

An Introductory Guide to Starting out in Anesthesiology

Naval Medical Center
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Adult Drug Dosing

Push-Dose Vasopressors	
Ephedrine	5-10 mg
Phenylephrine	50-100 mCg
Epinephrine	10-20 mCg
Hypnotic	
Propofol	2-3 mg/kg
Etomidate	0.2-0.3 mg/kg
Premedication	
Midazolam	(2 mg)
Dexmedetomidine	1-2 mCg/kg Intranasal
Paralytics	
Succinylcholine	1-1.5 mg/kg
Rocuronium	0.6-1.2 mg/kg
Cisatracurium	0.1-0.2 mg/kg
Vecuronium	0.1 mg/kg
Neostigmine	50-70 mCg/kg
Glycopyrrolate	10-15 mCg/kg
Sugammadex	2-4 mg/kg
Analgesics	
Fentanyl	1 mCg/kg (25-50 mCg)
Hydromorphone	3-10 mCg/kg (0.2-0.4 mg)
Morphine	0.1 mg/kg (1-4 mg)
Ketamine	0.2-0.5 mg/kg
Ketorolac	0.5 mg/kg (30 mg)
Acetaminophen	15 mg/kg (1000mg)
Dexmedetomidine	0.3-1 mCg/kg
Magnesium	30 mg/kg (2g)
Lidocaine	1-1.5 mg/kg
Antiemetic	
Ondansetron	0.1 mg/kg (4 mg)
Dexamethasone	0.1-0.2 mg/kg (4-8 mg)
Propofol	20 mg
Cardiac	
Labetalol	5-10 mg
Hydralazine	5-10 mg
Esmolol	0.3-1mg/kg (20-40 mg)
Nitroglycerin	50-100 mCg
Infusions	
Propofol	20-250 mCg/kg/min
Lidocaine	20-40 mCg/kg/min
Ketamine	5-10 mCg/kg/min
Remifentanyl	0.05-0.25 mCg/kg/min
Sufentanyl	0.1-0.5 mCg/kg/hr
Dexmedetomidine	0.25-1 mCg/kg/hr
Magnesium	7.5 mg/kg/hr
Reversal	
Naloxone	40 - 400 mCg
Flumazenil	0.01 mg/kg (0.2mg)

Typical Bolus Doses Highlighted

Drug Mechanisms

Push-Dose Vasopressors	
Ephedrine	Endogenous catecholamine release
Phenylephrine	Direct α_1 agonist
Epinephrine	Direct α_1/β_1 agonist
Hypnotic	
Propofol	Potentiates GABA at the GABA-a receptor
Etomidate	Activates GABA-a receptor
Premedication	
Midazolam	Potentiates GABA at the GABA-a receptor
Dexmedetomidine	Direct α_2 agonist
Paralytics	
Succinylcholine	Depolarizing NMBA, binds post-synaptic nicotinic ACh receptors
Rocuronium	Nondepolarizing NMBA, binds post-synaptic nicotinic ACh receptors
Cisatracurium	Nondepolarizing NMBA, binds post-synaptic nicotinic ACh receptors
Vecuronium	Nondepolarizing NMBA, binds post-synaptic nicotinic ACh receptors
Neostigmine	Acetylcholinesterase Inhibitor
Glycopyrrolate	Muscarinic Antagonist
Sugammadex	Cyclodextrin Ring, chelates steroidal nondepolarizing NMBA's
Analgesics	
Fentanyl	Synthetic μ -opioid agonist
Hydromorphone	Synthetic μ -opioid agonist
Morphine	μ -opioid agonist
Ketamine	NMDA receptor antagonist
Ketorolac	NSAID
Acetaminophen	Selective cyclooxygenase inhibitor
Dexmedetomidine	Direct α_2 agonist
Magnesium	Weak NMDA receptor antagonist
Lidocaine	Local anesthetic, sodium channel blockade, possible anti-inflammatory
Antiemetic	
Ondansetron	5HT ₃ receptor antagonism
Dexamethasone	Poorly Understood
Propofol	GABA-a Agonist, possible 5HT ₃ receptor antagonism
Cardiac	
Labetalol	9:1 β : α antagonist
Hydralazine	Direct α_1 antagonist
Esmolol	B-Blocker
Nitroglycerine	Direct Venodilator
Infusions	
Propofol	GABA-a Agonist
Lidocaine	Local anesthetic, sodium channel blockade, possible anti-inflammatory
Ketamine	NMDA receptor antagonist
Remifentanyl	Synthetic μ -opioid agonist
Sufentanil	Synthetic μ -opioid agonist
Dexmedetomidine	Direct α_2 agonist
Magnesium	Weak NMDA receptor antagonist
Reversal	
Naloxone	Competitive μ -opioid receptor inhibition
Flumazenil	Competitive GABA receptor inhibition

