Management of the Medically Compromised Dental Patient - Part III

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Analysis & Anemia

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3. Anemia & Anesthetics

Anemia & Anesthetics

Mild anemia:
- Use Lidocaine with Epinephrine, maximum 2 carpules

Moderate anemia:
- Use Bupivacaine with 1:200,000 epinephrine for major procedures and
- Mepivacaine without epinephrine for minor procedures

Severe cases:
- Defer Dental Rx till the patient is stabilized

NOTE: Use Mepivacaine without epinephrine ONLY for ALL procedures with 
  G6PD anemia
- AVOID PRILOCAINE AND SEPTOCAINE with all anemias

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4. Anemia & Analgesics

Anemia & Analgesics

- No Aspirin / NSAIDs: Platelet dysfunction
  Gastritis
  Acidosis

- Acidotic drugs cause hemolysis in Congenital anemias

- SAFE: Acetaminophen
  Codeine / Oxycodone / Hydrocodone with 
  Acetaminophen

- AVOID Acetaminophen and Codeine Sulphate in the G6PD patient

- Use Codeine Phosphate or Meperidine in G6PD anemia

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5. Anemia & Antibiotics

**Anemia & Antibiotics**

- Safe to use: Penicillins
  - Macrolides: Caution with Fe deficiency anemia
  - Clindamycin
  - Cephalosporins
- No sulpha drugs with G₆PD deficiency, to prevent hemolysis
- Trimethoprim and Sulphamethoxazole is not an effective antibiotic for oral infections
- Trimethoprim and Sulphamethoxazole treats respiratory & urinary tract infections

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6. Congenital Anemias: Dental Facts

**Congenital Anemias: Dental Facts**

- Hypoxia, infection or acidosis promotes “crisis” in the Congenital types of anemias
- Provide stress management using O₂ + N₂O and not Diazepam
- Diazepam depresses the respiratory center
- Use antibiotics to prevent / treat infections & promote healing
- Control pain with Acetaminophen with or without codeine
- Avoid aspirin / NSAIDS as they promote bleeding

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7. Bleeding Disorders and Blood Thinners

Bleeding Disorders and Blood Thinners

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8. Thrombocytopenia

Thrombocytopenia

• Normal Platelet Count: 150,000 - 400,000 /mm$^3$

• Thrombocytopenia occurs when platelet counts are less than 150,000/mm$^3$

• It is safe to do minor procedures in the dental setting if the platelet counts are > 50,000/mm$^3$

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9. Thrombocytopenia

Thrombocytopenia

- For outpatient periodontal or oral surgery: Platelet counts should be above 75,000/mm³
- For major surgical procedures done in the O.R. the platelet count should be above 100,000/mm³

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10. Thrombocytopenia cont.

Thrombocytopenia cont.

- Spontaneous bleeding can occur when the platelet counts are < 20,000 / mm³
- Platelet counts < 50,000 /mm³ are treated with:
  - Platelet Rich Plasma
  - Platelet Rich Concentrate
  - Desmopressin

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11. Coumadin: Alert

Coumadin: Alert

ALWAYS OBTAIN THE PT/INR FROM THE PHYSICIAN PRIOR TO PROBING A PATIENT ON COUMADIN

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12. Rheumatic Fever & SBE Prophylaxis

Rheumatic Fever & SBE Prophylaxis

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Endocarditis Prophylaxis: Recommended

- Systemic Shunts
- Prosthetic Cardiac Valves
- Prosthetic Joints
- Previous Bacterial Endocarditis
- Most Congenital Cardiac Malformations
- RHD
- Acquired Valvular Dysfunction

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Endocarditis Prophylaxis: Recommended

- Cardiomyopathy
- MVP with Regurgitation
- Valvular damage following Fenfluramine and Dextfenfluramine use
- Infuse port or Hickman Venous access
- Dacron Graft
- Occasionally, stents with angioplasty premedicated in the FIRST MONTH, if indicated by the cardiologist

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15. Endocarditis Prophylaxis: Not Recommended

Endocarditis Prophylaxis: *Not* Recommended

- Ostium Secundum ASD
- Surgical repair of an ASD / VSD / PDA without residua, beyond six months of repair
- Coronary artery bypass surgery
- MVP without regurgitation: confirmed by echocardiogram
- Functional heart murmur
- RF with NO valvular dysfunction
- Cardiac pacemakers or defibrilators

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16. Joint Prosthesis

**Joint Prosthesis**

- Staph. aureus is the most common offending organism in infections of joint prosthesis
- Staph. aureus is often resistant to Penicillin
- Any of these antibiotics is used for prophylaxis:
  - Cephalexin
  - Cefadroxil
  - Azithromycin
  - Clarithromycin
  - Clindamycin

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17. Patients with Potential Elevated Risks of Joint Infection

Patients with Potential Elevated Risks of Joint Infection

- Inflammatory Joint Diseases:
  - Rheumatoid arthritis
  - Systemic Lupus Erythematosus
- Patients with disease / drug / radiation induced immune suppression
- Insulin-dependent diabetics
- In the first two years following joint replacement
- Patients with previous prosthetic-joint infections
- Patients with acute infections at a distant site
- Hemophiliacs

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18. Premeditation Protocol

Premeditation Protocol

- Schedule successive appointments at intervals of 7-10 days
- Use Amoxicillin / Azithromycin / Clindamycin alternately, if appointments are needed at shorter intervals.

