

2018 ANESTHESIA ROTATION HANDOUT

TABLE OF CONTENTS	Page
Rotation Introduction	1
Rotation Objectives	2
Rotation Requirements	2
Weekly Schedule	3
Rotation Coordinators	4
Getting Started (first day)	4
Daily Protocol	5
Syllabus	6
Patient Flow	7
Map of Surgical Unit/OR's	8
The Board	9
Anesthesia Do's and Don'ts	10
Activity Chart (sample)	11
Checklists	12-13
Most common Anesthetic Drugs and Dosages	14-15

ROTATION INTRODUCTION

Although the performance of procedures (intubations, line placement, etc) is an integral daily function of the practicing anesthesiologist, they represent only a fraction of the practice of anesthesia. The participant is expected to achieve knowledge and skills relevant to the practice of anesthesia beyond simply performing procedures. The participant should develop an appreciation for the anatomy, physiology and pharmacology of anesthesiology as well as an understanding of how patient variability and disease processes affect our decisions. Each OR is a highly controlled physiology laboratory and offers an ideal teaching environment. We expect this knowledge of the physiologic effects of surgery and anesthetic drugs, coupled with the procedural skills obtained and refined during the rotation, to serve you well during a long and fulfilling medical career.

Physician Anesthesia Services, P.C. (PAS) is a 24 member private corporation serving EWSH for 50 years. Generally, ten anesthesiologists run 22 operating rooms on a given day. Six anesthesiologists will be in an OR and four will generally supervise two or three nurse anesthetists. Anesthetists (CRNA's) are BSN-degree nurses who have critical care experience, study for a Master of Science degree in anesthesia and pass national board exams.

If you have any questions about the rotation contact Drs. Cote, Krogulecki, Esmail or Everett. (Surgery Desk 364-4022)

ROTATION OBJECTIVES

1. Procedurals : Observe techniques for insertion and learn the indications for and the complications of: arterial lines, central venous lines, pulmonary arterial catheters, intravenous lines, airway management, lumbar punctures and “ blocks “ for postoperative pain management.
2. Didactic Knowledge:
 - a. Types of anesthetics (general, spinal, epidural, IV, regional, nerve blocks, sedation)
 - b. Pharmacology (narcotics, hypnotics, neuromuscular blocking agents, volatile agents, etc.)
 - c. Physiology (autonomic NS, hemodynamics, disease process)
 - d. Anatomy (larynx, vasculature, nervous system)
 - e. Disease and Anesthesia (Coronary, Cerebrovascular, IDDM, Obesity, Coagulopathy, Prematurity, Shock, etc.)

ROTATION REQUIREMENTS

1. Daily attendance: (0700 to 1630) unless previously excused for a mandatory educational requirement or personal matter. Can review the schedule for the next day with the Board-runner.
3. Direct a case: At the end of the rotation, the four week rotators will develop an anesthetic plan and execute it with minimal input from the attending anesthesiologist (subject to availability of appropriate case and one on one anesthesiologist supervision).
4. Case Presentation: 4 week rotators : Subject to appropriate case availability, the rotator will be presented with a patient profile and will prepare a case presentation for the anesthesia staff.
5. End of Rotation Test: All rotators are expected to demonstrate reasonable understanding of anesthetic principles on an end of rotation test that will reflect:
 - i) Assigned reading.
 - ii) Basic clinical principles commonly demonstrated in the OR
 - iii) A test (open book) to help you review and assimilate material presented during your anesthesia rotation. Please return the completed test to the office of the Assistant Dean in the Sparrow Professional Building or to your program advisor.
6. The text, Basics of Anesthesia, will be assigned and can be found online at the Sparrow Hospital Library
7. You Tube is a great place to find procedure videos.
8. Rotation objectives will vary by the length of the rotation, 1 – 4 weeks.
9. All evaluations must be signed by the anesthesiologist you spent the most time with during your rotation and returned to your program coordinator.

