>
<td>The fixation of the bladder in proper position</td>
<td></td>
</tr>
<tr>
<td>52. Hysterectomy</td>
<td>The fixation of the uterus in proper position</td>
<td></td>
</tr>
<tr>
<td>53. Nephrectomy</td>
<td>The fixation of the kidney in proper position</td>
<td></td>
</tr>
<tr>
<td>54. Orchiectomy</td>
<td>The fixation of the testicle in proper position</td>
<td></td>
</tr>
<tr>
<td>55. Bronchoscopy</td>
<td>Examination of the bronchus by viewing</td>
<td></td>
</tr>
<tr>
<td>56. Cystoscopy</td>
<td>Examination of the bladder by viewing</td>
<td></td>
</tr>
<tr>
<td>57. Esophagoscopy</td>
<td>Examination of the esophagus by viewing</td>
<td></td>
</tr>
<tr>
<td>58. Gastroscopy</td>
<td>Examination of the stomach by viewing</td>
<td></td>
</tr>
<tr>
<td>59. Laryngoscopy</td>
<td>Examination of the larynx by viewing</td>
<td></td>
</tr>
<tr>
<td>60. Proctoscopy</td>
<td>Examination of the rectum by viewing</td>
<td></td>
</tr>
<tr>
<td>61. Arthrodesis</td>
<td>Fusion of a joint</td>
<td></td>
</tr>
<tr>
<td>62. Paracentesis</td>
<td>Surgical puncture of a cavity, usually abdominal</td>
<td></td>
</tr>
<tr>
<td>63. Thoracentesis</td>
<td>Surgical puncture of the chest cavity</td>
<td></td>
</tr>
<tr>
<td>64. Tenolysis</td>
<td>Surgical freeing of a tendon</td>
<td></td>
</tr>
<tr>
<td>65. Cholelithiasis</td>
<td>Presence of stones in the gallbladder</td>
<td></td>
</tr>
<tr>
<td>66. Nephrolithiasis</td>
<td>Presence of stones in the kidney</td>
<td></td>
</tr>
<tr>
<td>67. Arteriogram</td>
<td>Examination of the artery by x-ray after injection of a dye</td>
<td></td>
</tr>
<tr>
<td>68. Aortogram</td>
<td>Examination of the abdominal aorta by x-ray after injection of a dye</td>
<td></td>
</tr>
<tr>
<td>69. Cholangiogram</td>
<td>Examination of the gallbladder by x-ray after injection</td>
<td></td>
</tr>
</tbody>
</table>
### Other Procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anastomosis</td>
<td>Formation of a passage between any two normally distant spaces or organs</td>
</tr>
<tr>
<td>2. Aspirate</td>
<td>Withdrawal of fluid, purulent matter</td>
</tr>
<tr>
<td>3. Biopsy</td>
<td>Removal of a small piece of tissue for pathologist examination</td>
</tr>
<tr>
<td>4. Caldwell-luc Window</td>
<td>Window operation; opening made into the canine fossa for removal of contents from maxillary sinus</td>
</tr>
<tr>
<td>5. Catherization</td>
<td>Insertion of a narrow tube into a cavity for drainage, etc</td>
</tr>
<tr>
<td>6. Debride</td>
<td>Freshen and cleanse a wound by removal of all friable, necrotic and nonviable tissue</td>
</tr>
<tr>
<td>7. Decompress</td>
<td>To relieve pressure</td>
</tr>
<tr>
<td>8. Dermabrade</td>
<td>To abrade the skin by means of sandpaper or electric apparatus</td>
</tr>
<tr>
<td>9. Desiccate</td>
<td>To dry up usually with an electric cautery</td>
</tr>
<tr>
<td>10. Disarticulate</td>
<td>Amputate or separate at a joint</td>
</tr>
<tr>
<td>11. Electrocoagulate</td>
<td>Passage of high frequency current through tissue producing coagulation of tissue cells and also destruction of tissue</td>
</tr>
<tr>
<td>12. Enucleation</td>
<td>Removal of an organ, or other body, in such a way that it comes out as a whole</td>
</tr>
<tr>
<td>13. Evisceration</td>
<td>Removal of the contents of an organ or viscera of the body</td>
</tr>
<tr>
<td>14. Exenteration</td>
<td>Removal of organs and tissue from the body-radical</td>
</tr>
<tr>
<td>15. Fulgurate</td>
<td>Utilization of sparks from a current for destruction of tissue</td>
</tr>
<tr>
<td>16. I &amp; D</td>
<td>Incision and drainage</td>
</tr>
<tr>
<td>17. Manchester</td>
<td>Operation for correcting a prolapsed uterus by amputation of the cervix and fixation of the cardinal ligaments</td>
</tr>
<tr>
<td>18. Marshall-Marchetti</td>
<td>Plication (stitching folds) of the urethra for correction of urinary stress incontinence</td>
</tr>
<tr>
<td>19. Marsupialization</td>
<td>Incision into a cystic lesion with evacuation of its contents and approximation of the wall of the cyst to those of the external incision to permit drainage and closure by granulation of the wound</td>
</tr>
<tr>
<td>20. Abdominal perineal resection</td>
<td>Abdominoperineal resection of the rectum for</td>
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<td></td>
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<td>---</td>
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</tr>
<tr>
<td>21. <strong>Pedicule graft</strong></td>
<td>Preparation of skin for grafting by forming a tubular structure which may be moved to another site on the body which requires the graft</td>
</tr>
<tr>
<td>22. <strong>Ramstedt</strong></td>
<td>(pyloromyotomy) incision of the uscles of the pylorus performed for congenital pyloric stenosis</td>
</tr>
<tr>
<td>23. <strong>Spinal fusion</strong></td>
<td>Surgical immobilization of the spine though formation of a body union</td>
</tr>
<tr>
<td>24. <strong>Submucous resection</strong></td>
<td>Resection of the nasal septum</td>
</tr>
<tr>
<td>25. <strong>Wertheim</strong></td>
<td>Radical hysterectomy (removal of the uterus, adjacent tissues and wide portion of the vagina) performed for uterine malignancy</td>
</tr>
<tr>
<td>26. <strong>Whipple</strong></td>
<td>One stage pancreaticoduodenectomy</td>
</tr>
</tbody>
</table>
Medication Safety in the Operating Room

