

# Physical and Psychological Evaluation

“When you prepare for an emergency the emergency ceases to exist”

# Main Causes of Negative Outcomes

- Inadequate pre-operative evaluation
- Inadequate monitoring
- Lack of pharmacological knowledge of the drugs being administered

# Goals of Physical and Psychological Evaluation

- Ability to tolerate the physical and /or psychological stresses of the planned procedure
- Treatment modifications indicated to enable patient to better tolerate the stresses of the procedure
- Determine if psychosedation is indicated
- Determine most appropriate technique
- Determine if any contraindications to the drugs to be used exist

# Physical Evaluation

- Medical history questionnaire
- Physical examination
- Dialogue history
- These 3 steps provide a data base to enable you to:
  - Establish a risk factor classification for the patient
  - Seek medical consultation if indicated
  - Appropriately modify the planned treatment

# Determination of Medical Risk

1. Is the patient physically and psychologically capable of tolerating the procedure in relative safety?
2. Does the patient represent a greater risk than normal during this treatment?
3. If risk is increased, what modifications will be necessary to minimize this risk?
4. Is the risk too great for the patient to be managed as an outpatient?

# Physical Status Classification System

- ASA I-without systemic disease
- ASA II-mild systemic disease (over 60, obese, smoker, pregnancy)
- ASA III-severe systemic disease that limits activity, but is not incapacitating
- ASA IV-incapacitating disease that is a constant threat to life

# Contraindications to Sedation

- Severe respiratory diseases
  - Uncontrolled asthma
  - History of sleep apnea
  - Recent bronchitis, flu, upper respiratory infection
- Severe heart disease
- Other possible contraindications:
  - Renal disease
  - Liver disease
  - Cerebral palsy that has respiratory complications

# Who to Sedate?

- Age: No published guidelines. Many practitioners choose 24 or 36 months as the lower limit
  - Most studies have the lower limit at 24 months; however, a few studies have included younger children:
    - » 12 months - Needleman et al, 1995, Ped Dent
    - » 18 months - Sams et al, 1993, Ped Dent; Nathan and West, 1987, JDC
    - » 21 months - Shapira et al, 2004, Ped Dent
- Weight limit: No published guidelines. Many practitioners choose 10-15 kg (20-30 lbs) as the lower limit
- Tonsils 40% or less (grades 0, 1, or 2)
- ASA I or II (ASA 3 and 4 – treated in a hospital setting)
- No upper respiratory infection (URI) within the last 2 weeks
  - Recent URIs mean the airway is more “reactive” and there is more potential for adverse events like laryngospasms
- Asthma – case specific – use BZD or Antihistamine
  - NOT demerol – releases histamine

# Drug-Drug Interactions

## ■ Benzodiazepines

- ETOH-enhanced sedation
- Barbiturates-enhanced sedation, inc. resp. depression

## ■ Demerol

- Barbiturates-CNS depression
- Curariform drugs-inc. resp. depression
- MAOIs-severe HPT

# Stress Reduction Protocol for the Normal, Healthy, but Anxious Patient

- 1. Anxiety recognition
- 2. CNS depressant night before, and before appt.
- 3. AM appt., minimize waiting time
- 4. Sedation during tx prn
- 5. Profound local
- 6. Variable appt. length
- 7. Post-op pain and anxiety control

# Stress Reduction Protocol for ASA II-IV

- Recognize medical risk
- Med consult prn before tx
- AM appt.
- Pre-op/post-op VS, monitored, and recorded
- Psycho sedation during tx prn
- Profound anesthesia, variable appt. length
- Post-op pain and anxiety control

# Physical Examination

- Monitoring of vital signs
- Visual inspection of the patient
- Function tests, as indicated
- Auscultation of heart and lungs and lab tests as indicated

# Vital Signs

- BP
- HR and rhythm
- Respiratory rate
- Temperature
- Height/Weight (important to determine appropriate drug dosages)

