

What Anesthesiologists do; What is Anesthesia?

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Consultant anesthesia & intensive care

Shifa hospital

History of Anesthesia

- 1842 Diethyl ether was used to produce surgical anesthesia
- Since then , there has been continuous improvement and anesthesia has become a recognized medical specialty.
 - New drugs
 - New techniques
 - Advance in basic and clinical research
 - Anesthesiology as a perioperative medicine

**Dr. William
Morton
demonstrate
use of ether
anesthesia
in 1846**





• Ether Day, 1846 •

Waters and Lewis, 1846

- 1846 Ether was used by Dr. William T. Morton successfully at Mass. General Hospital
- 1853 Chloroform administered by Dr. Snow to Queen Victoria for the birth of prince Leopold
- 1884 Cocaine used by Koller to produce topical anesthesia
- 1889 Spinal anesthesia by Bier
- 1933 Cyclopropane was used for surgical anesthesia
- 1934 Thiopental used for induction of anesthesia
- 1949 Succinylcholine was used as a muscle relaxant

- 1950s New generation of inhaled anesthetics discovered
- 1989 Propofol was used
- 1990 Pulse oximetry added to standards for anesthesia monitoring
- 1992-1994 Desflurane and Sevoflurane used clinically
- 1996 End-tidal CO₂ added to standards for anesthesia monitoring

- Anesthesiology is represented now with:
 - Professional societies
 - Scientific journals
 - Residency review committee
 - Boards of Anesthesiology

What is Anesthesiology?

- Anesthesiology is the practice of medicine dedicated to the relief of pain and total care of the surgical patient before, during and after surgery
- Education:
 - Four to Five years of anesthesia residency
 - Additional 1-2 years of research and/or subspecialty training
 - Pain
 - Intensive care
 - Pediatrics
 - OB
 - Neurosurgery
 - Cardiothoracic

- The practice of anesthesia is beyond the OR
 - Preoperative evaluation clinic
 - Post-operative care unit (recovery)
 - Acute and chronic pain management
 - Intensive care units
 - Trauma
 - Labor and delivery
 - Radiology, MRI , cardiac lab procedures
 - Office-based anesthesia
 - Research

How to prepare your patient for surgery?

Pre-operative evaluation

- To determine the medical status of the patient
- Develop a plan of the anesthetic care
- Reviewing with the patient or responsible adult the anesthetic plan (consent)

Pre-operative evaluation-cont

- History
- Physical examination
- Lab. Results if needed
- Consultation with other specialties in certain cases

History from

☐ Patient ☐ Patient / Guardian ☐ Significant other ☐ Chart ☐ Poor historian ☐ Language barrier

Pre-Anesthesia Evaluation

☐ See previous anesthesia record dated _____ for information

Diagnosis / Proposed procedure:

Age

Gender

Height (cm)

Weight (Kg)

Temp. (°C)

Pulse (bpm)

Resp. (rate)

Blood pressure (mmHg)

O2 Sat (%)

Current medication(s):

☐ None

Previous anesthesia / operations:

☐ None

Airway

☐ Neck circumference.....cm

☐ T-M distance.....cm

☐ MP



☐ Edentulous

☐ Facial hair

☐ Obesity: BMI.....

☐ Limited Neck ROM: ☐ Yes ☐ No

☐ Mouth opening

☐ Hx difficult airway

☐ Teeth chipped / loose

☐ Short muscular neck ☐ Overbite

Family Hx Anes. Problems**Allergies**

☐ None

System				Physical exam and comments
☐ WNL Respiratory				Tobacco use: ☐ Yes ☐ No ☐ Quit packs/day yrs
Asthma	Respiratory failure	Chronic tonsillitis	Productive cough	.....
Bronchiolitis	Pleural effusion	Chronic tonsillitis	SOB / Dyspnea	.....
COPD	Pulmon. embolism	Recent URI	OSA	.....
Emphysema	Sinusitis / Rhintis	TB / +PPD	Orthopnea	.....
Bronchitis	Environ allergies	Pneumonia	Wheezing	.....
☐ WNL Caridovascular				.....
Hypertension	Hyperlipoproteinemia	Abnormal ECG	Murmur	.....
CAD/Cardiomyopathy	CHF DOE PND	Dysrhythmia	Valvular Dz/MVP	.....
Angina	Peripheral Vasc. Dz.	Hypovolemia	Rheumatic fever	.....
Stable/unstable	Exercise tolerance	Chronic fatigue	Endocarditis	.....
Myocardial infarction	Excellent/Fair/Poor	Pacemaker / ICD	Aneurysm	.....
☐ WNL Hepto / Gastrointiestinal				Pre-procedure cardiac risk assessment: ☐ < 1% ☐ 1 - 5% ☐ > 5%
Obesity	Ulcers	N & V	Gallbladder Dz	Ethanol use: ☐ Yes ☐ No ☐ Quit Frequency
Cirrhosis	Hiatal hernia	Diarrhea	Diverticulum	.....
Hepatitis/Jaundice	GERD	IBS	Colon polyps	.....
Bowel obstruction		Pancreatitis		.....
☐ WNL Neuro/Musculoskeletal				.....
Arthritis / DJD	Headaches	Muscle Dz	Syncope	.....
Back problems(LBP)	▲ ICP/Head injury	Neuromuscular Dz	Seizures	.....
CVA / TIA	Loss of consciousness	Paralysis		.....
Psychiatric disorder		Paresthesia(s)		.....