Learning Objectives

1. The learner will be able to verbalize an understanding of commonly used medications in the perioperative setting.

2. The learner will be able to list the six rights of medication administration.

3. The learner will be able to describe the proper procedure for placing medications on the sterile field.
Drugs and Solutions

**Importance to Your Practice**

**Role of the Perioperative Nurse**

- Verify patient identification
- Obtain patient history related to medications
- Verify the correct drug or solution, dosage, route, and time of administration
- Know potential drug adverse reactions and other considerations
- Prepare the drug or solution
- Document the medication, dosage, route, and time of administration on the intraoperative record.

**Categories of Drugs and Solutions**

- Antibiotics
- Anticoagulants
- Hemostatic agents
- Cardiac agents
- Anti-Inflammatory agents (steroids)
- Ophthalmic agents
- Otic agents
- Posterior pituitary hormone agents
- Irrigating solutions for transurethral and gynecological procedures
- Diagnostic imaging agents
- Dyes (Thethylene Blue, Lugolis solution, Indigo Carmine)
- Local Anesthesia
- Conscious sedation

**Antibiotics**

- Penicillins (Ampicillin)
- Cephalosporins (Cefazolin Sodium [Ancef])
- Aminoglycosides (Neomycin Sulfate, Gentamycin Sulfate [Garamycin])
- Sulfonamides (Gantrism)
- Others (Bacitracin, Chloramphenicol [Chlormycetin], Vancomycin [Vancocin], Tetracycline)

**Dosages for Antibiotics**
Dosages will depend on the antibiotic and the individual patient’s needs.

**Routes for Administration for Antibiotics**

- As administered by the perioperative nurse, the typical route of administration is saline irrigation solution.

**Adverse Reactions to Antibiotics**

To penicillin:
- Hypersensitivity reactions
- Nausea
- Vomitting
- Colitis
- Tissue damage (when applied topically or by irrigation)

---

**Anticoagulants**

**Action:** To prevent or prolong the coagulation of blood.

- Heparin, Lovenox, Plavix

**Dosages for Anticoagulants**

- Dosages will be determined, in part, by the (1) patient’s condition, and (2) operative procedure.

Consult manufacturer’s recommendations and surgeon preference card for specific dosage information.

**Route of Administration for Anticoagulants**

- Heparinized saline irrigation solution.

**Adverse Reactions to Anticoagulants**

- Chills
- Rash
- Urticaria (hives)
- Pruritus (itching)
- Fever
- Respiratory allergic symptoms
- Anaphylactic/anaphylactoid reactions

**Hemostatic Agents**
**Action**
- Reduce capillary bleeding
- Assist in blood clotting

**Hemostatic Agents**
- Absorbable gelatin sponge (Gelfoam)
- Microfibrillar collagen (Avitene)
- Oxidized cellulose (Surgical, Oxycel)
- Topical thrombin

**Dosages for Hemostatic Agents**
- Patient’s condition
- Operative procedure

- You need to consult manufacturer’s recommendations and surgeon preference card for specific dosage information.

**Routes of Administration for Hemostatic Agents**
- Placed directly on the bleeding site (topical thrombin, Gelfoam, Avitene, Surgical, Oxycel)
- Topical thrombin may be used in spray form.

**Adverse Reactions to Hemostatic Agents**
- Topical thrombin—intravascular thrombosis
- Absorbable gelatin foam—increase risk of wound infection
- Oxidized cellulose and absorbable gelatin foam may cause pressure in confined spaces

**Other Considerations**
- Avoid use on pulsating arterial bleeding and in contaminated wounds.
- Avoid use of Microfibrillar collagen with autologous blood salvage units.