# BP Guidelines

- Normal       $<120/<80$  (ASA 1)
- Prehypertension       $120-139/80-89$  (ASA 1)
- Stage I hypertension       $140-159/90-99$  (ASA 2)
- Stage II hypertension       $\geq160/\geq100$
- Hypertensive crisis       $>220/>120$

# Respiratory Rate

- Determination must be made surreptitiously
- Normal rate for adult is 16-20 breaths per minute; children 24-28
- Bradypnea (abnormally slow)—produced by narcotics, head trauma, shock, hypothyroidism
- Tachypnea (abnormally rapid)—seen in fever, exercise, anemia, hyperthyroidism, and alkalosis (4 breaths/min. increase with each degree of fever)

# Respiratory Rate

- Apnea – absence of respirations
- Dyspnea – labored breathing; seen in asthma/COPD/CHF
- Hyperpnea – increased depth of respiration; hyperventilation
- Orthopnea – dyspnea in the supine position; seen in CHF

# Hyperventilation

- Abnormal increase in rate and depth of respiration
- Most commonly caused by extreme psychological stress
- Patient may experience light-headedness and tingling of fingers
- Patient will change breathing pattern if they know you're watching

# Temperature

- Should be monitored orally unless behavior prohibits
- Mercury or digital
- Patient must not have eaten, smoked, or had anything to drink for previous 10 minutes
- Leave thermometer in mouth for 2 minutes
- Infection control

# Temperature

- 98.6 degrees F is only an average
- True range of normal is 96.8-99.6 degrees F
- Normally varies from 0.5 to 2 degrees F during the day
- Lowest in early morning
- Fever is temperature above 99.6 degrees F

# Temperature

- Above 101 degrees F usually indicates active disease process
- Evaluate cause of fever prior to tx
- If fever is of dental or periodontal origin, immediate treatment is required and abx and antipyretic tx indicated
- 104 degrees F or higher, need medical consult
- Do not administer CNS depressants until fever has been treated

# Temperature

- Axillary temperature is 1 degree lower than oral
- Rectal temperature is 1 degree higher than oral

# Airway Considerations

- Practitioners should examine the airway before planning a sedation
- 2 concerns:
  - Once the patient is sedated and relaxed, how much soft tissue is there that could obstruct the airway? – this is why we examine the tonsils – the more tonsillar tissue, the more tissue that can “fall back” on the airway and obstruct it during a sedation
  - If an emergency occurred and the patient required intubation, how difficult am I expecting the intubation to be?

# The Difficult Airway

## ■ Findings on physical examination

- Significant obesity (especially neck and face)
  - » This means there's more soft tissue to relax and obstruct the airway and to obstruct our vision if intubation is required
  - »  $\text{BMI} = \text{wt. in lbs./ht. in inches squared} \times 703$ ;  $> 30 = \text{obese}$
- Short neck, limited neck extension, decreased hyoid mental distance ( $< 3 \text{ cm}$ ), neck mass, cervical trauma, tracheal deviation and dysmorphic features
- Small mouth ( $< 3 \text{ cm}$ ), edentulous, loose teeth, high arched palate, macroglossia, tonsillar hypertrophy, non-visible uvula
- Micrognathia, retrognathia, trismus, significant malocclusion