☐ WNL				Renal/Endocrine				☐ Dialysis				☐ Hemo		☐ Last date of dialysis:													
Thyroid disease				Renal insufficiency		Prostate		Type I / Type II				☐ Peritoneal		☐ Other:													
Cushing's syndrome				Renal stones		BPH/CA		UTI				☐ Kidney transplant:															
Renal failure/Dialysis				Adrenocortical insuff.		Diabetes mellitus		Pituitary disorder				.....															
☐ WNL								Other																			
Anemia				Radiation Tx		Immunosuppressed				Weight gain / loss				.....													
Bleeding disorder				Dehydration		Sickle cell Dz/Trait				Illicit drug use				.....													
Cancer				HIV / AIDS		Recent steroids				Thalassemia				.....													
Chemotherapy						Transfusion Hx								.....													
☐ WNL								Pregnancy								☐ G:				☐ P:		☐ Weeks of gestation:					
GDD						Multiple gestation				Other:						☐ EDD				☐ SROM		☐ AROM					
HELLP						Pre-eclampsia										☐ Induction				☐ Oxytocin		☐ PGE ₂		☐ Mg Drip			

Airway Assessment

Peruse

- History:
 - Surgery/procedure under GA or Sedation
 - OSA syndrome, snoring
- Congenital: syndromes e.g. Down's syndrome
- Acquired:
 - Infection
 - Tumors
 - Trauma
 - Metabolic, endocrine
 - Autoimmune

Mallampati

Evaluate

Mouth opening
Thyromental

Look

Face, Neck,
Chest



Obstruction

Tumor
Infection

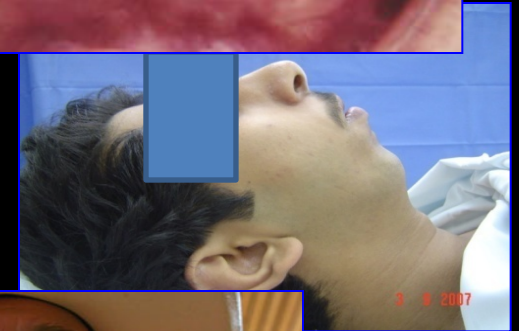
Neck Mobility

OA, RA, DM

LEMON

LEMON - Look

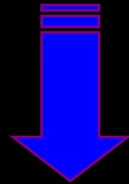
- Obesity BMI > 30 kg/m²
- Short or thick neck
- Micrognathia
- Presence of facial hair
- Overbite



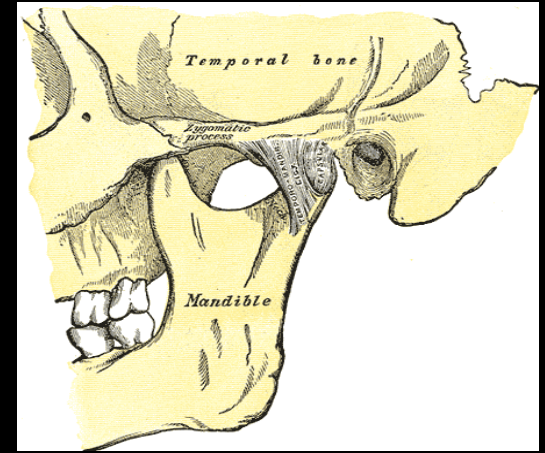
LEMON –Evaluate “4-6”

Mouth Opening

- 4-6 cm breadth of inter-incisors
- Open mouth as wide as possible
- Fit vertically *patient's* index, middle and ring fingers



Intact Temporomandibular Joint





Scleroderma



Juvenile Systemic Lupus



Normal



WOW...

Ability to “prognath”

Class 1: able to subluxate bottom incisors in front of upper incisors

Class 2: align upper and lower incisors*

Class 3: bottom incisors remain behind upper incisors*

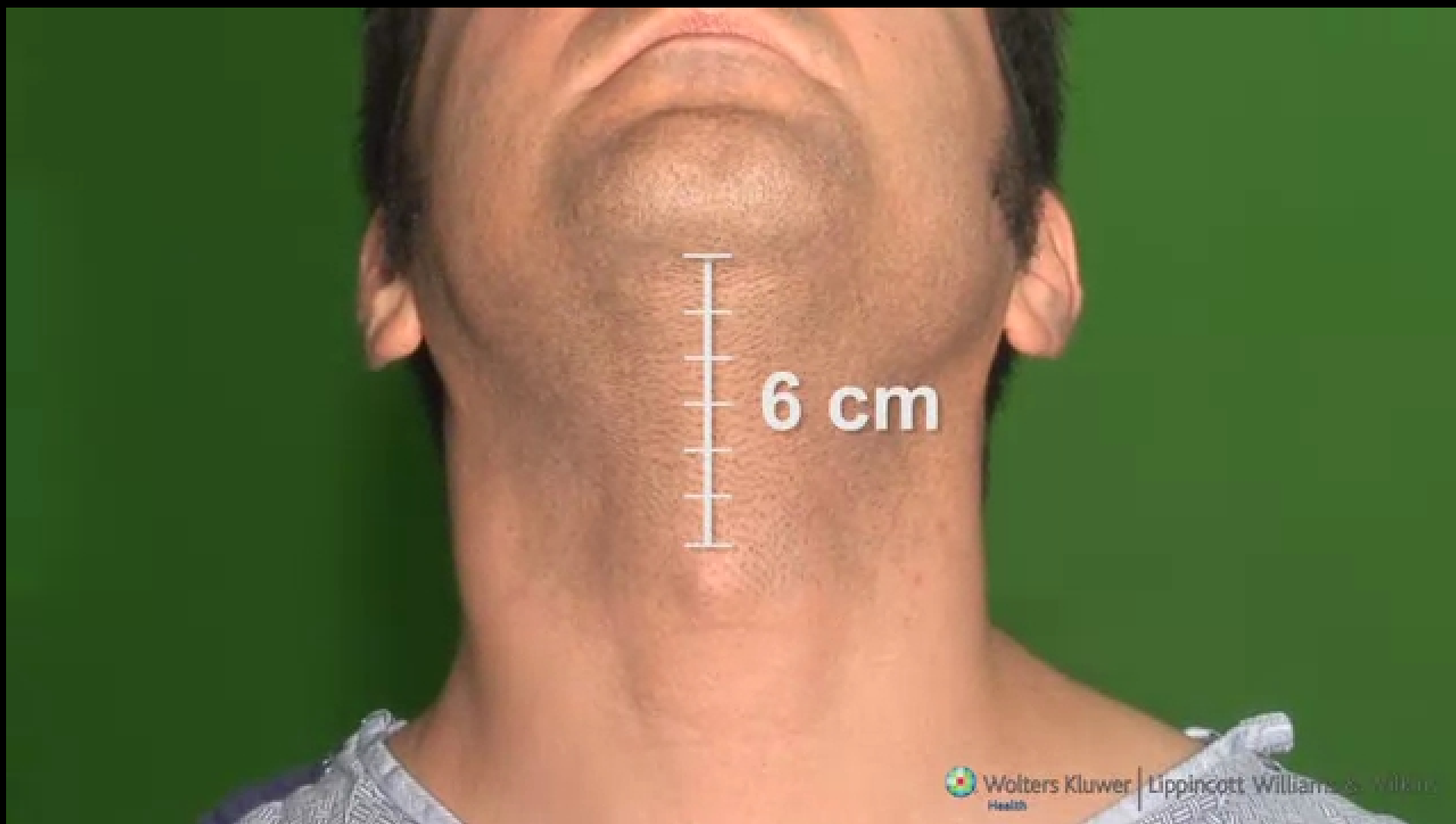
* Increased difficulty with intubation

Thyromental distance

- 6 cm breadths $\approx$ 3 fingers
mandible to thyroid cartilage
- > 6 cm in full extension