WEEKLY SCHEDULE

Week #1:

We expect that you will spend this week:

- learning your way around the surgical suites,
- observing the anesthesia for many types of surgery,
- learning about the anesthesia equipment,
- developing an appreciation for the role of the anesthesiologist and other surgical team members,
- doing basic anesthesia related reading, Vaporous anesthetics, IV anesthetics, and Mm relaxants.
- practicing rudimentary skills such as starting IV's, intubating, and mask ventilation, and
- learning indications and complications of invasive lines.

Weeks #2:

You will spend more time with individual anesthesiologists following cases through from beginning to end. Pediatric exposure will increase and cases will become more complex. Longer rotations, continued readings, locals and regional techniques.

Weeks #3:

Those participants with us for a month may be invited to come in early to insert invasive lines. The knowledge you acquire from direct observation, reading assignments and lectures will begin to coalesce as you begin to appreciate the 'big' picture. Reading: O.B. and Peds. Ask for opportunities to spend time in OB, Pain Center, IV starts and Outpatient care at St Lawrence.

Week #4:

You will become increasingly involved in managing cases. You will interview patients, develop an anesthetic plan, give the anesthetic (as appropriate cases and supervision is available), and follow through in PACU and post-op rounds. You will also take a multiple-choice open book examination covering the rotation to be returned to your program coordinator. Sub-specialty: Neuro and Cardiovascular.

ROTATION COORDINATORS (Surgery 364-4022)

Welcome to the experience of anesthesiology in a large practice that involves essentially every type of anesthesia. Although all anesthesiologists participate in your education while on rotation, the following anesthesiologists are the most involved in education administration and related questions should be directed to them:

Imu Esmail, MD
Forrest Cote, DO
Michael G. Krogulecki, DO
John Everett M.D.

GETTING STARTED

This may be your first day and you may have just received this introductory handout and are wondering “now what?” This rotation can be a little challenging to get into the rhythm with, so this section will give you the basics to get through your first day.

1. Arrival
 - a. You should report to the OR by 0700 on the first day
2. The Front Desk
 - a. Go to the OR suite and find the Front Desk in the West Wing. The Front Desk is the primary nursing station and is where “The Board” is located.
 - b. At the Front Desk, introduce yourself (a very good habit for new people in the OR in general) and ask:
 - i. Where the locker room is so you can change into scrubs
 - ii. Show you what locker you can use during the rotation
 - c. After getting into scrubs (remember your ID badge)
 - i. Return to the Front Desk
 - ii. Find the anesthesiologist who is the “board runner” for the day, he/she will make an assignment for you with an anesthesiologist to begin your anesthesia experience.
3. Shadowing – when introduced to one of the anesthesiologists:
 - a. Introduce yourself
 - b. Sign in on the white board in the OR you will be in.
 - c. Feel free to ask questions, but be sensitive to the needs of others.
 - d. On your first day, don’t worry too much about doing procedures, etc. Just relax, shadow one of the anesthesiologists, observe how things work in the OR, and familiarize yourself with the role of the anesthesiologist and associated equipment and procedures.
4. Fill out Activity Chart (also on the website)
 - a. See example, print from the web site and bring with you the first day of your rotation. Obtained at PASPC.ORG

DAILY PROTOCOL

1. You should arrive daily at 0700 and will generally leave around 1630 hrs.
2. Contact the Board Runner or one of the Rotation Coordinators for your assignment after you get into surgical scrubs.
3. You do not take call (unless you want to).
4. You will only be excused for:
 - a. Medical Students: Wednesday noon lecture and your Friday meetings with your Director.
 - b. Residents: Grand Rounds, your weekly clinic, and Thursday teaching afternoon conferences.
5. Document on your Activity Chart **DAILY**
 - a. Your attendance
 - b. Airway management tasks
 - 1) Mask ventilation
 - 2) LMA placement
 - 3) Intubations
 - c. Invasive procedures
 - 1) Observation
 - 2) Performance
 - d. IVs
 - 1) Class attendance
 - 2) IV placements , can set up in Out Patient and SLH
 - e. Miscellaneous events
 - 1) Day on Obstetric Anesthesia Service
 - 2) Visit to pain clinic
 - 3) Follow the Float for observation of Blocks in West PACU

SYLLABUS. The primary text is “Basics of Anesthesia” by Stoelting and Miller. Available on line in the EWS Library. The test questions at the end of the rotation come directly from the reading. The required chapters of reading depend on the length of your rotation on anesthesia. Although there appears to be an abundance of reading for one and two week rotations, these participants will almost exclusively be residents who will already have some familiarity with some of the subjects. You will be expected to view the assigned videos found on the website as early as possible in the rotation.