# Body Mass Index (BMI)

## BMI Chart

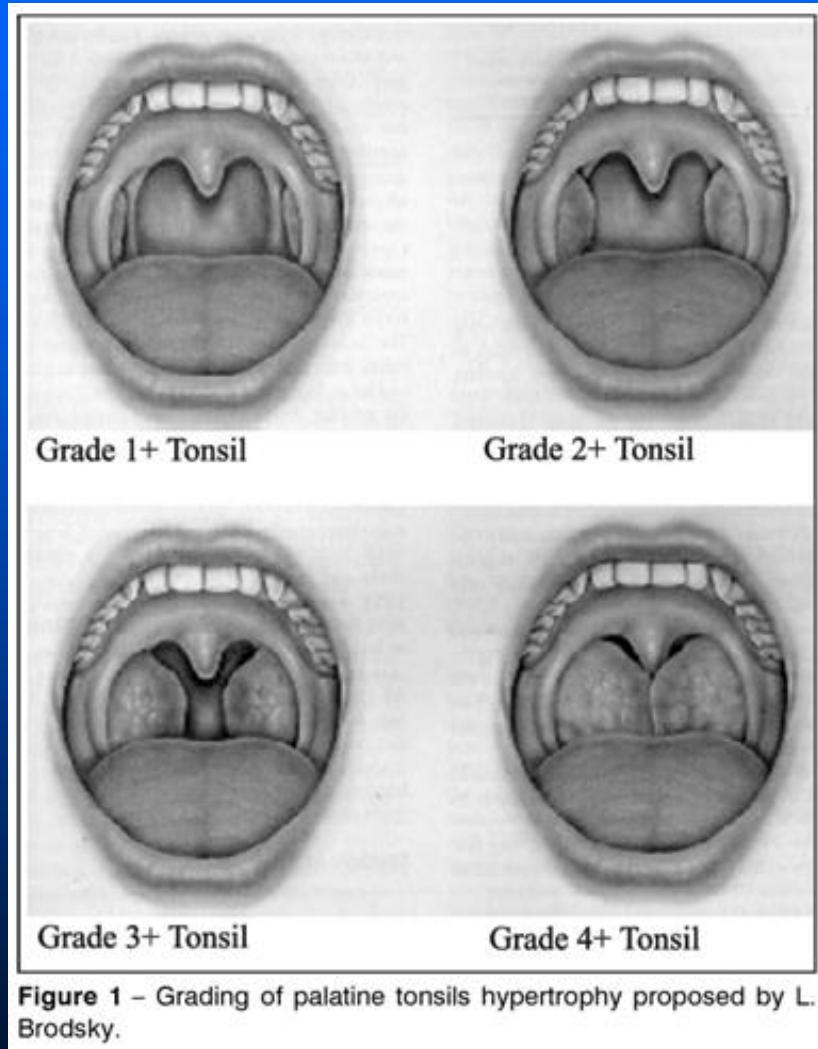
WEIGHT lbs kgs	100 45.5	105 47.7	110 50.0	115 52.3	120 54.5	125 56.8	130 59.1	135 61.4	140 63.6	145 65.9	150 68.2	155 70.5	160 72.7	165 75.0	170 77.3	175 79.5	180 81.8	185 84.1	190 86.4	195 88.6	200 90.9	205 93.2	210 95.5	215 97.7	
HEIGHT in/cm	Underweight					Healthy					Overweight					Obese					Extremely obese				
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
5'2" - 157.4	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39			
5'3" - 160.0	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39		
5'4" - 162.5	17	18	18	19	20	21	22	23	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37		
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35	
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	30	31	32	33	34	34		
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33	
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32	
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31	
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30	
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30	
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	
6'1" - 185.4	13	13	14	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26	
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26	

# Genetic Diseases at Risk for Sedation or Anesthesia Complications

List is not all-inclusive

Dwarfism (Achondroplasia)	Phenylketonuria
Angelman	Moebius Sequence
Apert	Mucopolysaccharidoses (Hunter, Hurlers)
Alagille	Neurofibromatosis (von Recklinghausen)
Beckwith-Wiedemann	Noonan
Cornelia de Lange	Oral-Facial-Digital
CHARGE	Osteogenesis Imperfecta
Cystic Fibrosis	Pierre Robin
Velo-Cardio-Facial (DiGeorge)	Polycystic Kidney
Down's	Prader-Willi
Duchenne's Muscular Dystrophy	Rubinstein-Taybi
Ectodermal Dysplasia	Sickle Cell Disease
Ehlers-Danlos	Sturge Weber
Epilepsy	Treacher Collins
Fragile X	Tuberous Sclerosis
Goldenhar (Hemifacial Microsomia)	Turner Syndrome
Gorlin (Nevoid Basal Cell Carcinoma)	Van der Woude
Hypophosphatasia	Williams Syndrome
Klippel-Feil	XXXY and XXXXY
Marfan	Butler et al, Anesth Analg, 2000;91:837-55