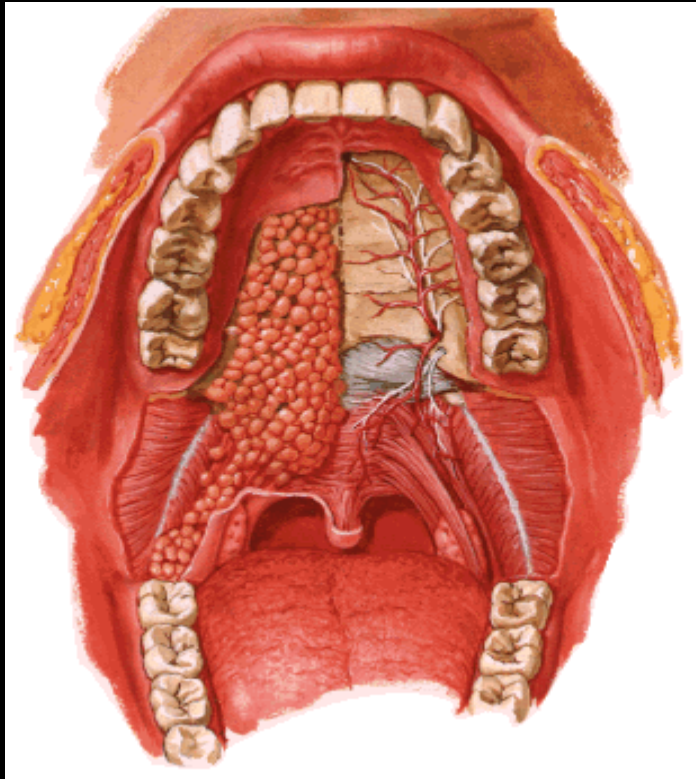
Intact Atlanto-occipital joint



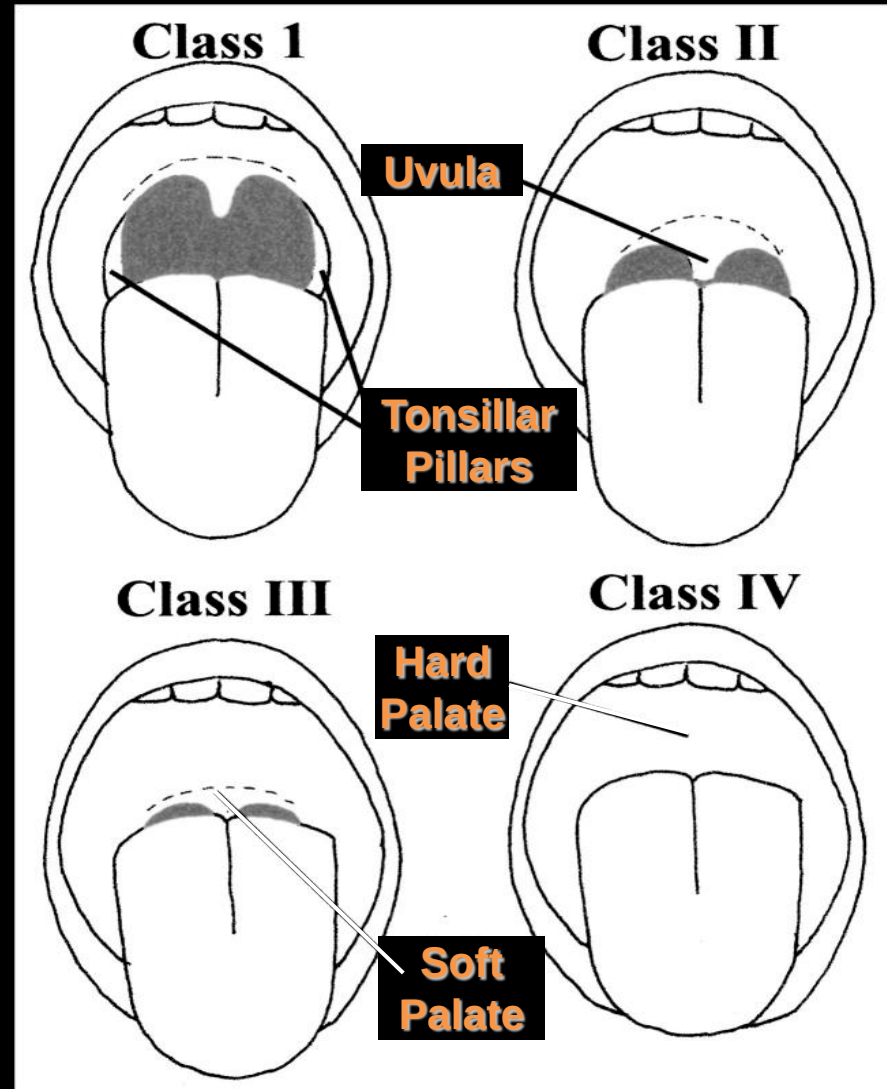
Evaluate the 3-3-2 Rule (in Trauma patients)