Chapter	Rotation length		
	1 week	2 weeks	4 weeks
Effect of Inhaled Anesthetics on Ventilation and Circulation		X	X
Intravenous Anesthetics	X	X	X
Opioids	X	X	X
Local Anesthetics		X	X
Neuromuscular Blocking Drugs		X	X
Preoperative Evaluation and choice of Anesthetic Technique	X	X	X
Tracheal Intubation	X	X	X
Spinal and Epidural Anesthesia	X	X	X
Positioning and Associated Risks			X
Monitoring		X	X
Fluid and Blood Therapy		X	X
Cardiovascular Disease			X
Central Nervous System Disease			X
Obstetrics			X
Pediatrics			X
Acute Postoperative Pain Management			X

For those interested in Anesthesia (optional reading)

Anesthesia Systems

Preoperative Medication

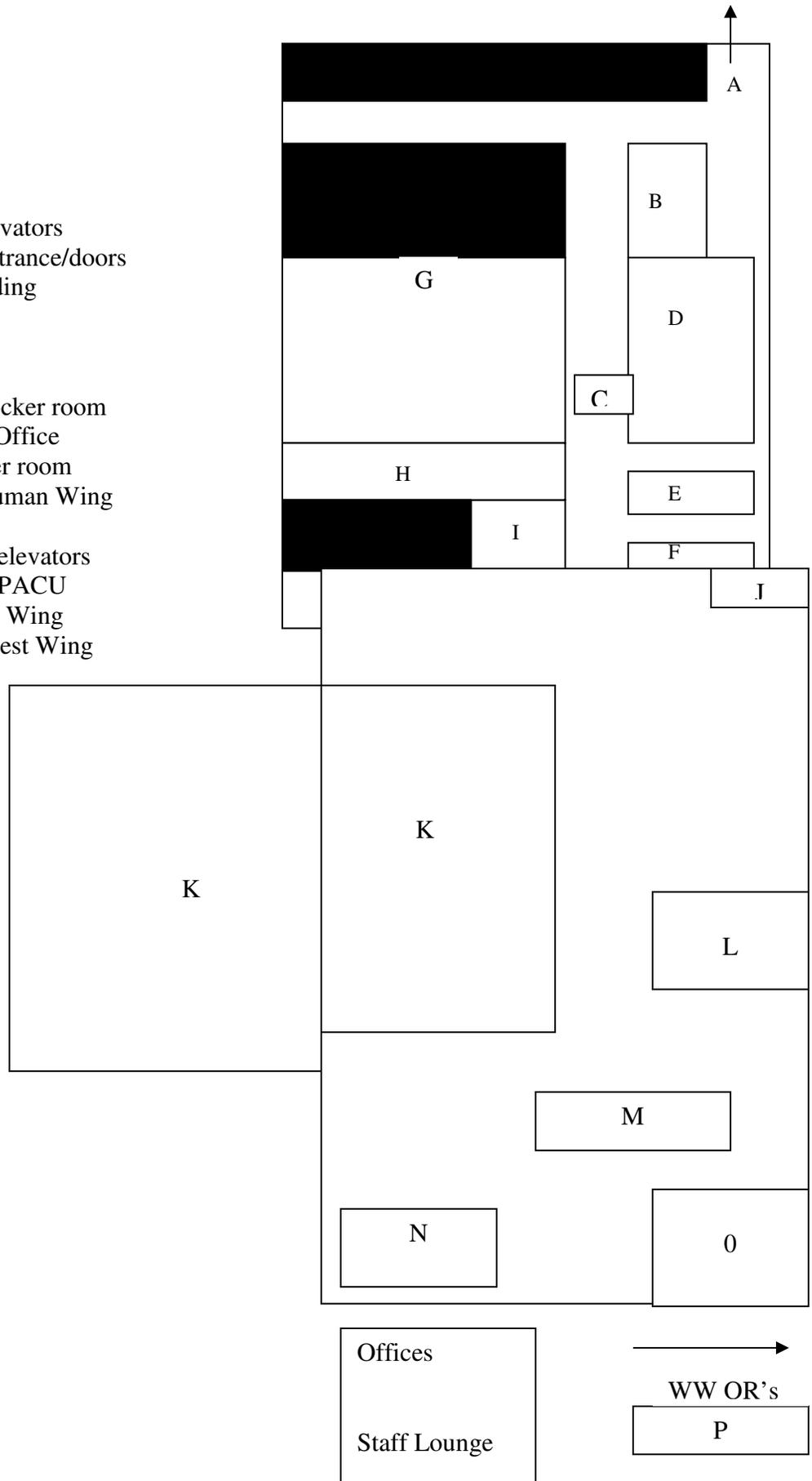
Elderly Patients

Chronic Pain Management (strongly recommended if spending time at the Pain Center)

PATIENT FLOW

1. Patients (Adults) coming for surgery, from home, go to OPS (Outpatient Surgery in the West Wing Tower) where they change into patient attire, are prescreened by nursing, have IVs placed, etc. These patients will remain in the OPS until taken directly to the OR. When interviewing the patient, this will take place in the patient's room in the OPSU prior to their coming to the OR. Check the Video monitor in West OPS or the highly technical white OR schedule taped to the Mayo Stand in OP west.
2. All patients are taken to the Neuman PACU
3. Same Day Surgery (SDS) patients will be admitted to the OPSU in the West Wing and transported to the West Wing Holding Area prior to Surgery or to West PACU if blocks or invasive lines need to be done.
4. Patients (inpatients) come to OPS West , usually spots 11/12, or, if they require a preoperative procedure to ready them for their operation, West PACU, Pediatric Pts are usually found in Neuman Holding, just inside the double doors leading to the “ OLD OR “.
5. Patients are
 - A. Screened by nursing for a completed surgical consent, etc
 - B. Seen by anesthesia to review the patient's history/labs/studies, perform a directed physical exam, take a directed medical history from the patient, and explain the plan of anesthesia to the patient and/or responsible adult
Seen by the surgeon site signed and initialed.
