Determination of Medical Risk

- Is the patient capable, physically and psychologically, of tolerating in relative safety the stresses involved in the proposed treatment?
- Does the patient represent a greater risk (of morbidity or mortality) than normal during this treatment?
- If the patient does represent an increased risk, what modifications will be necessary in the planned treatment to minimize this risk?
- Is the risk too great for the patient to be managed safely as an outpatient in the medical or dental office?

Physical Status Risk Classification (ASA, 1962)

ASA I – no systemic disease; a normal, healthy patient
ASA II – mild-moderate systemic disease with significant risk factors; medically stable
ASA III – severe systemic disease that limits physical activity; medically fragile but not incapacitating
ASA IV – incapacitating systemic disease that is a constant threat to life; medically debilitating
ASA V – moribund, not expected to survive 24 hours

Oral Risk Assessment

Levels of risk for dental procedures

ORA I – very low risk of adverse reaction (records, exam, impressions)
ORA II – minimal risk for stimulating an adverse reaction (routine simple procedures, LA,)
ORA III – moderate risk... (complicated procedures, extractions, sedation)
ORA IV – significant risk... (complex procedures and surgery, infections, sedation)
ORA V – very high risk... (severe infections, trauma, surgical treatments, sedation and GA)

Three Key Questions

- Are you currently being treated by a doctor for any medical condition?
- Have you ever been treated by a doctor for any medical condition?
- Are you currently taking any medications?
**MEDICAL EVALUATION**
- Chief Complaint
- History of Present Illness
- Past Medical History
- Review of Systems
- Physical Examination
- Diagnostic Studies
- Assessment/Differential Diagnosis
- Plan/Procedure

**Chief Complaint**
- Pain
- Swelling
- Bleeding
- Trauma
- Difficulty swallowing/breathing
- “Bite off”
- Facial deformity (developmental)

**History of Present Illness**
*Story in Chronological Order*
- Location
- Radiation
- Duration
- Quality
- Intensity
- Timing
- Exacerbates ??
- Alleviates ??
- Neurosensory deficit
- Motor deficit
- Autonomic findings

**Patient Evaluation and Risk Assessment**

**MEDICAL EVALUATION**
- Chief Complaint
- History of Present Illness
- Past Medical History
- Review of Systems
- Physical Examination
- Diagnostic Studies
- Assessment/Differential Diagnosis
- Plan/Procedure

**Past Medical History**
- Cardiovascular
- Pulmonary
- Hematological
- Liver/GI
- Endocrine
- Renal
- Immunological/Rheumatological
- Neurological
- Infectious Disease
- Immunocompromised states
Past Medical History
- Hospitalizations
- Surgical history
- Family history
- Psychosocial history
- Habit history
- Drug history
- Allergies/Adverse drug reactions
- Medications

Cardiovascular Disease
- Hypertension
- Rheumatic fever, RHD, murmurs
- Congenital heart disease
- Valvular disease
- Infective endocarditis
- Angina/Ischemic heart disease
- Heart failure/CHF
- Arrhythmias
- Valve replacement
- Heart transplant

Pulmonary Disease
- Asthma
- Chronic Obstructive Disease
  - Chronic bronchitis
  - Emphysema
- Tuberculosis
- Cystic fibrosis
- Lung cancer
- Lung resection
- Lung transplant

Hematological Disease
- Thrombocytopenic purpuras – platelets
- Hemophilia A/B – factor deficiencies
- Von Willebrand’s disease
- Coumadin therapy – anticoagulation
- Aspirin therapy
- Blood dyscrasias (anemia, WBC)

Liver/GI Disease
- Hepatitis – A, B, C, D, etc.
- Cirrhosis
- Liver failure – transplant
- GERD - esophagitis
- Duodenal/stomach ulcer disease
- Ileitis/colitis
- Malabsorption/diarrhea
- Irritable bowel syndrome

Endocrine Disease
- Diabetes Mellitus
- Thyroid disorders – hyper/hypo-
- Hypothalamic/pituitary disorders
- Adrenal disorders
- Steroid therapy
- Hormone replacement therapy
- Oral contraceptives
<table>
<thead>
<tr>
<th>Renal Disease</th>
<th>Immunologic/Rheumatologic Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary glomerular disease</td>
<td>Rheumatoid arthritis/JRA</td>
</tr>
<tr>
<td>Acute/chronic renal failure</td>
<td>Osteoarthritis</td>
</tr>
<tr>
<td>Nephrolithiasis</td>
<td>Osteomyelitis</td>
</tr>
<tr>
<td>Renal cysts and cystic disease</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Neoplasms</td>
<td>Systemic lupus erythematosis</td>
</tr>
<tr>
<td>Dialysis therapy</td>
<td>Polymyositis/dermatomyositis</td>
</tr>
<tr>
<td>Kidney transplant</td>
<td>Temporal arteritis/Polyarthritis rheaumatica</td>
</tr>
<tr>
<td></td>
<td>Fibromyalgia</td>
</tr>
<tr>
<td></td>
<td>Chronic fatigue syndrome</td>
</tr>
<tr>
<td></td>
<td>Joint replacements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neurological Disease</th>
<th>Infectious Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seizure disorder (epilepsy)</td>
<td>STD's</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>Cerebrovascular accident (Stroke)</td>
<td>Lyme disease</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>Herpes virus (I and II)</td>
</tr>
<tr>
<td>Dystonia/dyskinesia</td>
<td>Hepatitis virus</td>
</tr>
<tr>
<td>Peripheral neuropathies/NMJ disorders</td>
<td>Cytomegalovirus (CMV)</td>
</tr>
<tr>
<td>Mental retardation</td>
<td>Epstein Barr virus (EBV)</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>Human Immunodeficiency virus (HIV) - AIDS</td>
</tr>
<tr>
<td>Muscular dystrophy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Immunocompromised States</th>
<th>Hospitalizations/ Surgical History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organ transplant</td>
<td>Reason(s)</td>
</tr>
<tr>
<td>Bone marrow transplant</td>
<td>Frequency</td>
</tr>
<tr>
<td>Chemotherapeutic agents</td>
<td>Course/Complications</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>General anesthesia problems</td>
</tr>
<tr>
<td>HIV disease/AIDS</td>
<td>Medication problems</td>
</tr>
<tr>
<td>Pregnancy??</td>
<td>Bleeding problems</td>
</tr>
</tbody>
</table>