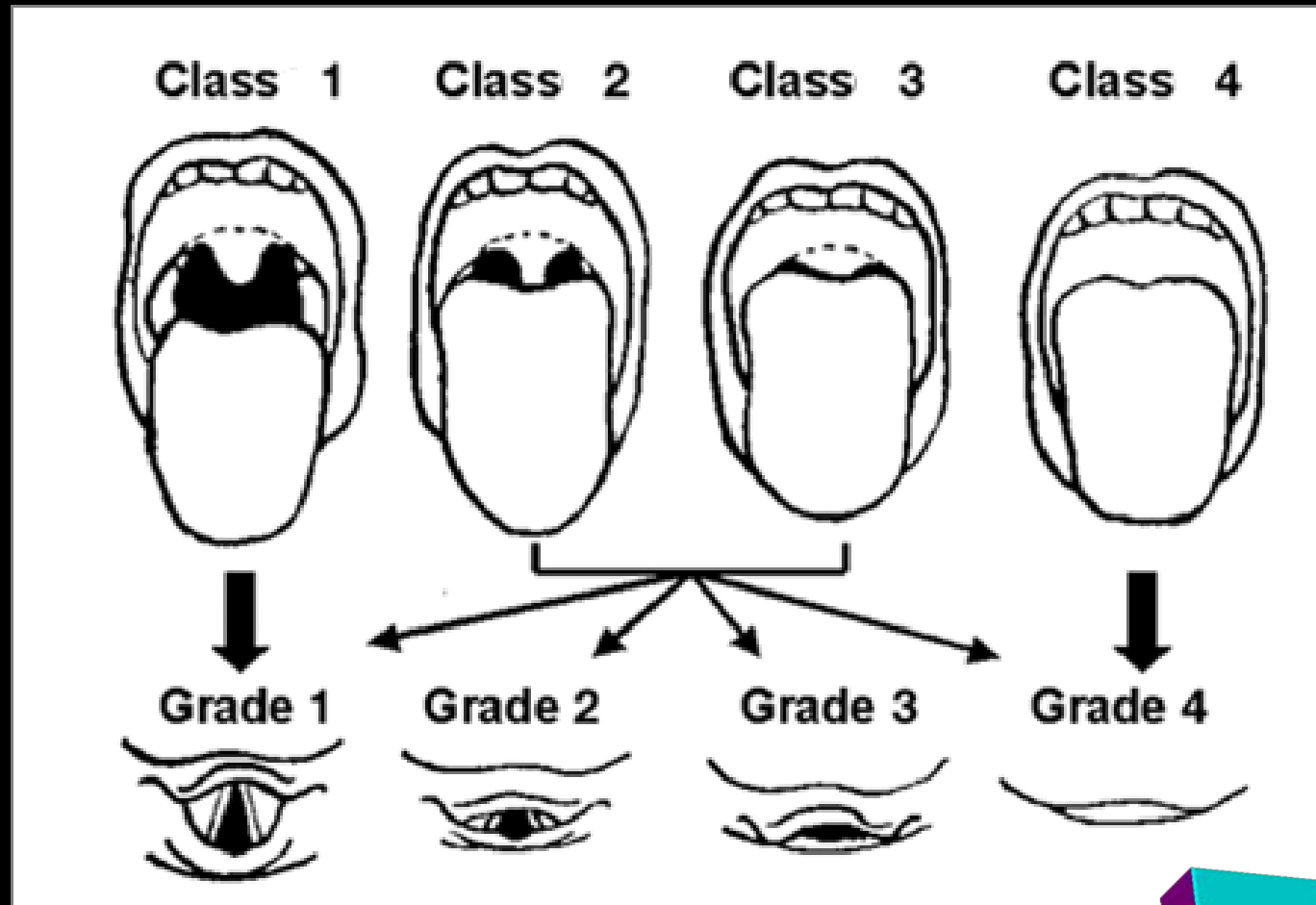
LEMON-Mallampati classification



F. Netter, MD



LEMON-Mallampati Classification



Increased difficulty in airway management



Mallampati

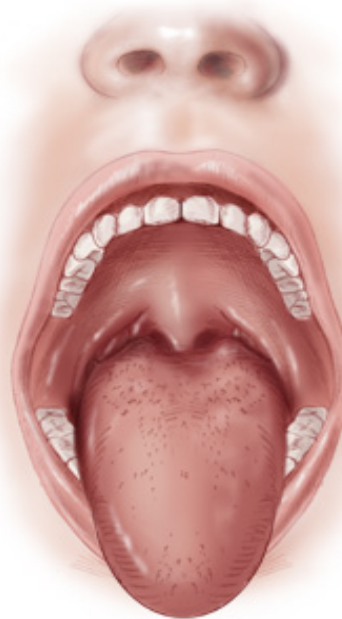
I

?