**Cardiac Agents**

**Actions**
- Reduce mammary artery spasm
- Test patency and integrity of a graft
- Sustain radial artery dilatation

**Examples of Cardiac Agents**
- Papaverine Hydrochloride (used to reduce mammary artery spasm)
- Plasma-Lyte A pH 7.4 (used to test patency and integrity of a graft)
- Radial artery solution—a Verapamil, Nitroglycerin, Sodium Bicarbonate, Heparin mixture (used to sustain radial artery dilatation)

**Dosages for Cardiac Agents**
- Dosages are determined, in part, by the patient’s condition and the operative procedure. Papaverine and radial artery solution are diluted in normal saline. Consult manufacturer’s recommendations and surgeon preferences card for specific dosage information

**Routes of Administration for Cardiac Agents**
- Topical (papaverine)
- Irrigation (Plasma-Lyte A pH 7.4)
- Immersion (radial artery solution)

**Adverse Reactions to Cardiac Agents**
- Reactions are rare.

**Other Considerations**
- Precipitation will occur if Ringer’s Lactate is mixed with Papaverine.

**Anti-Inflammatory Agents**

**(Sterosids)**

**Action:** To reduce inflammation and possible postoperative edema at operative sites.

**Anti-Inflammatory Agents**
- Dexamethasone (Decadron, Hexadrol)
- Hydrocortisone Sodium Succinate (Solu-Cortef)
- Methylprednisolone Sodium Succinate (Solu-Medrol)
- Methylprednisodone Acetate (Depo-Medrol)
- Triamcinolone Acetonide (Artisocort, Kenalog)

**Dosages for Anti-Inflammatory Agents**
- Patient’s Conditions
- Operative procedure

**Routes of Administration for Anti-Inflammatory Agents**
- Parenterally
- Directly to the operative site

**Adverse Reactions to Anti-Inflammatory Agents**
- Dosage or duration dependent
Other Considerations

- Avoid if patient has known hypersensitivity to any component
- Avoid if patient has a systemic fungal infection
- Thoroughly dissolve particles

Ophthalmic Agents

Action

- To anesthetize
- To promote diffusion and absorption of anesthetic agent
- To reduce intraocular removal
- To facilitate lens removal
- To maintain a deep anterior chamber
- To prevent or control infection
- To reduce inflammation and possibly of infection

Examples of Ophthalmic Agents

- Topical anesthetic agents
  - Proparacaine Hydrochloride (Ophthaine)
  - Tetracaine Hydrochloride (Pontocaine)

- Miotic agents (used to constrict the pupil and to reduce intraocular pressure)
  - Acetylcholine Chloride (Miochol)
  - Pilocarpine
  - Physostigmine (Eserine)

- Viscoclastic agent (used to maintain separation of tissues)
  - Sodium Hyaluronate (Healon)

Examples of Ophthalmic Agents

- Anti-infective-steroid combination agents (used to reduce infection and/or inflammation)
  - Dexamethasone 0.1%
  - Neomycin Sulfate
  - Polymyxin B Sulfate

- Glucocorticoid agents (used to reduce inflammation)
  - Methylprednisolone Acetate suspension (Depo-Medrol)
  - Betamethasone Sodium Phosphate
  - Betathasone Acetate suspension (Celestone Soluspan)

- Enzymatic agent (used to promote diffusion and absorption of anesthetic agent)
  - Hyaluronidase (Wydase)
Dosages for Ophthalmic Agents
- Patient's condition
- Operative procedure

Routes of Administration for Ophthalmic Agent
- Topical
- Instillation

Adverse Reactions to Ophthalmic Agent
- Irritation
- Conjunctivitis
- Swelling
- Redness

Otic Agents

Action
- To anesthetize
- To stop or slow bleeding
- To irrigate

Examples of Otic Agents
- Xylocaine with Epinephrine
- Epinephrine
- Gelfoam
- Ringer's Lactate or Saline

Dosages of Otic Agents
- Patient's condition
- Operative procedure

Route of Administration for Otic Agents
- Topical
- Instillation

Adverse Reactions to Otic Agents
- Ear irritation
- Itching
Other Considerations
- Agents should be at body temperature before application or instillation

- **Posterior Pituitary Hormonal Agents**

**Action:**
- Stimulate uterine muscle

**Example**
- Vasopressin

**Dosages for Posterior Pituitary Hormonal Agents**
- Patient’s condition
- Operative procedure

**Route of Administration for Posterior Pituitary Hormonal Agents**
- Regional injection

**Adverse Reactions**
- Uterine tetany
- Tremor
- Sweating
- Vertigo
- Abdominal cramps
- Nausea

**Irrigating Solutions for Transurethral and Gynecological Procedures**

**Action**
- Transurethral (TUR) procedures
  - Flush a cavity
  - Ensure the patency of an irrigating system
- Gynecological procedures- to irrigate, visualize and/or distend the uterine cavity

**Examples of TUR Irrigating Solutions**
- Glycine 1.5%
- Other nonelectrolyte solutions

**Example of Gynecological Irrigation Solutions**
Dosages of Irrigating Solutions
- Transurethral irrigation
  - Volumes adequate to flush the cavity
  - To ensure irrigation system patency
- Gynecological irrigation
  - Volumes adequate to irrigate, visualize and/or distend the uterine cavity

Route of Administration for Irrigating Solutions
- Irrigation system into the bladder or the uterus

Adverse Reactions to Irrigating Solutions
- Chills
- Vertigo
- Backache
- Nausea

Other Considerations
- Do not administer if solution is cloudy
- Do not administer to patients with anuria
- Warm solution (not to exceed 150 degrees F./66 degrees C)

Diagnostic Imaging Agents
(Radiopaque Media)

Action
- Permit visualization of internal structures

Examples of Diagnostic Imaging Agents
- Renografin (used for cholangiography, hyterosalpingography)
- Cystografin (used for csytourethrography)
- Hypaque

Dosages for Diagnostic Imaging Agents
- Patient’s condition
- Operative procedure
- Contrast media may be diluted with normal saline
- Consult manufacturer’s recommendations and surgeon preference card for specific dosage information.
Route of Administration for Diagnostic Imaging Agents
- Instilled directly into an organ or duct with a catheter or tube. The surgeon administers the contrast media

Allergic Reactions
- Reactions to diagnostic imaging agents are rare. If the patient has a history of possible hypersensitivity to other medical imaging procedures, report this finding.