6. The patient is taken to the OR after
 - A. The patient has been by evaluated by all interested parties in patient holding/patient room
 - B. The OR is setup and ready for the patient
 - C. The surgeon is available for the surgical procedure
7. After the surgical procedure, the patient is
 - A. Usually taken to the PACU for recovery, Neuman, before going to their room in the hospital
 - B. Occasionally taken to an intensive care unit directly.
 - C. If the patient will be sent home, he/she will be taken to Neuman PACU and then returned to the OPSU, in the east end of the basement.
 - D. Some Pts who have a MAC anesthetic will go directly to OPSU east.

- A Cafeteria
- B Neuman-elevators
- C OR main entrance/doors
- D Patient Holding
- E Front Desk
- F The Board
- G PACU
- H Women's locker room
- I Anesthesia Office
- J Men's locker room
- K OR's in Neuman Wing
- L Sx Lounge
- M West Wing elevators
- N West Wing PACU
- O OPSU West Wing
- P OR Desk West Wing



THE BOARD

1. The Board is a large magnetic wall panel.
2. Each box represents one operating room and contains a column of magnetic stickers that summarize Staffing by Room.
3. At the top of each OR box is either a yellow or gold sticker which represents the anesthesia provider for that OR
 - A. The yellow stickers represent Anesthesiologists who are personally performing the anesthesia for that OR
 - B. The Orange stickers represent Certified Nurse Anesthetists (CRNAs) that are performing the anesthesia for that room, and are Medically Directed by an Anesthesiologist usually on a 3 to 1 basis
4. The right side of the board contains several yellow stickers with 2 to 4 OR numbers written next to them. These represent the anesthesiologists who are medically directing multiple rooms and are assigned initials.
5. ORs on the Video monitor in front of the Desk :
 - A. The ORs are numbered 1 to 12, 14-23 (Room 13 is not used)
 - B. Within each OR box are a column of operation magnetic stickers each of which represents a scheduled operation and lists
 - i. Start time of operation
 - ii. Surgeon
 - iii. Type of operation
6. The Board is very fluid and room assignments and times for operations can change according to the flow of the day