Typical Drug Dilutions

Push-Dose Vasopressors	
Ephedrine	5 mg/mL
Phenylephrine	0.1 mg/mL (DD)
Epinephrine	10 mCg/mL (DD)
Hypnotic	
Propofol	10 mg/mL
Etomidate	2 mg/mL
Premedication	
Midazolam	1 mg/mL
Dexmedetomidine	4 mcg/mL
Paralytics	
Succinylcholine	20 mg/mL
Rocuronium	10 mg/mL
Cisatracurium	
Vecuronium	
Neostigmine	1mg/mL
Glycopyrrolate	0.2mg/mL
Sugammadex	100 mg/mL
Analgesics	
Fentanyl	50 mg/mL
Hydromorphone	0.2 mg/mL
Morphine	1 mg/mL
Ketamine	10 mg/mL
Ketorolac	30 mg/mL
Acetaminophen	10 mg/mL
Dexmedetomidine	4 mg/mL
Magnesium	100mg/mL
Lidocaine	20 mg/mL
Antiemetic	
Ondansetron	4 mg/mL
Dexamethasone	4 mg/mL
Propofol	10 mg/mL
Cardiac	
Labetalol	5 mg/mL
Hydralazine	5 mg/mL
Esmolol	10 mg/mL
Nitroglycerine	50 mCg/mL (DD)
Infusions	
Propofol	10 mg/mL
Lidocaine	8 mg/mL
Ketamine	10 mg/mL
Remifentanyl	Varies
Sufentanyl	Varies
Dexmedetomidine	4 mcg/mL
Magnesium	100 mg/mL
Reversal	
Naloxone	0.04 mg/mL
Flumazenil	0.02 mg/mL