Mallampati

IV



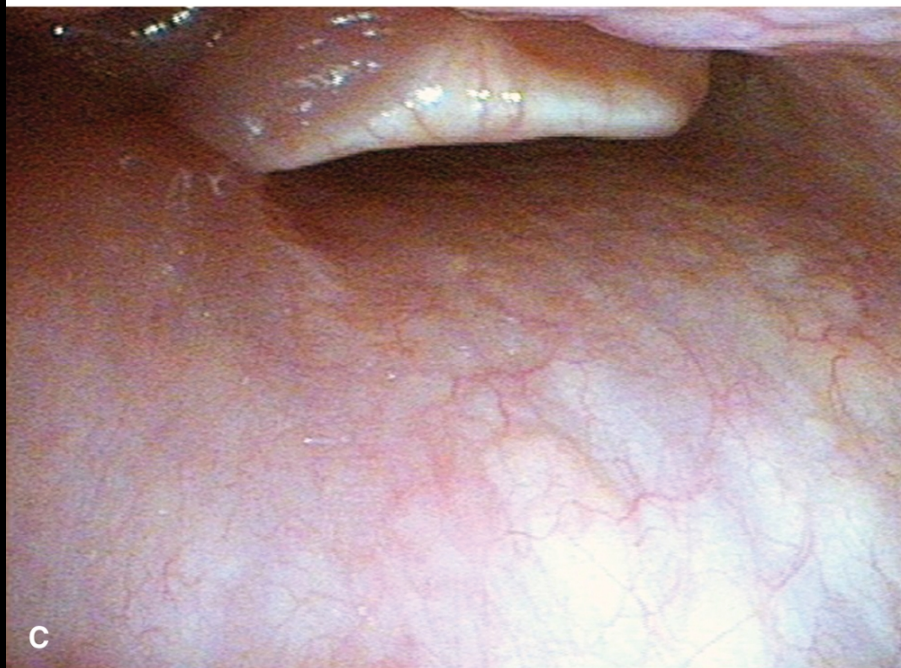
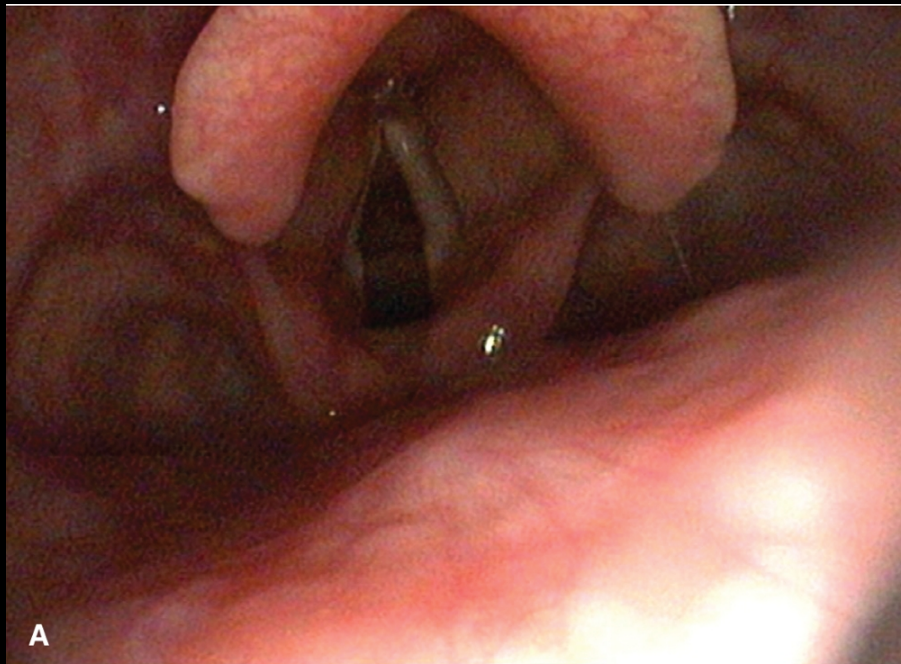
Mallampati

II



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III



LEMON -Obstruction



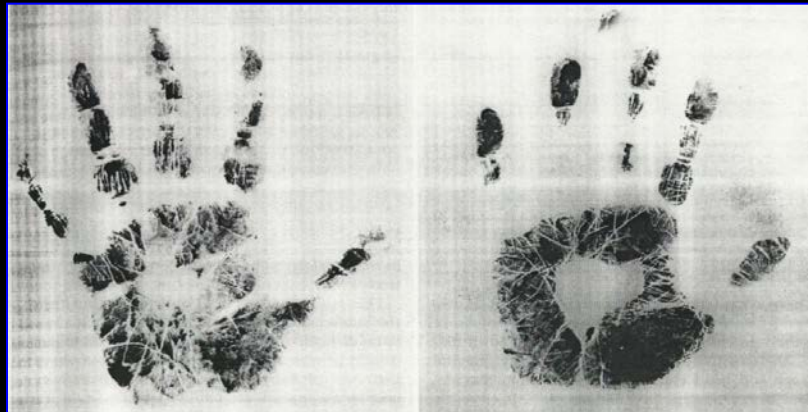
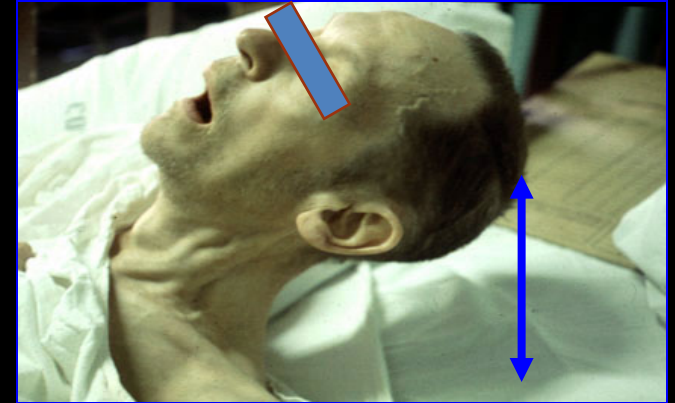
Look for upper and lower airway obstruction

- Foreign body
- Epiglottitis
- Croup
- Abscesses
- Others... surgery, tumors, radiation