Adverse Reactions
- In patients with multiple myeloma or paraproteinemia, may cause renal failure
- In patients with sickle cell disease, may promote cell sickening.

Other Considerations
- Do not use parenteral products if cloudy or discolored.

Dyes

Action
- To stain or mark a specific area or structure

Examples of Dyes
- Methylene blue
- Indigo carmine

Administration of Dyes
- Determined by the operative procedure

Routes of Administration for Dyes
- Dyes added to solution
- Marking pens may be used to mark the skin

Adverse Reactions to Dyes
- None reported

Local Anesthesia

Perioperative Nurse Qualifications
- Safely use
- Interpret data obtained from intraoperative monitoring
Preoperative Assessment
- Usual preoperative assessment and planning

Action
- To block neuromuscular conduction

Examples
- Aminoesters (2-chlorprocaine, procaine, tetracaine)
- Aminoamides (lidocaine, prilocaine, mepivacaine, bupivacaine, etidocaine)

Allergic Reactions
- Erythema
- Urticaria
- Edema
- Bronchoconstriction
- Hypotension

Systemic toxicity
- Numbness of tongue
- Lightheadedness
- Visual disturbances
- Twitching
- Seizures
- Coma
- Respiratory arrest

Nursing Interventions
- Ensure patent airway
- Administer oxygen
- Provide supportive care and definitive care if needed

Intraoperative Nursing Interventions
- Continuously monitor patient’s:
  - Blood pressure
  - Heart rate and rhythm
  - Respiratory rate
  - Oxygen saturation
  - Skin color and condition
  - Level and type of response

Other Considerations
- Provide a calm and supportive setting for the awake patient
• Prepare emergency equipment and medications for interventions
• Understand that the “local” situation may shift to “conscious sedation” status as the procedure and the patient’s responses evolve

Delivering Medications onto the sterile field

Perioperative Registered Nurse (circulating role)

1. Check surgeon’s preference card to obtain type, dose and concentration medication(s). Verify this information with the surgeon prior to drawing up the medication. Obtain necessary vials of medication(s) and check expiration dates.
2. Prior to drawing up appropriate medication in a syringe, the circulating nurse shows vial(s) of all medications, to the scrub person, i.e. name and expiration date and gives the scrub nurse the following materials:
   • 25g 5/8 needle
   • 22g 1 ½ needle
   • Sterile marking pen
   • Steri-strip
3. After confirming medication(s) with scrub person, the circulating nurse draws medication up using an 18g 1 ½ needle and delivers it via syringe to the sterile field
   • The scrub person using a sterile marking pen and steri-strips writes down the amount/concentration of medication she has received (e.g. 30cc Lidocaine and 30cc Sterile Water and 0.3 Epinephrine 1:1000). Medicine cup and syringe should also be labeled.
   • As the syringe is handed to the surgeon, the scrub nurse informs the surgeon as to the contents of the syringe (e.g. the syringe contains a mixture of 30cc Lidocaine/30cc NS and 0.3cc Epinephrine)
4. The circulating nurse shows the vials to the surgeon/anesthesia according to hospital policy. The vials are not discarded until the end of the procedure.
5. The circulating nurse documents the following on the OR nurse’s progress note:
   Name of drug(s)
   Amount/concentration
   Total amount used by surgeon

Perioperative RN Personnel Medication List

You are responsible for knowing the usage of the medication in the OR as well as the generic name of the **drugs. RN’s only: MUST know all emergency meds, the dosage and how to prepare it as a drip.
### Perioperative Medication Key