Bold = Dilution Required

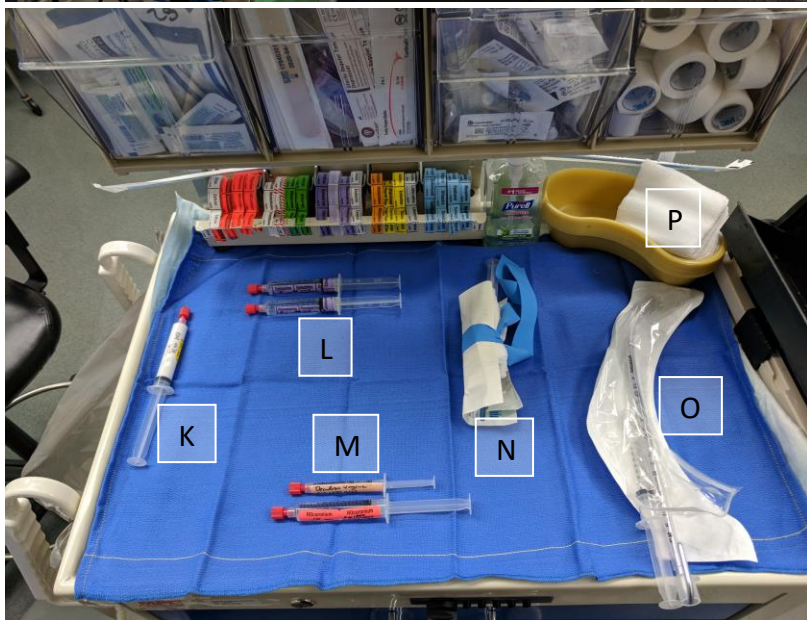
DD = Double Dilution Required

Helpful Equations

Mean Arterial Pressure	$MAP = DBP + (\text{pulse pressure}/3)$
Cardiac Output	$CO = SV \times HR$ (4-8 L/min)
Cardiac Index	$CI = CO/BSA$ (2.5-4.2 L/min/m²)
Ejection Fraction	$EF = EDV - ESV/EDV$
Arterial Oxygen content	$CaO_2 = (SaO_2 \times Hb \times 1.34) + (PaO_2 \times 0.003)$
Systemic Vascular Resistance	$SVR = 80 \times (MAP - CVP)/CO$ (900-1500 dyne/sec/cm⁵)
Systemic Vascular Resistance Index	$SVRI = SVR \times BSA$
Pulmonary Vascular Resistance	$PVR = 80 \times (\text{mean PAP} - PWP)/CO$ (50-150 dyne/sec/cm⁵)
Pulmonary Vascular Resistance Index	$PVRI = PVR \times BSA$
Estimated Blood Volume (Adult)	$EBV = 705\text{mL} \times \text{Total Body Weight}$
Max Allowable Blood Loss	$MABL = EBV \times (\text{Hct} - \text{min acceptable Hct})/\text{Hct}$
Fractional Excretion of Na	$FeNa = (\text{Urine Na} \times \text{Plasma Cr})/(\text{Urine Cr} \times \text{Plasma Na}) \times 100$
Oxygen Consumption	$Vo_2 = CO \times (CaO_2 - CvO_2)$ (3-4 mL/kg/min)
LaPlace's Law	$\text{Pressure} = 2 \times \text{surface tension}/\text{radius}$
Equation for Laminar Flow	$\text{Flow} = \text{Pressure gradient}/\text{airway resistance}$
Poiseuille's Law for airway resistance	$\text{Airway resistance} = (8 \times \text{viscosity} \times \text{Length of tube} \times \text{flow})/(\pi \times r^4)$
Minute Ventilation	$MV = RR/Vt$ [L/min]
Inspired Tension of Oxygen	$PiO_2 = P_b \times FiO_2$
Alveolar Oxygen Tension	$PAO_2 = PiO_2 - (PaCO_2/Rq)$
Approximating Arterial Oxygen Tension	$PaO_2 = 102 - (\text{Age}/3)$
Henry's Law (for calculating dissolved gas concentration in blood)	$\text{Gas Concentration} = \text{gas solubility coefficient} \times \text{partial pressure}$
Total Oxygen delivery	$DO_2 = CaO_2 \times CO$ [mL O ₂ /min]
Cerebral Perfusion Pressure	$CPP = MAP - ICP$
Normal Cerebral metabolic Oxygen consumption (CMRO ₂)	3-3.8 mL/100g/min

Normal Adult Values Highlighted

Basic Adult OR Setup



Basic Adult OR Setup

A: Various Tape Selection

B: Salem Sump for Intra-abdominal Cases

C: Mask

D: Oropharyngeal Airway Selection

E: Induction Medications (Lidocaine, Propofol, Succinylcholine, etc.)

F: Appropriate size ETT & Direct Laryngoscope

G: Rescue LMA

H: Temperature Probe

I: Bite Block

J: “Don’t Forget” Drugs (Tylenol, Zofran, Toradol, Sugammadex, etc.)

K: Rescue Propofol

L: Push-Dose Vasopressors (Phenylephrine, Ephedrine)

M: Post-Induction Drugs (Rocuronium, Dexamethasone, etc.)

N: Extra IV Start Kit

O: Rescue ETT (1/2 size smaller than planned ETT)

P: 4x4 Stash

Example Presentation

Room Intro: Hi sir/ma'am, this is Dr. Johnson, we are scheduled to be working together in OR 10 tomorrow with Dr. Smith doing a single general surgery case.

One Liner: The case is a 53 year old, 126 kg (BMI 46), woman with no known drug allergies, who has a history of morbid obesity, moderate persistent asthma, and atrial fibrillation who is presenting for a laparoscopic roux-en-Y gastric bypass procedure.

PMH/PSH/FH/SH: She had no other pertinent medical history. She has had multiple orthopedic procedures in the past without any personal or family history of anesthetic complications. She has a 30 pack-year history of smoking, quit 2 years ago, and denies alcohol or illicit drug use.

Preop Evaluation: She was seen in pre-op clinic and had a Mallampati 3 airway with a thick neck, but otherwise reassuring airway exam. Preoperative laboratory evaluation was remarkable for a mild anemia with a hemoglobin of 10. No further cardiopulmonary evaluation was completed.

Overall Plan: My plan for this patient is a general endotracheal anesthetic.

Monitors/Access: I will plan for standard ASA monitors, and 2 large bore peripheral IV's for access.

Premedication: I plan to give IV midazolam for preoperative anxiolysis.

Induction/Airway: I will place the patient on a large ramp to ensure an adequate sniffing position. I am planning on an IV induction with fentanyl, lidocaine, propofol, and rocuronium, and then direct laryngoscopy for placement of an endotracheal tube. I will have a Glidescope in the room ready for backup.