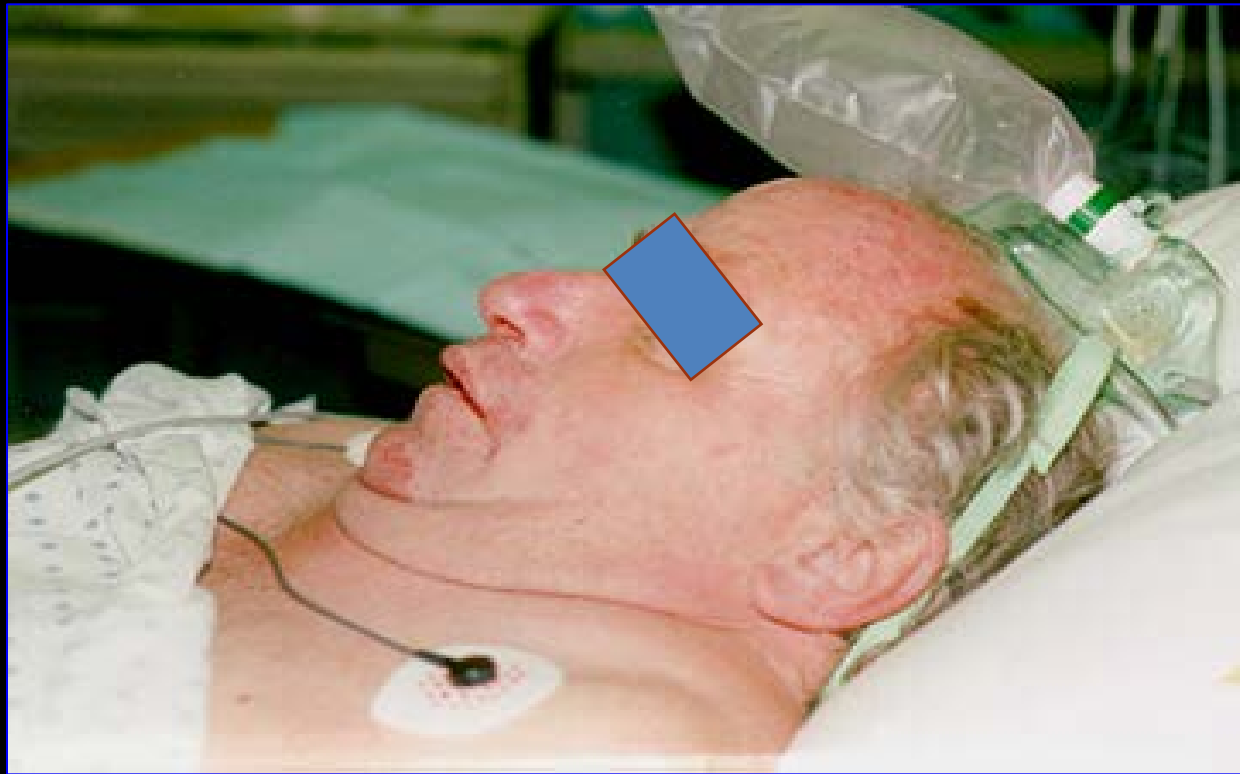


LEMON –Neck Mobility

- Neck Mobility
- RA, DM, degenerative arthritis
- History of surgery, trauma



Neck thickness
Circumference 47cm
Shirt neck size > 18



Diagnostic Studies

ECG:

PFT:
..... ☐ WNL

Chest X-ray:

Echo:

Other:

Laboratory Studies

CBC:

LFT:
..... ☐ WNL

BUN/Cr:

PT/PTT/INR:

SE:

HCG:

LMP:

Other e.g. Blood Group:

Preoperative Laboratory Testing

- The American Society of Anesthesiologists (ASA) states that:

“Preoperative tests, as a component of the preanesthesia evaluation, may be indicated for various purposes, including:”

Preoperative Laboratory Testing

- 1. Discovery of a disorder which may affect perioperative anesthetic care.**
- 2. Assessment of an already known disorder, & medical therapy which may affect perioperative anesthetic care.**
- 3. Formulation of specific plans & alternatives for perioperative anesthetic care.**

Preoperative Laboratory Testing

Update September 2013

- *“No evidence from high-quality studies supports the routine use of any specific preoperative testing prior to non-cardiac surgery.”*

“ASA Practice Advisory for Preanesthetic Evaluation”

Recommended Laboratory Testing

Blood Count	o All Patients
Coagulation Studies	o Chemotherapy o Hepatic disease o Bleeding disorder o Anticoagulants
Electrolytes	o Renal disease o Diabetes o Diuretic, digoxin, steroid use o CNS disease o Endocrine disorders

Recommended Laboratory Testing

Blood Urea Nitrogen/Creatinine

- Physiologic age ≥ 40 years
- Cardiovascular disease
- Renal disease
- Diabetes
- Diuretic or digoxin use
- CNS disease
- Class “C” procedure*

Blood Glucose

- Physiologic age ≥ 40 years
- Diabetes
- Steroid use
- CNS disease
- Class “C” procedure*

Recommended Laboratory Testing

Liver Function Tests	◦ Hepatic disease ◦ Hepatitis exposure ◦ Malnutrition
Pregnancy Test	◦ Possible pregnancy
Albumin	◦ Malnutrition ◦ Class “C” procedure*
Type and Screen	◦ Hematologic disorder ◦ Coagulation abnormality ◦ Class “C” procedure*

Recommended Laboratory Testing

Chest X-Ray

- Physiologic age ≥ 40 years
- Cardiovascular disease
- Chronic obstructive pulmonary disease (COPD)
- Malignancy

ECG

- Physiologic age ≥ 40 years
- Cardiovascular disease
- Pulmonary disease
- Diabetes
- Digoxin use
- CNS disease
- Class "C" procedure*

Recommended Laboratory Testing

***Class “C” procedures are defined as highly invasive and commonly necessitate blood administration, invasive monitoring, and postoperative care in a critical care unit**

Anesthesia Plan					
☐ Risks and benefits discussed with patient/parents/guardian		☐ NPO as per guidelines		ASA Physical Status	
☐ GA	☐ Regional/GA backup	☐ GA/RA combined		1	2
☐ LA/MAC/Deep sedation/GA backup		☐ Past-op admission to ICU		3	4
				5	
Pre-Anesthesia medications ordered:				Add "E" in Emergency	
☐ Drug				Anesthesiologist signature and stamp	
☐ Drug					
☐ Drug					
☐ Dose					
☐ Dose					
☐ Dose					
☐ Route				Date:	
☐ Route				Time:	
☐ Route					
☐ After APAC, patient and records reassessed by:				Remarks:	
Anesthesiologist signature and stamp:					
Date:					

ASA -Physical Status classification

- Serves as a general measure of the patient wellbeing
- Independent of the planned operation
- Does not describe anesthetic risks directly
- Risk of any surgery
 - Patient related factors
 - Skills of surgical team and the facility
 - Risk of the specific procedure
 - Emergency

- **ASA 1** Healthy patient
- **ASA 2** Mild systemic disease with NO limitation.
Example: HTN, DM, Obesity
- **ASA 3** Severe systemic disease WITH limitation.
Example : Poorly controlled DM
- **ASA 4** Severe systemic disease with constant threat to life.
Example: CHF, unstable angina
- **ASA 5** Moribund patient not expected to survive without the procedure.
Example: ruptured abdominal aneurysm
- **ASA 6** Brain dead, for organ donation
- **Emergency E**

ASA physical status	I	II	III	IV	V	VI
Definition	"Healthy"	"Mild systemic disease"	"Severe systemic disease but not incapacitating"	"Incapacitating disease"	"Dying"	"Declared brain death"
Age	> 3 months to < 65 years	≤ 3 months or ≥ 65 to 84 years	≤ 1 month preterm NB or ≥ 85 years			
Functional capacity; walk up 1 flight of stair or 200 m. on the level	Complete without distress	Rest at completion because of distress	Stop en route because of distress	Unable to do		
Medical status	No organic, physiologic, or psychiatric disturbance	Single/multiple systemic disease(s) with good control No functional limitations or vital organ involvement	Poorly controlled systemic disease(s) Some functional limitations No immediate life threatening condition	Poorly controlled systemic disease(s) Significant functional limitation Constant potential threat to life	End stage disease(s) and not expected to survive within 24 hours	Clinically dead patients awaiting organ harvest
Mortality rate (%)	0.06 – 0.08	0.27 – 0.4	1.8 – 4.3	7.8 – 23	9.4 – 51	