<table>
<thead>
<tr>
<th>NAME</th>
<th>GENERIC NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancef</td>
<td>Cefazolin</td>
<td>Cephalosporin antibiotic</td>
</tr>
<tr>
<td>Anectine</td>
<td>Succinylcholine</td>
<td>Neuromuscular blocker-adjunct to anesthesia to induce skeletal muscle relaxation. Facilities intubation</td>
</tr>
<tr>
<td></td>
<td>Chloride</td>
<td></td>
</tr>
<tr>
<td>Aminophylline</td>
<td>Theophylline</td>
<td>Bronchodilator-relaxes smooth muscle of bronchial airway. Treatment of bronchospasms</td>
</tr>
<tr>
<td>Antropine</td>
<td></td>
<td>Anticholinergic- decreases secretions and blocks cardiac vagal reflexes</td>
</tr>
<tr>
<td>Ampicillin</td>
<td></td>
<td>Penicillin antibiotic</td>
</tr>
<tr>
<td>Bacitracin</td>
<td></td>
<td>Anti-infective</td>
</tr>
<tr>
<td>Cocaine</td>
<td></td>
<td>Local anesthetic, especially for oral cavity and nasal procedures</td>
</tr>
<tr>
<td>Dantrium</td>
<td>Dantolene sodium</td>
<td>Treatment of Malignant Hyperthermia</td>
</tr>
<tr>
<td>Diprivan</td>
<td>Propofol</td>
<td>Short acting anesthetic given IV for induction and maintenance of general anesthesia. Also used for sedation</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Dopamine</td>
<td>Adrenergic-improves perfusion to vital organs.</td>
</tr>
<tr>
<td>Drug</td>
<td>Description</td>
<td></td>
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<tr>
<td>--------------------</td>
<td>------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Dobutrex Hydrochloride</td>
<td>Increase cardiac output</td>
<td></td>
</tr>
<tr>
<td>Dobutamine Hydrochloride</td>
<td>Adrenergic-increases cardiac output, adjunct in cardiac surgery.</td>
<td></td>
</tr>
<tr>
<td>Decadron Dexamethasone</td>
<td>Corticosteroid-decreases inflammation</td>
<td></td>
</tr>
<tr>
<td>Dilantin Phenytoin</td>
<td>Anticonvulsant, treatment for seizures</td>
<td></td>
</tr>
<tr>
<td>Epinephrine Adrenaline</td>
<td>Bronchodilator-treatment of anaphylaxis. Increase of heart rate, blood pressure, etc. Used in an arrest.</td>
<td></td>
</tr>
<tr>
<td>Fentanyl</td>
<td>Narcotic analgesic-adjunct to general anesthetic</td>
<td></td>
</tr>
<tr>
<td>Flourescein</td>
<td>Bright yellow dye if viewed under cobalt blue illumination</td>
<td></td>
</tr>
<tr>
<td>Garamycin Gentamycin SO4</td>
<td>Aminoglycoside for GI/GU surgery prophylaxis</td>
<td></td>
</tr>
<tr>
<td>Glucagons</td>
<td>Treatment of hypoglycemia, increases blood glucose. Also increases smooth muscle relaxation in bowel surgery</td>
<td></td>
</tr>
<tr>
<td>Heparin</td>
<td>Anticoagulant</td>
<td></td>
</tr>
<tr>
<td>Hypaque</td>
<td>Dye used to visualize under x-ray ex: cholangiograms</td>
<td></td>
</tr>
<tr>
<td>Hyskon</td>
<td>Visual media for hysteroscopy</td>
<td></td>
</tr>
<tr>
<td>Isoflurance</td>
<td>Inhalation anesthetic</td>
<td></td>
</tr>
<tr>
<td>Isuprel Isoproterenol</td>
<td>Treatment for bradycardia</td>
<td></td>
</tr>
<tr>
<td>Indigo Carmine</td>
<td>Blue dye used in urologic surgery cases</td>
<td></td>
</tr>
<tr>
<td>Ketamine</td>
<td>General anesthetic</td>
<td></td>
</tr>
<tr>
<td>Kantrex Kanamycin</td>
<td>Aminoglycoside-pre-op bowel sterilization, intraperitoneal irrigation</td>
<td></td>
</tr>
<tr>
<td>Lasix Furosemide</td>
<td>Loop diuretic</td>
<td></td>
</tr>
<tr>
<td>Lugol’s Solution</td>
<td>Strong Iodine Solution</td>
<td></td>
</tr>
<tr>
<td>Mannitol Osmitrol</td>
<td>Osmotic diuretic also irrigation solution for TURP</td>
<td></td>
</tr>
<tr>
<td>Marcaine</td>
<td>Bupivacaine (Sensorcaine)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local anesthetic</td>
<td></td>
</tr>
<tr>
<td>Methylene Blue</td>
<td>Dye</td>
<td></td>
</tr>
<tr>
<td>Monsels Ferric Subsulfate</td>
<td>Topical cautery for GYN-cone biopsy</td>
<td></td>
</tr>
<tr>
<td>Morphine</td>
<td>Narcotic analgesic-fast acting</td>
<td></td>
</tr>
<tr>
<td>Nesacaine Chloroprocaine</td>
<td>Local anesthetic</td>
<td></td>
</tr>
<tr>
<td>Neomycin SO4</td>
<td>Aminoglycoside-suppression of intestinal bacteria</td>
<td></td>
</tr>
<tr>
<td>Nipride Nitroprusside sodium</td>
<td>Antihypertensive-to produce controlled immediate hypotension during anesthesia</td>
<td></td>
</tr>
<tr>
<td>Neosporin Combination: Neomycin and Polymixin and Bacitracin</td>
<td>Antibiotic ointment</td>
<td></td>
</tr>
<tr>
<td>Neosynephrine Phenylephrine</td>
<td>Adrenergic, vasoconstriction for maintenance of</td>
<td></td>
</tr>
<tr>
<td>Drug</td>
<td>Use</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>during decreased blood pressure, spinal and inhalation anesthesia.</td>
<td></td>
</tr>
<tr>
<td><strong>Oxycel</strong></td>
<td>Hemostatic agent</td>
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</tr>
<tr>
<td><strong>Polymyxin</strong></td>
<td>Polymixin B Sulfate1 Anti-infective, irrigations</td>
<td></td>
</tr>
<tr>
<td><strong>Pronestyl</strong></td>
<td>Procainamide HCL Antiarrythmic for afib, vtach, PVC's, atrial tach</td>
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<tr>
<td><strong>Papavarine</strong></td>
<td>Vasodilator-cerebral and peripheral ischemia treatment</td>
<td></td>
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<tr>
<td><strong>Pitressin</strong></td>
<td>Vasopressin (ADH) Pituitary hormone-anti diuretic effect also controls bleeding abd. Surgery and esophageal varices.</td>
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<tr>
<td><strong>Pitocin</strong></td>
<td>Oxytocin Oxytocin—for labor induction and decrease of postpartum bleeding, incomplete or inevitable abortion</td>
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<tr>
<td><strong>Penicillin</strong></td>
<td>Antimicrobial</td>
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<tr>
<td><strong>Protamine Sulfate</strong></td>
<td>Antidote to treat heparin overdose- Heparin antagonist</td>
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<tr>
<td><strong>Neostigmine</strong></td>
<td>Cholinergic- antidote for skeletal muscle relaxants</td>
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<tr>