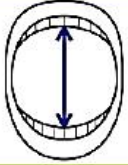
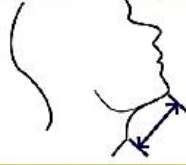
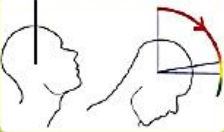
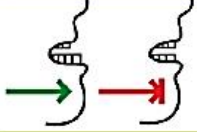
Maintenance: I am planning to use desflurane for maintenance of anesthesia, as well as running a lidocaine infusion for MAC reduction and pain relief.

Analgesia: I will achieve analgesia for the case with acetaminophen and hydromorphone as needed in addition to the lidocaine infusion.

Antiemesis: I will administered dexamethasone and ondansetron for postoperative nausea and vomiting prophylaxis.

Emergence: At the end of the case, I will reverse the patient with sugammadex. I plan to extubate this patient awake, and transfer to PACU for recovery.

Airway Exam

<u>Mouth opening</u> < 4 cm → 1 point ≥ 4 cm → 0 points 	<u>Thyromental distance</u> < 6.0 cm → 2 points 6.0-6.5 → 1 point > 6.5 cm → 0 points 												
<u>Mallampati</u> <table border="1"> <thead> <tr> <th>0 points</th> <th>0 points</th> <th>1 point</th> <th>2 points</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>II</td> <td>III</td> <td>IV</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> The patient should not phonate, as it elevates the soft palate		0 points	0 points	1 point	2 points	I	II	III	IV				
0 points	0 points	1 point	2 points										
I	II	III	IV										
													
<u>Neck movement</u> < 80° → 2 points 80-90° → 1 point > 90° → 0 points 	<u>Ability to prognath</u> Yes → 0 points No → 1 point 												
<u>Weight</u> < 90kg → 0 points 90-110kg → 1 point > 110kg → 2 points	<u>History of difficult intubation</u> Definite → 2 points Questionable → 1 point None → 0 points												
The points are summarized into the SARI score. A score of ≥ 4 indicates difficult direct laryngoscopy according to the Simplified Airway Risk Index.													

1 Adult Patient Finger Width = 2 cm

Ref: Norskov, AH. Preoperative airway assessment– Experience gained from a multicentre cluster randomised trial and the Danish Anaesthesia Database. Dan Med J 2016;63(5)B5241

Airway Devices

Nasopharyngeal Airway

Used in awake or sedated patients without definitive airway to bypass upper airway obstruction. Proper size is from nostril to tragus of ear

Oropharyngeal Airway

Used in unconscious patients to bypass upper airway obstruction. Proper size is from corner of mouth to angle of the mandible

Nasal Cannula

Used in sedation cases for supplemental oxygen. 1L O₂ flow is about 4% FiO₂, max flow 5L. May be equipped with ETCO₂ monitoring for respiratory monitoring.

Simple Facemask

Used in sedation cases for supplemental oxygen. Max FiO₂ around 60%. Requires angiocath to monitor ETCO₂.

Non-Rebreather

Used in sedation cases for supplemental oxygen. Max FiO₂ 100% when bag inflated. Requires angiocath to monitor ETCO₂.

Anesthesia Facemask

Used to provide non-invasive positive pressure ventilation and to mask ventilate anesthetized patients. Do not exceed 25-30 cm H₂O airway pressure due to concern for gastric insufflation.

Laryngeal Mask Airway (Supraglottic Airway Device)

Non-definitive airway, placed in deeply sedated or anesthetized individuals. Think of this as a mask that you don't have to hold on the patient's face. The "best oral airway you will find". Rescue device in the Difficult Airway Algorithm. Do not leave in place longer than 3-4 hours due to concerns for airway edema/pressure necrosis. Do not exceed 25-30 cm H₂O airway pressure due to concern for gastric insufflation. Do not use in laparoscopic cases due to need for higher airway pressures to counteract the pneumoperitoneum.

Endotracheal Tube

Definitive airway due to endotracheal cuff. When inflated to 25-30 cm H₂O pressure, isolates the lungs from any airway secretions. Allows for definitive positive pressure ventilation. Placed under direct or indirect laryngoscopy.