ASA physical status	I	II	III	IV	V	VI
Physiological status	Normal healthy patient	Healthy pregnant woman Active allergies	Pre-existing disease in pregnancy, GDM, PIH, Mild pre-eclampsia	Severe pre-eclampsia, Eclampsia, HELLP syndrome		
CVS		HT with BP $\leq$ 140/90 mmHg	BP $\geq$ 180/110 mmHg Stable angina MI > 6 months / Cardiac arrhythmia without hemodynamic instability Compensated heart failure EF 25% - 50%	Unstable angina Acute MI MI $\leq$ 6 months Uncontrolled cardiac arrhythmias with hemodynamic instability Severe heart failure EF < 25%	Ruptured aortic aneurysm Sepsis syndrome with hemodynamic instability S/P CPR	
RS		Well controlled asthma (attack < 1 per week) Heavy smoker (> 20 pack year) without COPD	Stress-/ exercise-induced or hospitalized asthma COPD on medications	Asthma or COPD with exacerbation		
CNS		Well controlled epilepsy Parkinsonism Dementia Alzheimer's disease GCS $\geq$ 13	Stroke > 6 months with or without neurologic sequelae GCS 9 to 12	Uncontrolled epilepsy Stroke < 6 months or bed-ridden status GCS $\leq$ 8		

Fasting guidelines

Elective anesthesia

Clear liquids	2 h
Breast milk	4 h
Formula milk Other milk Light meal	6 h
Solids	8 h

Anesthesia Plan

- Who is the patient?
- What is the surgery?
- Is this an Emergency or Scheduled case?

Inadequate pre-operative planning and errors in patient preparation are the most common causes of anesthetic complications

Anesthesia death rates

- 1950's 1: 1800
- 1960's 1: 10,000
- 1980's 1:20,000 to 1 : 70,000
- 1990's 1: 200,000

What does anesthesia mean?

- 4 As
 - Amnesia
 - Analgesia
 - Akinesia
 - Autonomic stability

Types of Anesthesia

- General
- Regional
- Combined
- Monitored Anesthesia Care MAC

General anesthesia

Patient is unconscious and has no awareness or other sensations

- Spontaneous ventilation
 - Endotracheal tube ETT
 - Laryngeal Mask Airway LMA
 - Mask
- Mechanical ventilation
 - Paralysis
 - ETT may be LMA

General Anesthesia

- Airway Management
- Induction
- Maintenance
- Muscle paralysis
- Emergence

Not every patient undergoing surgery needs to go under general anesthesia

Stages of anaesthesia

The Guedel's classification in 1937

Stage 1 "induction"

- The period between initial administration of induction agents & loss of consciousness. Patient progresses from analgesia without amnesia to analgesia with amnesia. Patients can carry on a conversation at this time.

Stage 2 "excitement stage"

- The period following loss of consciousness & marked by excited & delirious activity. Respirations & heart rate may become irregular. In addition, may be uncontrolled movements, vomiting, breath holding, & pupillary dilation.

Stage 3 "surgical anaesthesia"

- The skeletal muscles relax, vomiting stops , & respiratory depression occurs . Eye movements slow, then stop, patient is unconscious and ready for surgery.

Divided into 4 planes:

1. eyes initially rolling, then becoming fixed
2. loss of corneal and laryngeal reflexes
3. pupils dilate and loss of light reflex
4. intercostal paralysis, shallow abdominal respiration

Stage 4 "overdose"

- The stage where too much medication has been given relative to the amount of surgical stimulation & patient has severe brain stem or medullary depression. This results in a cessation of respiration & potential cardiovascular collapse. This stage is lethal without cardiovascular and respiratory support.

Regional

- Field block
- Nerve block
- Plexus block
- Spinal block
- Epidural block

Regional Anesthesia

ADVANTAGEA	DISADVANTAGES
Patient is awake	Hemodynamic instability
No intubation	Block failure / Inadequate
No induction	Patient cooperation
Pain control	Systemic toxicity

Monitored Anesthesia Care

- Sedation/analgesia
- Monitoring the vital signs
- Maintain the airway
- Ready to convert to general anesthesia if necessary

Surgical Diagnosis / Procedure			Date:		
.....				Start	Stop
Anesthesiologist(s)		Surgeon(s)	Anesthesia		
A. Tech.			Procedure		
Pre- Procedure			Patient Safety		
☐ Identified	☐ Patient reassessed immediately prior to anesthesia & surgery, surgical site verified - Ready to proceed	☐ Pre-Anesthetic state	☐ Anesthesia machine /Equip. / Room checked		
☐ ID Band		☐ Awake	☐ Secured with safety belt		
☐ Questioned		☐ Calm	☐ Arm(s) secured on arm boards: ☐ L ☐ R		
☐ Chart reviewed		☐ Anxious	☐ Arm(s) tucked: ☐ L ☐ R ☐ Axillary Roll		
☐ Consent signed	☐ Peri-Operative pain management discussed with patient/guardian, plan of care completed	☐ Lethargic	☐ Pressure points checked, padded, monitored		
☐ NPO since:		☐ Uncooperative	☐ Prone: No pressure on orbits / nose / genitals		
.....		☐ Unresponsive	☐ Eye care: ☐ Taped closed ☐ Ointment		
			☐ Saline ☐ Pads ☐ Goggles		