ANESTHESIA DO'S AND DON'TS

- DO be vigilant (vigilance is the buzzword of the anesthesia profession).
- DO put your name on the board as soon as you enter an OR.
- DO introduce yourself in the holding area to every patient with whom you will work.
- DO use the side door to the OR (not the hallway door).
- DO be courteous to the nurses and scrub techs.
- DO always have an alternate plan of action.
- DON'T** leave any gaps in the anesthesia chart. **Fill in every blank.**
- DON'T** ever administer a paralyzing agent without first assessing the airway.
- DON'T** ever use an unlabeled syringe.
- DON'T** use needles (we have a needleless system).
- DON'T** recap needles.
- DON'T** become so transfixed on the charting or equipment that you forget to observe the pt.

ACTIVITY CHART (example)

ACTIVITY CHART		MONTH: January			ROTATOR:		Mouse			
Day	Attendance	Airway mgmt tasks			Invasive Procedures					Misc event
	(√ if present)	Mask ventilate	LMA placement	Intubation	Arterial line	Central line	Epidural	Nerve Block	IV	
		(write number performed today)			(number observed [O] or performed [P])					
1					O- /P-	O- /P-	O- /P-	O- /P-	P-	
2	√	0	0	0	O-1/P-0	O-1/P-0	O-2/P-0	O-0/P-0	P-	
3	√	0	1	0	O-2/P-0	O-1/P-0	O-2/P-0	O-0/P-0	P-	
4	√	3	0	1	O-0/P-0	O-0/P-0	O-3/P-0	O-2/P-0	P-	
5	√	2	2	2	O-1/P-0	O-0/P-0	O-0/P-0	O-1/P-0	P-	
6	√	6	3	2	O-0/P-0	O-0/P-0	O-1/P-0	O-0/P-0	P-	
7					O- /P-	O- /P-	O- /P-	O- /P-	P-	
8					O- /P-	O- /P-	O- /P-	O- /P-	P-	
9	√	4	0	4	O-2/P-0	O-2/P-0	O-2/P-0	O-3/P-0	P-	
10	√	2	4	1	O-1/P-0	O-1/P-0	O-1/P-0	O-1/P-0	P-1	IV class
11	√	3	2	3	O-3/P-0	O-2/P-0	O-3/P-0	O-1/P-0	P-0	
12	√	7	5	0	O-0/P-1	O-0/P-0	O-1/P-0	O-2/P-0	P-6	
13	√				O- /P-	O- /P-	O- /P-	O- /P-	P-	
14					O- /P-	O- /P-	O- /P-	O- /P-	P-	
15					O- /P-	O- /P-	O- /P-	O- /P-	P-	
30					O- /P-	O- /P-	O- /P-	O- /P-	P-	
31					O- /P-	O- /P-	O- /P-	O- /P-	P-	

NOTES: January 4th afternoon: observed cardioversions and endoscopies with Dr. Kochan
Access your copy from the website

EXPLANATION FOR ABOVE SAMPLE: (actual numbers on the chart are completely theoretical and do not represent expectations)

- Mr. Mouse’s first day was January 2nd, and he has documented his attendance for his first two weeks
- On his first day (January 2nd), he observed one arterial line, one central line, and two epidural placements
- On January 3rd Mr. Mouse placed his first LMA
- On January 4th Mr. Mouse was able to accomplish his first intubation, and successfully mask ventilate 3 patients. Additionally, Mr. Mouse made a special request to see some offsite procedures with Dr. Kochan which he documented under “NOTES”
- On January 10th, he took the IV class and placed his first IV
- On January 12th, he placed his first arterial line