Oral/Nasal RAE

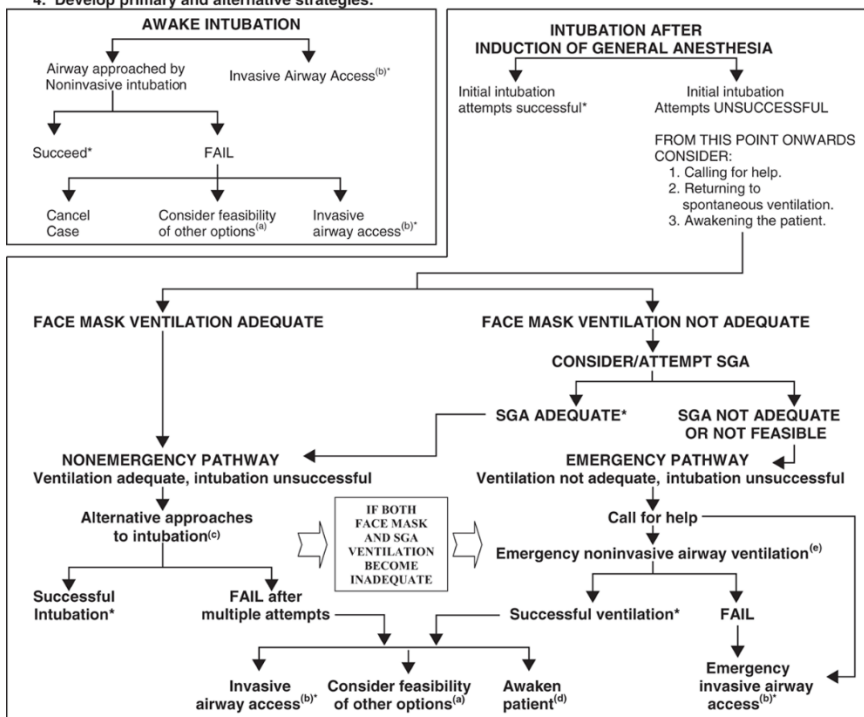
Endotracheal tubes formed in certain patterns to facilitate oral or maxillofacial surgery. Primarily used in ENT or OMFS rooms.

ASA Difficult Airway Algorithm



1. Assess the likelihood and clinical impact of basic management problems:
 - Difficulty with patient cooperation or consent
 - Difficult mask ventilation
 - Difficult supraglottic airway placement
 - Difficult laryngoscopy
 - Difficult intubation
 - Difficult surgical airway access
2. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.
3. Consider the relative merits and feasibility of basic management choices:
 - Awake intubation vs. intubation after induction of general anesthesia
 - Non-invasive technique vs. invasive techniques for the initial approach to intubation
 - Video-assisted laryngoscopy as an initial approach to intubation
 - Preservation vs. ablation of spontaneous ventilation

4. Develop primary and alternative strategies:

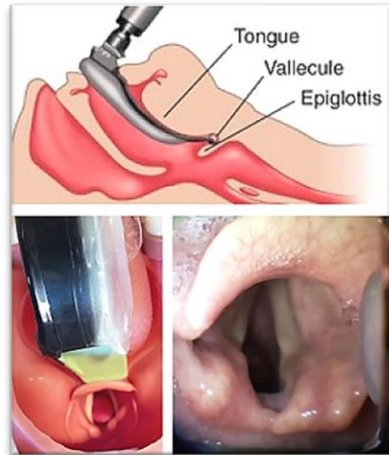


Ref: Committee on Standards and Practice Parameters. Practice Guidelines for Management of the Difficult Airway: An Updated Report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Anesthesiology 02 2013, Vol.118, 251-270.

Direct Laryngoscopy

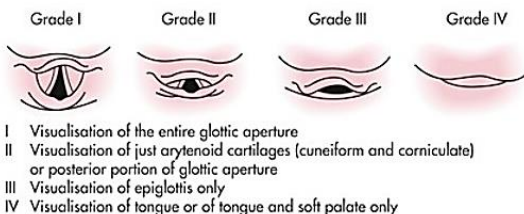
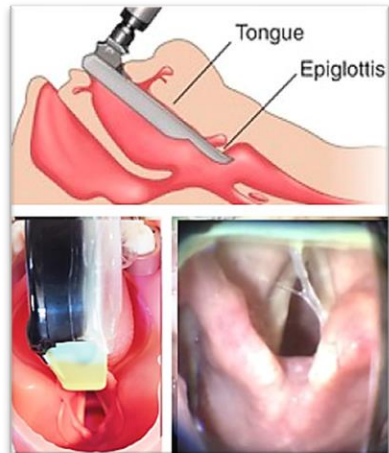
Macintosh Blade

- Curved
- Advanced into vallecula
- Raises the hyoepiglottic ligament, raising the epiglottis and exposing the glottic opening
- Larger blade, requires wide mouth opening
- Displaces large tongues well
- Higher first pass success rate than Miller blade



Miller Blade

- Straight
- Placed under the epiglottis
- Directly displaces the epiglottis and exposes the glottis
- Thinner blade, requires smaller mouth opening
- Useful when epiglottis is large and floppy (pediatrics)
- May be useful in more anterior airways
- Large tongue may be difficult to displace.



