Serious reform of resident duty hours began in 1984 after the tragic death of 18-year-old Libby Zion at New York Hospital, due to a simple medical error. Zion came to the ER complaining of fever and chills and was seen by a junior resident who discussed the case by telephone with the referring physician. Zion was believed to have a common viral syndrome, was admitted to the medical service at 2 AM and was given Tylenol. The junior resident and intern re-examined Zion together later and prescribed meperidine, a strong analgesic, for chills and "agitation," in spite of the fact that the physicians knew Zion took phenelzine, a common antidepressant at the time. Phenelzine is from a class of drugs known as MAO inhibitors, which interact poorly with meperidine. All MAO inhibitors are and were commonly known to be potentially fatal - resulting in a "hypertensive crisis," characterized by convulsive seizures, fever, marked sweating, excitation, delirium, tremor, coma, and circulatory collapse - when taken in combination with drugs like meperidine.

After receiving the meperidine, Zion was noted to be restless and confused. The intern, responsible for numerous other patients and having already worked more than 18 hours without a break, ordered restraints and haloperidol, a sedating antipsychotic. By 6 AM Zion had an axillary temperature of 42° C (normal 37.5° C). Shortly thereafter she went into respiratory arrest and died.

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 hospitalized for an illness or operation?
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

Past Medical History

- Cardiovascular
- Pulmonary
- Hematological
- Liver/GI
- Endocrine
- Renal
- Immunological/Rheumatological
- Neurological
- Infectious Disease
- Immunocompromised states
<table>
<thead>
<tr>
<th>Past Medical History</th>
<th>Cardiovascular Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Hospitalizations</td>
<td>➢ Hypertension</td>
</tr>
<tr>
<td>➢ Surgical history</td>
<td>➢ Rheumatic fever, RHD, murmurs</td>
</tr>
<tr>
<td>➢ Family history</td>
<td>➢ Congenital heart disease</td>
</tr>
<tr>
<td>➢ Psychosocial history</td>
<td>➢ Valvular disease</td>
</tr>
<tr>
<td>➢ Habit history</td>
<td>➢ Infective endocarditis</td>
</tr>
<tr>
<td>➢ Drug history</td>
<td>➢ Angina/Ischemic heart disease</td>
</tr>
<tr>
<td>➢ Allergies/Adverse drug reactions</td>
<td>➢ Heart failure/CHF</td>
</tr>
<tr>
<td>➢ Medications</td>
<td>➢ Arrhythmias</td>
</tr>
<tr>
<td>➢ Drug history</td>
<td>➢ Valve replacement</td>
</tr>
<tr>
<td>➢ Allergies/Adverse drug reactions</td>
<td>➢ Heart transplant</td>
</tr>
<tr>
<td>➢ Habit history</td>
<td></td>
</tr>
<tr>
<td>➢ Psychosocial history</td>
<td></td>
</tr>
<tr>
<td>➢ Habit history</td>
<td></td>
</tr>
<tr>
<td>➢ Drug history</td>
<td></td>
</tr>
<tr>
<td>➢ Allergies/Adverse drug reactions</td>
<td></td>
</tr>
<tr>
<td>➢ Medications</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pulmonary Disease</th>
<th>Hematological Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Asthma</td>
<td>➢ Thrombocytopenic purpuras – platelets</td>
</tr>
<tr>
<td>➢ Chronic Obstructive Disease</td>
<td>➢ Hemophilia A/B – factor deficiencies</td>
</tr>
<tr>
<td>➢ Chronic bronchitis</td>
<td>➢ Von Willebrand’s disease</td>
</tr>
<tr>
<td>➢ Emphysema</td>
<td>➢ Coumadin therapy – anticoagulation</td>
</tr>
<tr>
<td>➢ Tuberculosis</td>
<td>➢ Aspirin therapy</td>
</tr>
<tr>
<td>➢ Cystic fibrosis</td>
<td>➢ Blood dyscrasias (anemia, WBC)</td>
</tr>
<tr>
<td>➢ Lung cancer</td>
<td></td>
</tr>
<tr>
<td>➢ Lung resection</td>
<td></td>
</tr>
<tr>
<td>➢ Lung transplant</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liver/GI Disease</th>
<th>Endocrine Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Hepatitis – A, B, C, D, etc.</td>
<td>➢ Diabetes Mellitus</td>
</tr>
<tr>
<td>➢ Cirrhosis</td>
<td>➢ Thyroid disorders – hyper/hypo-</td>
</tr>
<tr>
<td>➢ Liver failure – transplant</td>
<td>➢ Hypothalamic/pituitary disorders</td>
</tr>
<tr>
<td>➢ GERD - esophagitis</td>
<td>➢ Adrenal disorders</td>
</tr>
<tr>
<td>➢ Duodenal/stomach ulcer disease</td>
<td>➢ Steroid therapy</td>
</tr>
<tr>
<td>➢ Ileitis/colitis</td>
<td>➢ Hormone replacement therapy</td>
</tr>
<tr>
<td>➢ Malabsorption/diarrhea</td>
<td>➢ Oral contraceptives</td>
</tr>
<tr>
<td>➢ Irritable bowel syndrome</td>
<td></td>
</tr>
</tbody>
</table>
Renal Disease
- Primary glomerular disease
- Acute/chronic renal failure
- Nephrolithiasis
- Renal cysts and cystic disease
- Neoplasms
- Dialysis therapy
- Kidney transplant

Immunologic/Rheumatologic Disease
- Rheumatoid arthritis/JRA
- Osteoarthritis
- Osteomyelitis
- Osteoporosis
- Systemic lupus erythematosus
- Polymyositis/dermatomyositis
- Temporal arteritis/Polyarthritis rheumatica
- Fibromyalgia
- Chronic fatigue syndrome
- Joint replacements

Neurological Disease
- Seizure disorder (epilepsy)
- Multiple sclerosis
- Cerebrovascular accident (Stroke)
- Parkinson’s disease
- Dystonia/dyskinesia
- Peripheral neuropathies/NMJ disorders
- Mental retardation
- Cerebral palsy
- Muscular dystrophy

Infectious Disease
- STD’s
- Tuberculosis
- Lyme disease
- Herpes virus (I and II)
- Hepatitis virus
- Cytomegalovirus (CMV)
- Epstein Barr virus (EBV)
- Human Immunodeficiency virus (HIV) - AIDS

Immunocompromised States
- Organ transplant
- Bone marrow transplant
- Chemotherapeutic agents
- Radiation therapy
- HIV disease/AIDS
- Pregnancy??

Hospitalizations/Surgical History
- Reason(s)
- Frequency
- Course/Complications
- General anesthesia problems
- Medication problems
- Bleeding problems
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??

Current Medications

MEDICAL EVALUATION

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

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
- Sulfat compounds – LA (articaine)
- Metabisulfite preservative (vasoconstrictors)-no cross reaction with true “sulfa” allergy
- Methylparaben*

Allergic Hypersensitivity
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)