Give completed sheets to the program director/mentor at end of rotation

CHECKLISTS

Holding Area in the Neuman Wing or OPSU in the West Wing Tower patient room

1. Review medical history including: Indication for operation, co-existing diseases, ALLERGIES, medications and surgical concerns.
2. Check Lab Values: Potassium, hemoglobin, B-HCG, ECG, Coagulation studies, Cardiac Studies, PFTs, etc.
3. Interview the patient: ALLERGIES, Problems in the past with anesthesia? NPO Status? Recent upper respiratory infection? Does the patient have GERD? How well controlled is the patient's GERD.
4. Examine heart, lung, and airway (dentition, Mallampatti class, thyromental distance, range of neck motion).
5. Discuss the anesthetic plan with the patient.
6. Advise patient of risks of anesthesia.
7. Check status of IV lines.

Operating Room:

Observe only until told otherwise

1. Prepare drugs in advance:
 - A. 2% Lidocaine: 50 mg (2.5 ml)
 - B. Propofol 200 mg (20 ml)
 - C. Fentanyl 100 mic (2 ml)
 - D. Neuromuscular Blocker
 - 1) Succinylcholine 120 mg (6 ml)
 - 2) Rocuronium 50 mg (5 cc)
 - E. Ephedrine: 50 mg (diluted in 5 ml saline)
 - F. Atropine 0.4 mg (1.0 ml)
2. Check the anesthesia machine, breathing circuit, laryngoscope, and LMA, endotracheal tube, etc. Ask to see hoe to do a machine check-out
3. Check the suction.
4. Check the IV.
5. Apply monitors (BP cuff, pulse oximeter, EKG leads) and document baseline vital signs.
6. Circulating nurse ready and surgeon nearby.
7. Begin the anesthesia induction (only in presence of anesthesiologist)

Induction:

1. Pre-oxygenate
2. Push induction agent (propofol, Etomidate, thiopental, etc)
3. Assess the airway (can you mask ventilate the patient?)
4. Ventilate the patient
5. Push the NMB agent (only after confirm can mask ventilate the patient, exception is during RSI [Rapid Sequence Induction])
6. Administer volatile agent as indicated (ensure patient remains asleep while relaxed)
7. Tape the eyes
8. Monitor vitals frequently
9. Assess the neuromuscular, blockade
10. Intubate
11. Check breath sounds, chest movement, CO₂, lung compliance.
12. Tape the endotracheal tube
13. Check the vital signs
14. Insert the esophageal stethoscope (if using one)
15. Position the patient
16. Put up the drapes.
17. Observe the incision and its physiologic effects
18. Perform appropriate charting (only after ensure patient stable and anesthetized)

During the Case:

1. Accurate charting of five-minute vitals automatically EPIC.
2. Monitor blood loss and urine output closely
3. Know what the surgeon is doing at all times

Emergence:

1. Check neuromuscular blockade (must have at least 1-2 twitches before attempting reversal of neuromuscular blockade)
2. Administer reversal agents (usually neostigmine and glycopyrrolate)
3. Establish spontaneous ventilation
4. Remove esophageal stethoscope
5. Place bite block/ Airway
6. Suction oropharynx
7. Remove eye tape
8. Extubate awake/asleep, ask why, Vs. transfer to PACU with LMA.
9. Extubate at the end of inhalation (with full lungs)
10. Gently suction oropharynx
11. Check vital signs
12. Remove monitors and go to PACU, with Nasal O₂.

Arrival in the PACU:

1. Help the nurse to apply the monitors
2. Give nurse report including
 - a. Patient's name
 - b. Surgical procedure
 - c. Type of anesthesia
 - d. Significant medical history
 - e. Problems during case
 - f. Narcotics, anti-emetics, analgesics given
 - g. Which analgesics are ordered for PACU
3. Monitor and document the PACU vital signs
4. Complete the anesthesia chart (anesthesia end time, anything else to complete chart)
5. Write the PACU orders (if not done preoperatively)

MOST COMMON ANESTHETIC DRUGS AND DOSAGES USED AT EWSH

Neuromuscular Blocking Agents (induction doses, not maintenance doses):

Rocuronium (Zemuron) 0.6 mg/kg

Pancuronium (Pavulon) 0.1 mg/kg, not used , but happy to talk about.