Cormac & Lehane Laryngoscopy Grading Scale

Basic Ventilator

Volume Controlled Mandatory Ventilation (Volume Control)

Historically the first ventilator mode developed. All other modes except PSV and Manual default to CMV when the patient is providing no respiratory effort. Clinician sets a mandatory minute ventilation (MV) by setting tidal volume (TV) and respiratory rate (RR). The machine slowly increases airway pressure until the adequate tidal volume is generated. Does not allow for patient respiratory efforts between breaths, therefore an uncomfortable mode in a spontaneously breathing patient and is used primarily during the maintenance portion of a surgical case.

Pressure Regulated Volume Control (Volume Control Autoflow)

A dynamic pressure control mode where the compliance of the lung is measured with each mechanical breath. In doing this, the machine determines breath by breath what amount of airway pressure it will require to generate a set TV. Parameters are the same as in Volume Control, but the machine is not delivering a set volume, it is delivering a calculated pressure for a calculated period of time to generate a desired volume based upon the calculate lung compliance. This is the primary mode that is utilized during surgeries here at NMCP as it dynamically adjusts to changes in lung compliance such as positioning changes or pneumoperitoneum during laparoscopic cases. Can be set to synchronize to the patient's breathing to provide SIMV type ventilation if the patient is breathing on their own.

Pressure Support Ventilation (Pressure Support)

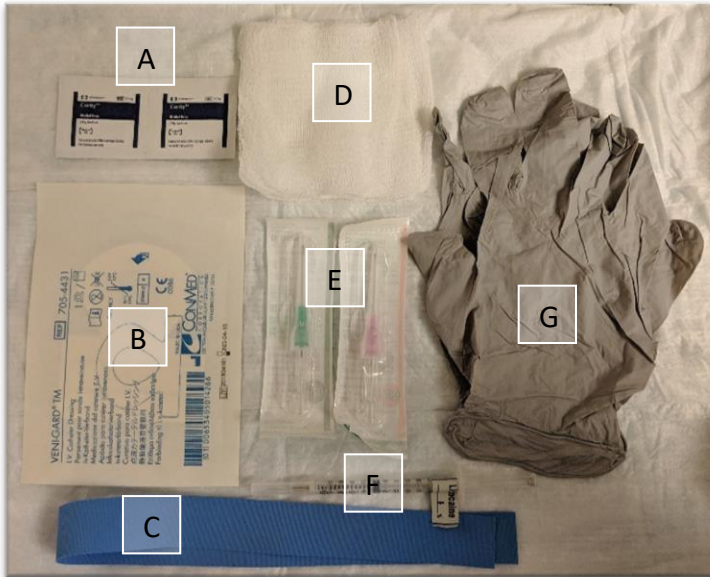
Utilized in a spontaneously breathing individual. The machine delivers a set amount of synchronized pressure support when it detects a patient breath, offloading the work of breathing through an anesthesia circuit. A backup rate can be set to ensure that the patient maintains ventilation if the surgical stimulus changes. Used primarily as a weaning mode, where the patient is hypoventilated with the pressure support backup rate in order to build up CO₂ at the end of a case. This hypercarbia drives spontaneous respirations which will then be supported by the anesthesia machine in this mode. Support is then weaned down prior to extubation. Minimal settings are considered 5 cmH₂O of pressure support and 5 cmH₂O of PEEP. These are the settings that theoretically only negate the work of breathing through an anesthesia circuit and provide no supplemental ventilator support.

Manual/Spontaneous

This is the only mode where the variable bypass valve is activated on our machines. It is also the only mode where the patient can be hand ventilated using the bag. Used primarily for hand ventilation at the start of a case, or as a final test of respiratory function prior to extubation, as absolutely no support is being provided in this mode.