<td><strong>Sodium bicarbonate</strong></td>
<td>Antacid (Alkalinizers) treatment of cardiac arrest and metabolic alkalosis</td>
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<tr>
<td><strong>Solucortef</strong></td>
<td>Hydrocortisone Cortisosterone- to decrease inflammation</td>
<td></td>
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<tr>
<td><strong>Solumedrol</strong></td>
<td>Methylprednisolone Corticosteroid</td>
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<tr>
<td><strong>Surgical</strong></td>
<td>Oxidized cellulose- absorbable hemostatic</td>
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</tr>
<tr>
<td><strong>Thrombin</strong></td>
<td>Hemostatic-control of hemorrhage</td>
<td></td>
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<tr>
<td><strong>Toradol</strong></td>
<td>Ketoralac Non-narcotic analgesic, injectable NSAID</td>
<td></td>
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<tr>
<td><strong>Tridil</strong></td>
<td>Nitroglycerin Antiarrythmic, vasodilator. Decreases blood pressure</td>
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<tr>
<td><strong>Vibramycin</strong></td>
<td>Doxyxyccline Tetracycline antibiotic</td>
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<tr>
<td><strong>Wydase</strong></td>
<td>Hyaluronidase Enzyme-increases absorption and dispersion of injected drugs and urography</td>
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<tr>
<td><strong>Xylocaine</strong></td>
<td>Lidocaine Antiarrythmic treatment of V tech</td>
<td></td>
</tr>
<tr>
<td><strong>Versed</strong></td>
<td>Midazolam Sedative, pre-operatively</td>
<td></td>
</tr>
<tr>
<td><strong>Zemuron</strong></td>
<td>Rocuronium Neuromuscular blocking intubation</td>
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<tr>
<td>Critical Element</td>
<td>Behavioral criteria you are expected to perform:</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1. <strong>Introduces self (I)</strong></td>
<td>Tells the patient full name and title.</td>
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</tr>
<tr>
<td>2. <strong>Performs hand hygiene (T)</strong></td>
<td>Washes hands with soap and water or alcohol hand gel for 15 seconds.</td>
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<tr>
<td>3. <strong>Identifies patient (T)</strong></td>
<td>While looking at the patient’s identification bracelet, asks the patient to state his/her full name and date of birth. If carrying out an intervention, compares with OR schedule.</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Explains procedures to the patient (I, T)</strong></td>
<td>Explains overall the nature of a preoperative assessment. Explains what is going to be done and lets the patient know if there is a need to ask any questions or speak to the surgeon.</td>
<td></td>
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</table>
| 5. **Checks the chart for completeness** | Nurse must check labs and results if ordered or hospital policy  
CBC if ordered  
PT/PTT, INR if on ASA or anticoagulants  
Electrolytes  
Pregnancy test, if applicable  
Chest X ray result  
EKG-result  
Checks consent (correct side written on consent), signed by patient and MD  
Admitting note  
H&P  
Progress note  
Order sheet  
Availability of Blood |
| 6. **Begins the Universal Protocol process Preoperatively** | Preoperatively  
Asks the patient to state the procedure and the side that will be done  
Checks OR schedule to assure correct name, DOB, Procedure, MR#, and side/site.  
Checks the marking site which is done by the surgeon  
Intervenes for any discrepancies found. Resolution of discrepancies by checking the:  
Chart  
Consent  
Confirming side/site with Surgeon  
Anesthesiologist  
Involving the patient  
Radiological Images |
| 7. **Universal Protocol Intraoperatively** | Intraoperatively  
Checks consent for accurate documentation of surgery.  
Assures MD has marked the surgical site  
Assures proper documentation on site verification form with only approved abbreviations.  
When taken into OR, patient name and surgery are repeated to scrub tech  
Prior to incision, a PAUSE is taken to confirm patient name, procedure and laterality, DOB; all equipment needed present prior to surgery.  
Performs accurate documentation of final PAUSE in OR on site verification form, including printed name, signature of RN and date.  
Places copy of site verification form with paperwork in chart or for Quality monitoring |
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<tr>
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<th><strong>8. Assesses preoperatively</strong></th>
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<tr>
<td></td>
<td>Asks patient when was the last time they had anything to eat or drink?</td>
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<tr>
<td></td>
<td>Asks if they have any allergies to medications</td>
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<tr>
<td></td>
<td>Asks if they are allergic to latex</td>
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<td></td>
<td>Asks if there are wearing any dentures or have any loose teeth, glasses, contact lenses or hearing aides</td>
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<tr>
<td></td>
<td>Asks if patient has any jewelry, tattoos or piercings anywhere on the body</td>
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<tr>
<td></td>
<td>Asks if patient has any breathing problems, like asthma, emphysema or COPD</td>
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<tr>
<td></td>
<td>Do they take any meds for BP</td>
</tr>
<tr>
<td></td>
<td>Do they take any meds for their heart?</td>
</tr>
<tr>
<td></td>
<td>Do they take any medications over the counter or herbal meds?</td>
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<tr>
<td></td>
<td>Do they have diabetes?</td>
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<td></td>
<td>Have you had any previous surgeries or any trouble with anesthesia?</td>
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<th></th>