Time (hr.)				A															
Anesthesia Agents and Other Intra-Op Medications	☐ Des	☐ Iso	☐ Sevo	Cardiopulmonary Systems Airways Reassessed ☐															
	☐ N ₂ O	☐ Air	☐ O ₂																
	()	240																	
	()	220																	
	()	200																	
	()	180																	
	()	160																	
	()	140																	
	()	120																	
	()	100																	
	()	80																	
	()	60																	
	()	40																	
	()																		
Fluids	Crystalloids																		
	Colloids																		
	Blood and Components																		
Monitors	Urine (ml)																		
	EBL (ml)																		
	FIO ₂ / SpO ₂																		
	ETCO ₂																		
	Temperature																		
	BIS																		
Vent	CVP / PCWP																		
	Tidal Volume (ml) / Pressure (mmHg)																		
	Respiratory Rate																		
	Peak Pressure (cmH ₂ O)																		
	☐ PEEP	☐ CPAP	(cmH ₂ O)																
Codes	Anesthesia							Remarks:											
	Complications																		

Monitors and Equipment

- | | | |
|--|--|-------------------------------------|
| ☐ Steth: | ☐ Esoph. | ☐ Precoridal |
| ☐ Non-invasive B/P | ☐ PNS | |
| ☐ Continuous ECG | ☐ Fluid/Blood warmer | |
| ☐ Pulse oximeter | ☐ Cell saver | |
| ☐ End tidal CO ₂ | ☐ BIS | |
| ☐ Oxygen monitor | ☐ TEE | |
| ☐ ET agent analyzer | ☐ ICP | |
| ☐ Temp | ☐ FHT monitor | |
| ☐ Body warmer | ☐ IPC ☐ EP | |
| ☐ Airway humidifier | ☐ Doppler | |
| ☐ Rapid fluid infuser | | |
| ☐ NG/OG tube | ☐ Other | |
| ☐ Foley catheter | | |
| ☐ Arterial line | | |
| ☐ CVP | | |
| ☐ PA line | | |
| ☐ IV's | | |
| | | |
| | | |
| ☐ Patient position | | |

Anesthetic Technique

GA Induction

☐ Pre-O₂☐ RSI☐ Cricoid pressure☐ Intravenous☐ Inhalation☐ IM

GA Maintenance

☐ Inhalation☐ Inhalation/IV☐ TIVA☐ GA/Regional combination

Regional

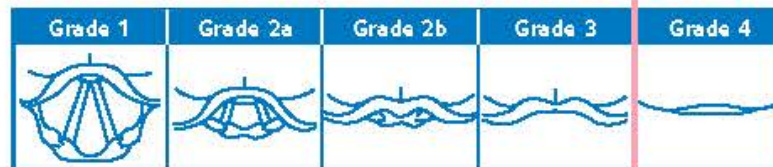
Specify:

Regional Technique

☐ Approach/Site:☐ Single☐ Continuous☐ Guidance☐ Landmarks☐ Nerve Stimulation☐ Ultrasound☐ Needle:☐ LA☐ Additive:☐ Events:☐ **Success** ☐ Complete ☐ Partial ☐ Failed ☐ Aborted☐ Catheter:☐ Test dose response:+.....-☐ Skin cm ☐ Secured☐ Performed by:☐ **Sedation and Analgesia / Monitored Anesthesia Care**

Airway Management

- ☐ Oral ETT ☐ RAE ☐ L.T.A ☐ Magill forceps
☐ Nasal ETT ☐ LMA#
☐ Stylet ☐ LMA Fastrach#
☐ D/L ☐ LMA ProSeal#
☐ Tube size: ☐ FOI ☐ Awake
☐ Blade: ☐ Laser ETT ☐ Blind
☐ Attempts X: ☐ Armored ETT ☐ Bougie
☐ **Grade (with / without external laryngeal pressure)**



- ☐ Secured at: cm ☐ DLT
☐ ET CO₂ present ☐ in place OA TT ETT
☐ Breath sounds = bilateral ☐ Mask vent:
☐ Oral airway ☐ Nasal airway
☐ Circle system ☐ T-piece ☐ Bite block
☐ Mask ☐ Via tracheotomy ☐ Coaxial
☐ Nasal cannula ☐ Simple O₂ mask

Throat pack:

Topicalization:

Nerve Block(s)

☐ **Difficult / Impossible intubation (see remarks)**

T Tourniquet

Location	mmHg	Total time
Time of delivery		
Sex:	☐ M	☐ F
Apgar:		

Postoperative Management

- Pain control
- Intensive Care Unites
 - Hemodynamic stability
 - Ventilation support

Immediate Post Anesthesia Notes				Post Anesthesia Medications / Notes			
Transfer to:			Time:	Controlled and other medications			
Temp. (°C)	Pulse (bpm)	Resp. (rate)	Blood pressure (mmHg)	Medication	Time	Dose	Route
O ₂ Sat (%)				1.			
				2.			
				3.			
				4.			
				5.			
				6.			
				7.			
				8.			
☐ A ☐ Stable ☐ Mask O ₂ ☐ Throat pack removed ☐ V ☐ Unstable ☐ NC O ₂ ☐ P ☐ Oral/nasal airway ☐ Intubated ☐ Continuous epidural analgesia ☐ U ☐ T-piece ☐ Ventilator/BVM ☐ PCEA				☐ Pain (Assessed/Managed) ☐ PONV ☐ Surgery/Anesthesia related complications in PACU ☐ Yes ☐ No If yes, explain			
☐ See progress notes for anesthesia related concerns							
Post Anesthesia Plan				Anesthesiologist signature and stamp			
☐ Medication							
☐ IV fluid							
☐ Oxygen therapy							
☐ Other recommendations and remarks				Date: Time:			

Modified Aldrete score	
Respiration:	
Able to breathe and cough	2
Limited respiratory effort (Dyspnea/splinting)	1
No spontaneous respiratory effort	0
Systolic Arterial Pressure:	
+/- 20% of pre-anesthesia level	2
+/- 20% to 50% of pre-anesthesia level	1
+/- 50% of pre-anesthesia level	0
Oxygen saturation:	
SpO2 > 94% on AIR	2
SpO2 > 94% on O2	1
SpO2 < 94% on O2	0
Consciousness:	
Fully alert, answers to verbal stimulus	2
Arousable when called	1
Unresponsive	0
Movement:	
Able to move 4 extremities	2
Able to move 2 extremities	1
No movement	0
If Aldrete score is 6 or below refer to Anesthesiologist.	
Anesthesiologist	
Discharge score	
Signature and stamp	

What qualities should a person possess to be successful in this specialty?

- Good academically.
- Detail-oriented.
- Skilful at procedures.
- Calm in stressful situations .
- Warm and caring

Thanks