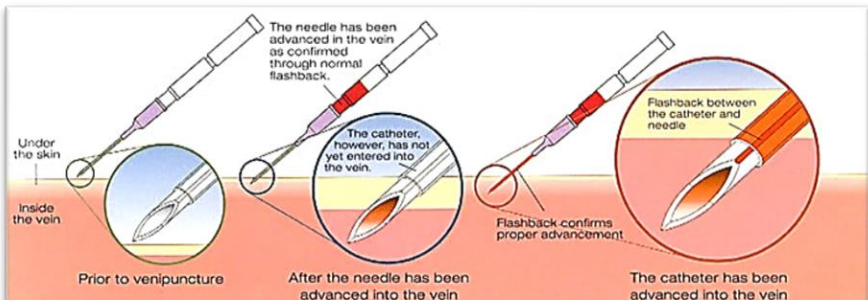
IVs

Preoperative IV Start Kit



A. Alcohol Swabs; B. Venigard Dressing; C. Tourniquet; D. 4x4 Gauze; E. IV Catheters (20g and 18g);
F. 1% Lidocaine in a 1mL Tuberculin Syringe; G. Gloves

IV Catheter Placement Technique



Standard ASA Monitors

- Pulse Oximeter
 - 660 and 940 nm wavelength light emitted and detected
 - Calculates ratio of oxyhemoglobin to deoxyhemoglobin
 - Oxygenation and perfusion monitor
 - Audible tone
 - Pleth Variability Index (PVI) can be used to determine fluid responsiveness (>13)
- Electrocardiography
 - Arrhythmia monitoring (Lead II, best P wave)
 - ST segment monitoring (Lead V5, best sensitivity for ST)
- Non-Invasive Blood Pressure
 - Oscillometric monitor
 - Cessation of oscillations = Systolic blood pressure
 - Maximal oscillations = Mean blood Pressure
 - Diastolic blood pressure must be calculated
 - Every 5 minutes at minimum, standard is every 3 minutes
- Temperature Monitor
 - Core Temp Locations
 - Nasopharyngeal
 - Distal 1/3 of esophagus
 - Tympanic Membrane
 - Pulmonary Artery
- Ventilator Monitors
 - End Tidal CO₂ (Ventilation & Perfusion)
 - FiO₂ with low oxygen alarm

Postop Nausea and Vomiting

Primary Risk Factors	Secondary Risk Factors
Female Gender Non-Smoker History of PONV History of Motion Sickness Intended Administration of Opioids	Sex Organ Surgery Strabismus Surgery Intra-abdominal Surgery Nitrous Oxide Use Inhaled Anesthetic Use Etomidate Use Young Adult Age Obesity Delayed Gastric Emptying

In general, the risk factors for PONV are additive. The general population without risk factors has around a 10% risk of PONV, while a patient with 4 primary risk factors may have upwards of an 80% risk. In patients deemed to be “High Risk” (generally ≥ 2 primary risk factors), a multimodal approach to pharmacoprophylaxis is recommended.

Common Intraoperative Prophylaxis	Common Postoperative Treatments
Ondansetron Dexamethasone Propofol Infusion Transdermal Scopolamine Aprepitant Total Intravenous Anesthetic (TIVA) Opioid Sparing Anesthetic	Promethazine Low Dose Propofol Low Dose Haloperidol Intramuscular Ephedrine Sphenopalatine Ganglion Block

Useful Resources

Anesthesiology and Critical Care Reviews and Commentaries (ACCRAC) Podcast.

Brown EN, et al. Multimodal General Anesthesia: Theory and Practice. *Anesthesia & Analgesia*. 127(5):1246-1258, November 2018.

Gan TJ, et al. Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. *Anesthesia & Analgesia*. 2014. 118(1):85-113

Mentsoudis SG. Et al. Society of Anesthesia and Sleep Medicine Guideline on Intraoperative Management of Adult Patients With Obstructive Sleep Apnea. *Anesthesia & Analgesia*. 2018. 127(4):967-987.

Dunn LK, et al. Perioperative Use of Intravenous Lidocaine. *Anesthesiology*. 2017. 126, 729-737.

Pajewski TN. Current approach on spinal cord monitoring: the point of view of the neurologist, the anesthesiologist and the spine surgeon. *Eur Spine J*. 2007 Nov; 16(Suppl 2): 115–129.

ASA Committee on Standards and Practice Parameters. Standards for basic anesthetic monitoring. Last affirmed on October 28, 2015.

Brull, SJ, et al. Current Status of Neuromuscular Reversal and Monitoring. *Anesthesiology*. 2017. 126(1): 173-90.