<th><strong>9. Infection Control</strong></th>
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<tr>
<td></td>
<td>Maintains clean and safe environment for patient</td>
</tr>
<tr>
<td></td>
<td>Demonstrates knowledge of environmental controls-temp, humidity of room</td>
</tr>
<tr>
<td></td>
<td>Adheres to dress code and wears appropriate PPE in OR</td>
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<td></td>
<td>Wash hands after every patient</td>
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<td></td>
<td>Maintains aseptic technique at all times</td>
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<td></td>
<td>Initiates corrective action when breaks in technique have occurred.</td>
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<th><strong>10. Anesthesia Care</strong></th>
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<tr>
<td></td>
<td>Provides support to anesthesiologist during induction &amp; emergence phase</td>
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<td></td>
<td>Maintains with patient during Induction phase &amp; emergence phase to assist and provide protection and psychological comfort.</td>
</tr>
<tr>
<td></td>
<td>Demonstrates correct application of cricoid pressure</td>
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<td></td>
<td>Maintains patient warm prior, during and after induction and extubation</td>
</tr>
<tr>
<td></td>
<td>Assists anesthesiologist with Regional anesthesia</td>
</tr>
<tr>
<td></td>
<td>Provides safety for patient during regional/local/general anesthesia</td>
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<tr>
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<th><strong>11. Thermodynamics</strong></th>
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<tr>
<td></td>
<td>Places warm blanket in patient prior to induction</td>
</tr>
<tr>
<td></td>
<td>Does not expose patient unnecessarily until before surgery</td>
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<tr>
<td></td>
<td>Pours warm irrigation fluids on sterile field</td>
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<tr>
<td></td>
<td>Utilizes bear hugger appropriately</td>
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<tr>
<td></td>
<td>Warms OR prior to pediatric patient</td>
</tr>
<tr>
<td></td>
<td>Warms OR table prior to pediatric patient</td>
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<tr>
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<th><strong>12. Age Specific Criteria</strong></th>
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<tr>
<td></td>
<td>Verbalizes understanding of differences in pediatric anatomy, physiology and developmental needs specific to age specific patients</td>
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<tr>
<td></td>
<td>Is able to identify possible signs of child abuse</td>
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<tr>
<td></td>
<td>Thermal regulation of OR prior to introduction of pediatric patient to OR</td>
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<tr>
<td></td>
<td>Can verbalize Parent Assisted Induction of patient</td>
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<td></td>
<td>During scrub, sets up instruments according to size of patient.</td>
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<tr>
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<th><strong>13. Implants</strong></th>
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<tr>
<td></td>
<td>Checks expiration date on all implants utilizes sooner date to expire.</td>
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<tr>
<td></td>
<td>Documents implants accurately</td>
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<tr>
<td></td>
<td>Reconstitutes implants appropriately</td>
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<tr>
<td></td>
<td>Documents on Tissue Log Book accurately all pertinent information for tracking purposes.</td>
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<tr>
<td></td>
<td>Receives consent and MD. Order prior to obtaining implant.</td>
</tr>
</tbody>
</table>
| 14. Electrocautery Safety | - Turns on ESU machine on prior to case to check for proper functioning  
- Checks for biomet sticker  
- Places ESU pen in cartridge container when scrubbed  
- Documents accurately on periop record ESU information  
- Places electrocautery pad on patient appropriately  
- Shaves patient if necessary prior to application of bovine pad.  
- Demonstrates proper application of bovine cord to machine and set numbers as directed by surgeon  
- Removes ESU pad and inspects skin condition of bovine site postoperatively  
- Documents accurately on perioperative record of skin condition of ESU pad site  
- Documents any deviations from the norm on skin condition when bovine removed.  
- Aware of incident reporting when any deviation from the norm is noted.  
- Demonstrates appropriate dispersal pad for age specific patients. <30 lbs use pediatric dispersive pad. |
| 15. Latex Allergy Safety | - Demonstrates patients regarding latex allergies through assessment  
- Establishes latex restricted environment (Multidisciplinary approach)  
- Posts Latex Allergy sign over OR door and retrieves latex cart  
- Determines proper protocol for patients that are latex allergic once the surgical pack has been opened.  
- Prepares pack prior to latex allergic patient enters OR  
- Monitors all latex free items on sterile field. |
| 16. Maintaining Sterile Field | - Opens sterile packages according to procedure  
- Demonstrates proper gloving  
- Open small items onto sterile field without contamination  
- Creates and maintains field and observes principles of aseptic technique.  
- Safely pours fluids and medications on to sterile field.  
- Controls own movement within sterile field  
- Recognizes and corrects breaks in sterile technique by self and others  
- Limits traffic in room  
- Keeps door closed at all times during procedure  
- Can transport sterile items from one room to another.  