Habit/Drug History
- Alcohol
- Tobacco (nicotine)
- Marijuana
- Cocaine
- Opioids
- Benzodiazepines
- Other CNS stimulants
- Herbal medicine

Allergies/Adverse Drug Reactions
- Penicillin's
- Other antibiotics (Sulfa drugs)
- Anti-inflammatory drugs (Aspirin & NSAIDs)
- Codeine and other opioids
- Local anesthetics??

MEDICAL EVALUATION
- Chief Complaint
- History of Present Illness
- Past Medical History
- Review of Systems
- Physical Examination
- Diagnostic Studies
- Assessment/Differential Diagnosis
- Plan/Procedure

Current Medications

Review of Systems
- General
- Skin
- Head, eyes, ears, nose and throat
- Neck
- Cardiovascular
- Chest
- GI/GU
- OB/GYN
- Neurological
- Psychiatric

Physical Examination
- Inspection
- Palpation
- Percussion
- Auscultation
Vital Signs

- Pulse rate
- Blood pressure
- Respiration rate
- Temperature
- Pain level

Physical Examination

- Skin
- HEENT
- Neck
- Cardiac
- Lungs
- Abdomen
- Musculoskeletal
- Neurological

LOCAL ANESTHESIA

CONTRAINDICATIONS

1. Absolute
2. Relative

Allergic Reactions

- Local anesthetic – ester vs. amide
- Sulfur compounds – LA (articaine)
- Metabisulfite preservative
  (vasoconstrictors)-no cross
  reaction with true “sulfa” allergy
- Methylparaben*

Allergic Hypersensitivity

- Local anesthetic – ester vs. amide
- Sulfur compounds – LA (articaine)
- Metabisulfite preservative
  (vasoconstrictors)-no cross
  reaction with true “sulfa” allergy
- Methylparaben*

**Table 17-6: Classification of allergic diseases (modified from Goyette and Goll)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanism</th>
<th>Principle and Route of Action</th>
<th>Time of Onset</th>
<th>Clinical Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Anaphylactic (prompt, severe, without mediator)</td>
<td>IgE antibody to allergen</td>
<td>Rapid</td>
<td>Anaphylaxis (larynx, heart, anaphylactic shock)</td>
</tr>
<tr>
<td></td>
<td>Genes (functional)</td>
<td>IgE antibody to allergen</td>
<td>Ultra-</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
<tr>
<td></td>
<td>Genes (nonfunctional)</td>
<td>IgE antibody to allergen</td>
<td>Super-</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
<tr>
<td>II</td>
<td>Immune (delayed)</td>
<td>Delayed immune response</td>
<td>24-48 h</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
<tr>
<td></td>
<td>Immune (incomplete)</td>
<td>Delayed immune response</td>
<td>24-48 h</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
<tr>
<td>III</td>
<td>Immune (complete)</td>
<td>Delayed immune response</td>
<td>24-48 h</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
<tr>
<td>IV</td>
<td>Immune (delayed)</td>
<td>Delayed immune response</td>
<td>24-48 h</td>
<td>Urticaria, angioedema, anaphylactic shock</td>
</tr>
</tbody>
</table>
CONTRAINDICATIONS

1. Absolute
2. Relative

Atypical Plasma Cholinesterase
- Inherited autosomal recessive trait
- Rare, 1 in every 2820 (6-7%)
- LA – Elevated levels of ester local anesthetics

Malignant Hyperthermia
- Autosomal dominant
- Males > Females
- Abnormal reaction to certain medications including volatile inhalational gases and succinylcholine
- Release of Ca from sarcoplasmic reticulum triggering muscle contractions
  - Muscle rigidity, metabolic acidosis & elevated core body temperature

Malignant Hyperthermia
- Succinylcholine (77% of cases)
- Halothane (60% of cases)
- Previously believed to cause MH
  - Lidocaine
  - Mepivacaine

Methemoglobinemia
- Acquired through drugs or chemicals that are able to increase the formation of methemoglobin.
- Normal – 99% of Hb in the ferrous state, 1% in the ferric state. Methemoglobin reductase enzyme is normally functioning.

Methemoglobinemia
- Articaine (Ultracaine)
  - Prilocaine (Citanest)
  - Benzocaine (Hurricane Spray, Oragel)
- Oxidizes ferrous to ferric iron form of Hb and blocks the methemoglobin reductase pathway
- Methemoglobin levels increase (1.5 g/dl) develop 3-4 hrs after drug administration
**Medical History**
*(Physical Status)*
- Cardiovascular (uncontrolled HTN, recent MI, chest pain, coronary artery disease)
- Pulmonary (acute respiratory infection, asthma attack)
- Hematological (bleeding disorder)
- Liver/GI (cirrhosis)
- Endocrine (uncontrolled hyperthyroidism)
- Renal (renal insufficiency or failure)
- Immunocompromised states (leukemia)
- Pregnancy

**Medical History**
*(Physical Status)*
- Psychosocial history
- Allergies/Adverse drug reactions
- Medications *(MAO inhibitors, Tricyclic antidepressants and epinephrine)*