Useful Phone Numbers

ANESTHESIA TECH WORKROOM	3-3249
BLOOD BANK	3-1626
FACILITIES MANAGEMENT	3-0050
INPATIENT PHARMACY	30284
LAB	3-1568
NMCP QUARTERDECK	3-5008
OB ANESTHESIA OFFICE	3-4616
PREOP HOLDING FRONT DESK	3-3401
PACU	3-3344/39
OR #1	3-3010/11
OR #2	3-2015/16
OR #3	3-3024/25
OR #4	3-3022/23
OR #5	3-3087/88
OR #6	3-3030/31
OR #7	3-3032/33
OR #8	3-3036/37
OR #9	3-3034/35
OR #10	3-3089/90
OR #11	3-3026/27
OR #12	3-3091/92
OR #13	3-3093/94
OR #14	3-3097/98
OR #15	3-3099/100
OR #16	3-3104/05
OR #17	3-3101/02

Staff Directory

Name	Home Number	Cell Number
ADAMS, JENNIFER	757-546-3400	757-681-3400
LCDR BOOTH, GREGORY	N/A	847-987-7387
LCDR BRADLEY, A. STEVEN	N/A	904-589-1790
CDR BRONAUGH, STEPHEN	N/A	714-264-3969
LCDR BUSER, RAQUEL	N/A	757-739-0211
CDR GEIGER, PHILLIP	N/A	559-836-3920
CAPT GIST, RICHARD	757-967-5967	225-326-8942
GRAUERHOLZ, MARIA	757-518-0131	757-619-7760
LCDR HEROD, MARCUS	N/A	216-233-4920
LCDR HIGGS, MAUREEN	757-935-5099	760-473-6646
CDR LEE, MICHAEL	N/A	202-277-7884
CDR LONGWELL, JASON J	N/A	301-980-3610
CDR MCDONALD, KATHLEEN	N/A	301-325-4549
CDR MOORE, JEFFREY	N/A	850-384-3580
CDR O'DONNELL, ROBERT	757-335-7883	757-434-8070
LCDR SLAMA, ELIZABETH	N/A	843-557-9347
CAPT STEDJELARSEN, ERIC	N/A	619-339-0223
CDR TROWBRIDGE, DAVID	N/A	858-531-0348

ASA-Physical Status Class	Definition	Examples, Including, but Not Limited to
I	A normal healthy patient	Healthy, nonsmoking, no or minimal alcohol use
II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Examples include (but not limited to) current smoker, social alcohol drinker, pregnancy, obesity (30 < BMI < 40), well-controlled DM/HTN, mild lung disease
III	A patient with severe systemic disease	Substantive functional limitations; one or more moderate to severe diseases. Examples include (but not limited to) poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥ 40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, premature infant PCA < 60 weeks, history (> 3 months) of MI, CVA, TIA, or CAD/stents
IV	A patient with severe systemic disease that is a constant threat to life	Examples include (but not limited to) recent (< 3 months) MI, CVA, TIA, or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, sepsis, DIC, ARDS, or ESRD not undergoing regularly scheduled dialysis
V	A moribund patient who is not expected to survive without the operation	Examples include (but not limited to) ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction
VI	A declared brain-dead patient whose organs are being removed for donor purposes	

The addition of "E" denoted emergency surgery; an emergency is defined as existing when delay in treatment of the patient would lead to a significant increase in the threat to life or body part.

ARDS = acute respiratory distress syndrome; BMI = body mass index; CAD = coronary artery disease; COPD = chronic obstructive pulmonary disease; CVA = cerebrovascular accident; DIC = disseminated intravascular coagulation; DM = diabetes mellitus; ESRD = end-stage renal disease; HTN = hypertension; MI = myocardial infarction; PCA = post conceptual age; TIA = transient ischemic attack.

Adapted from <https://www.asahq.org/resources/clinical-information/asa-physical-status-classification-system>.

Lidocaine	1-1.5 mg/kg
Propofol	2-3 mg/kg
Succinylcholine	1-1.5 mg/kg
Rocuronium	0.6-1.2 mg/kg
Fentanyl	25-50 mcg bolus
Hydromorphone	0.2-0.4 mg bolus
Isoflurane	1 MAC = 1.15%
Sevoflurane	1 MAC = 1.85%
Desflurane	1 MAC = 6.0%

Inches	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
Centimeters	142	145	147	150	152	155	157	160	163	165	168	170	173	175	178	180	183	185	188	191	193

Pounds	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
Kilograms	45	50	55	59	64	68	73	77	82	86	91	95	100	105	109	114	118	123	127	132	136

DON'T PANIC