- Pours solutions correctly |
| 17. Gowning and Gloving | - Selects clean, dry area on which to open package  
- Inspects package for integrity  
- Opens package in sterile manner without contamination.  
- Dries hands with towel appropriately and discards  
- Lifts gown out of wrapper and steps away from nonsterile objects  
- Slips arms into sleeve using a forward motion, until sleeve-cuff is over hands  
- Utilizes closed glove technique in proper manner  
- Demonstrates proper changing of contaminated gloves  
- Hand circulator wrap- around tie to front of gown, grabs sterile part of tie and secure it.  
- Circulator ties back of sterile person appropriately.  
- Removes PPE in proper fashion.  
- OPEN GLOVING- Demonstrates proper application of open gloving technique. |
| 18. Instrumentation | - Identifies instruments accurately  
- Sets up back table in standardized manner dependent on case  
- Inspects instrument trays or sterile items for integrity  
- Retrieves all instrumentation needed for surgical case prior to the case.  
- Passes instruments correctly.  
- Removes instrumentation to dirty utility at end of case in accordance with hospital policy. |
| 19. Surgical PREP | - Is aware if patient has any allergies  
- Collects all needed equipment prior to prep  
- Aseptically opens prep and prepares  
- Demonstrates open glove technique accurately  
- Places absorbent towels in appropriate manner  
- Cleans area of incision-laparoscopic cases does umbilicus first  
- Utilizes proper sequence of prepping. Clean to dirty  
- Blots area properly and removes blotter properly  
- Paints area of incision in proper fashion- clean to dirty  
- Removes absorbent towels properly |
| 20. Surgical Counts | - Performs counts (sponges, sharps & instruments) audibly and visually  
- Documents counts accurately on count sheet  
- Performs counts prior to incision, at closing and final count  
- Utilizes count bags appropriately  
- Counts out and documents appropriately when items are counted out.  
- When relieved for break, surgical counts done.  
- Performs count in accurate sequence (surgical field, sterile field, bucket, and count bags.  
- Appropriately follows policy if incorrect count is done  
- Prepares incident report accurately and prepares for intraoperative X-ray, for incorrect counts. |
| 21. Specimen Handling | - Labels specimens appropriately  
- Processes specimens according to type of pathology test. (Frozen, Permanent, C&S, biopsies)  
- Demonstrates proper use of specimen information into invision or paper documentation.  
- Documents appropriately on specimen requisition form.  
- Checks label for correct name of patient  
- Verbally announces specimen and clarifies if needed.  
- Labels specimens on sterile field when multiple specimens are needed.  
- Disposition of specimens done correctly  
- Documentation of specimens placed in logbook |
| 22. Patient Teaching | - Demonstrates knowledge using appropriate teaching strategies to educate patient/family  
- Assess patient /SO need for education and readiness to learn  
- Able to assess cultural needs and their effects on learning and teaching  
- Documents education and patient Teaching performed and level of understanding  
- Determines patients ability to understand comprehension, language barriers and uses resources necessary to communicate/educate patient.  
- Utilizes the teach back method |
| 23. Positioning | • Places Safety Strap on patient when transferred to OR table  
• Verbalizes various positions utilized for various cases  
• Assesses ability or confinements of patient for positioning  
• Utilizes appropriate positioning devise needed.  
• Demonstrates proper utilization of positioning devise.  
• Demonstrates skill and knowledge in safe positioning of the patient.  
  ○ Supine  
  ○ Prone  
  ○ Lithotomy  
  ○ Jack Knife  
  ○ Lateral  
  ○ Sitting  
  ○ Trendelenberg  
• Demonstrates skill and knowledge in nerve impairment, skin integrity by padding patient correctly  
• Maintains patient privacy |
|-----------------|---------------------------------------------------------------|
| 24. Hand Off Reporting-Continuity of Care RN to RN | • Utilizes Hand off Communication through SBAR Protocol  
• (Name, Age, Diagnosis, Surgical Procedure)  
• States Current Stage of Procedure  
• States Allergies or any significant medical history  
• Instrumentations off/on field  
• Surgical Counts as per policy  
• Any communication with family for changes in clinical status/condition.  
• Any additional issues or concerns |
| 25. Medication Administration | • Aware of patient allergies  
• Demonstrates knowledge of six patient rights of medication (right dose, right route, right time, right patient, right medication, right expiration date)  
• Audibly and visually shows medication and expiration date to scrub person prior to administration on sterile field.  
• Demonstrates knowledge of medication administration for age specific groups.  
• Documents medications on sterile field on operative record accurately.  
• Is able to demonstrate or verbalize appropriate nursing action in the event of the onset of side effects, adverse drug reaction.  
• Announces to surgeon the medication (scrub only) prior to administration of medication to patient.  
• Verbalizes knowledge of saving all vials of medication till after the case is complete.  
• Label all medications including saline irrigations & water on the sterile field.  
• Is able to verbalize sequence of events if an adverse reaction is noted on patient. (Adverse Drug Reaction Form & Occurrence) |
Adson Forceps

Allis clamp

Army Navy Retractor
Babcock Retractor

Balfour Retractor
Deaver Retractors

Debakey Forcep

Harrington Retractor (sweetheart)
Hemostat

Kelly Clamp
Kockers Clamps

Malleable Retractors

Mayo Scissor
Metzenbaum Scissor (metz)

Mosquito
Needle Holders

Plain and Tooth forceps
Richardson Retractors

Russian Forcep

Scalpel Holder

Straight Hemostat
Weitlaner Retractor

Yankauer Suction