# Tonsils



## Brodsky Grading (used by ENTs)

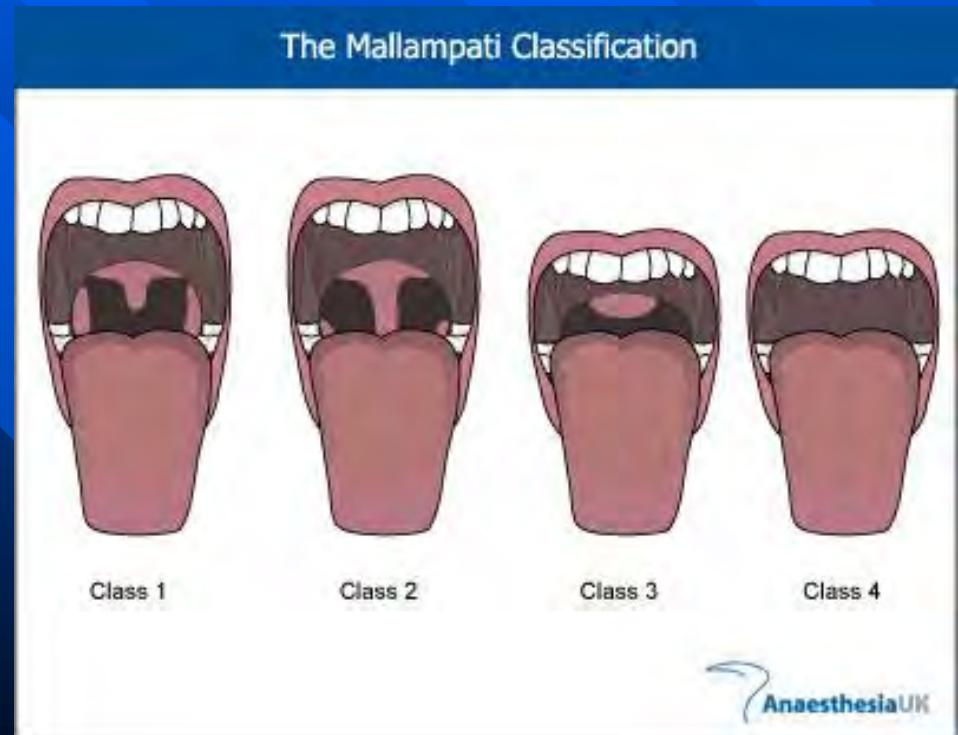
- Grade 0 – tonsils inside the tonsillar fossa with no air obstruction (AO)
- 1+ - tonsils slightly out of the tonsillar fossa presenting 25% AO
- 2+ - tonsils presenting 25-50% AO
- 3+ - tonsils presenting 50-75% AO
- 4+ - tonsils presenting 75% AO

Figure 1 – Grading of palatine tonsils hypertrophy proposed by L. Brodsky.

# Mallampati Classifications

- Class I: faucial pillars, soft palate and uvula are visualized
- Class II: faucial pillars and soft palate can be seen, but the uvula is masked by the tongue
- Class III: only the soft palate can be seen

- Mallampati classifications are used by providers who intubate patients. The lower the classification, the easier it is to view the vocal cords, and the intubation is expected to be less difficult.



# ASA NPO Guidelines

- Clear liquids - 2 hours
- Breast milk - 4 hours
- Infant formula - 6 hours
- Non-human-milk - 6 hours
- Light meal- 6 hours



These guidelines apply to all ages

These do not guarantee complete gastric emptying

Meals that contain fried or fatty foods and meat may prolong gastric emptying

# Definition of a Clear liquid

- Make sure the patient understands the definition of a clear liquid:
  - You should be able to put your hand behind the glass and still see it
  - Chicken broth, though mostly clear, contains fat and is not a clear liquid