Even ask the Old folks about Curare

Succinylcholine (Anectine) 1-2 mg/kg

Cisatracurium (Nimbex) .1 mg/kg

Narcotics:

Fentanyl (Sublimaze) 1-2 mcg/kg [unit dose]

Morphine Sulfate .05- 0.1 mg/kg [unit dose]

Hydromorphone (Dilaudid) 0.5 - 2.0 mg adults

Narcotic Antagonist:

Naloxone (Narcan): adult 0.04-0.4 mg (usually administered 0.04 mg at a time until desired effect), kids 1 - 10 mcg/kg. Not benign, can be dangerous.

Non-narcotic Analgesics:

Ketorolac (Toradol) 15-30 mg IV NSAID (15 mg for elderly or chronic renal disease).

Acetaminophen (Tylenol) 20-30mg/kg (max. 2 G).

IV Ofirmev.

Antiemetics:

Metoclopramide (Reglan) 10-20 mg - dopamine antagonist

Droperidol (Inapsine) 0.01 mg/kg – butyrophenone (requires postop ECG monitoring)

Ondansetron (Zofran) 0.05 mg/kg - serotonin antagonist

Decadron 0.2 mg/kg

Emend 40 PO

Local Anesthetics:

Xylocaine (Lidocaine) - amide, local administration toxic level 4.0 mg/kg without epinephrine, 7.0 mg/kg with epinephrine
Bupivacaine (Marcaine) - amide, local administration toxic level 2.5 mg/kg without epinephrine, 3.0 mg/kg with epinephrine
Tetracaine (Pontocaine) – ester
Ropivacaine 0.2 – 0.5 % less toxic than Marcaine
EXPAREL liposomal Bupivacaine 266 Mg

Anticholinergics:

Atropine 0.01 mg/kg
Glycopyrrolate (Robinul) 0.01 mg/kg - minimal vagolytic effects

Anticholinesterases:

Neostigmine (Prostigmin) 0.057 mg/kg (5 mg maximum dose)
Edrophonium (Tensilon) 0.5-1.0 mg/kg- fast onset but expensive (40 mg maximum dose)

Extra Sugammadex “ the coolest thing ever “

Hemodynamic Modulators:

Epinephrine (Adrenaline) - 1.0 - 5.0 mics/min, mixed agonist
Dopamine - 2 -20 mics/kg/min, mixed agonist
Dobutamine (Dobutrex) 2 - 20 mics/kg/min, mixed agonist
Norepinephrine (Levophed) - 2-20 mics/min, alpha agonist
Nitroprusside (Nipride) - 0.5 - 8.0 mics/kg/min, vasodilator
Labetalol (Trandate, Normodyne) - up to 1 mg/kg, mixed antagonist
Phenylephrine (Neosynephrine) 25-200 mics/min, pure alpha agonist•
Esmolol (Brevibloc) - 50-200 mics/kg/min, short acting beta antagonist at usual dosing
Ephedrine 5-10 mg, indirect synthetic sympathomimetic

Induction Agents:

Propofol (Diprivan) 2 mg/kg bolus, 25-160 mics/kg/mm - benzyl alkaloid induction agent
Etomidate (Amidate) 0.3 mg/kg imidazole induction agent - minimal cardiac effects
Ketamine (Ketalar) 1-2 mg/kg - phencyclidine derivative - Dissociative
Brevital 1% 1-2 mg/kg for ECT at SLH

Anxiolytics:

Midazolam (Versed) 1 -2 mg
PO for Kids 0.5 mg/kg max 20mg for Kids
Lorazepam (Ativan) 1-4 mg (rarely used in OR)
Diazepam (Valium) 2-10 mg (rarely used in OR)
Clonidine 4 mics / kg , max 100 mics , Per-op kids from 1-10 yo

Benzodiazepine Antagonists:

Flumazenil (Romazicon) – 0.1mg-0.5 mg.

Early Recovery Protocol

GYN

Colo Rectal Sx

Urology

All have PO multi modal Agents pre-op

Neurontin + Celebrex + 1 gr Tylenol

May get SA Dilaudid, TAP block or Exparel Local