Example: Day 1: Amoxicillin
         Day 3: Azithromycin
         Day 6: Clindamycin
         Day 9: Amoxicillin

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19. Premedication & Co-Infection

Premedication & Co-Infection

Co-Infection is treated one of two ways:
• Use the same antibiotic for premedication and treatment of infection

Example:
Premed: 2.0 g Amoxicillin P.O. 1 h prior to treatment
Then start Amoxicillin 250 / 500 mg 6 hours LATER
Infection Rx: 250 / 500 mg Amoxicillin q.i.d. for 5-7 days

NOTE: Amoxicillin should not be used as premedication antibiotic during appointments for the following
2-3 weeks

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20. Premedication & Co-Infection

Premedication & Co-Infection

• Use a different antibiotic for premedication and the treatment of infection

Example:
Premed: 2.0 g Amoxicillin P.O. 1 h prior to treatment
Then start Clindamycin 150 / 300mg P.O. 6 hours
AFTER the intake of 2.0 g Amoxicillin
Infection Rx: Clindamycin 150 / 300 mg t.i.d. for 5-7 days

NOTE: No change in the premed. antibiotic needed for subsequent dental visits

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21. Hypertension

Hypertension

T.I.A. & C.V.A.
ANGINA & M.I.
RENAL DISEASE
INTERMITTENT CLAUDICATION

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22. Joint National Commission VII BP Classification

Joint National Commission
(JNC-2003) VII BP Classification

Classification of Blood Pressure of Adults Aged 18 Years and Older:

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic BP mmHg</th>
<th>Diastolic BP mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt; 120</td>
<td>&lt; 80</td>
</tr>
<tr>
<td>Pre hypertension</td>
<td>120-139</td>
<td>80 - 89</td>
</tr>
<tr>
<td>Stage I</td>
<td>140-159</td>
<td>90 - 99</td>
</tr>
<tr>
<td>Stage II</td>
<td>≥160</td>
<td>≥100</td>
</tr>
<tr>
<td>Stage III*</td>
<td>≥180</td>
<td>≥110</td>
</tr>
</tbody>
</table>

*DEFER DENTISTRY & REFER PATIENT STAT TO THE E.R./P.C.P IN STAGE III HYPERTENSION

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23. Hypertension & Vital Organ Status

Hypertension & Vital Organ Status

- VITAL ORGAN STATUS must be evaluated PRIOR to deciding on the L.A. in the presence of hypertension

- Vital organ status must be prioritized when deciding on the use of epinephrine in the L.A.

- If the vital organ status is normal then use the BP readings to decide on the type of L.A.

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24. Hypertension & Normal Vital Organs

Hypertension & Normal Vital Organs

- Use Lidocaine with Epinephrine:
  In well controlled ASA-I or II status patient

- Epinephrine is contraindicated in ASA III / IV status patients

- Use Prilocaine or Bupivacaine for mild Hypertension (Htn)

- Use Mepivacaine without epinephrine for moderate Htn

- Defer routine dental treatment in severe Hypertension: Triage to ER ASAP or to PCP within a week

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Hypertension & The Circulations

- Hypertension can affect the Cerebral, Coronary, Renal or the Peripheral Circulations

- Cerebral Circulation: T.I.A.s & C.V.A.s
- Coronary Circulation: Angina & M.I.
- Renal Circulation: C.R.F. / ESRD
- Peripheral Circulation: Intermittent Claudication

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MI: Dental Guidelines

- Dental treatment must be delayed by 6 months following a massive M.I.
- Delay dental treatment by 3 months with a minor M.I.
  The patient is hospitalized just for observation, in a minor M.I.
- Use Mepivacaine without epinephrine for the first 6 months of dental treatment and then evaluate if L.A. with epinephrine can be given

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27. **MI: Dental Guidelines cont.**

**MI: Dental Guidelines cont.**

- Following recovery if the patient is on Digitalis, then Epinephrine is CONTRAINDICATED

- AVOID Epinephrine, Macrolides, Tetracyclines, Aspirin, NSAIDs, in patients on Digitalis

- These drugs cause Digitalis toxicity

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28. **Renal Circulation**

**Renal Circulation**

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Renal: Dental Guidelines

- Schedule dentistry for hemodialysis patients on the ‘OFF’ days of dialysis
- Premedicate for all invasive procedures
- AVOID Prilocaine or Septocaine, as the erythropoietin is LOW
- Excessive bleeding is countered with local hemostats or Desmopressin
- Frequent denture adjustments may be needed due to poor bone density

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Drugs and Renal Disease

<table>
<thead>
<tr>
<th>Drug</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine</td>
<td>Use ONLY if S. Creatinine is &lt; 2mg/dL</td>
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<tr>
<td></td>
<td>Maximum 2 carpules</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>Use Mepivacaine in patients with S. Creatinine &gt; 2 mg/dL</td>
</tr>
</tbody>
</table>

AVOID PRilocaine OR Septocaine IN THE PRESENCE OF HYPOXIA

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Drugs and Renal Disease

<table>
<thead>
<tr>
<th>Drug</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin / NSAIDs</td>
<td>Contraindicated in renal disease</td>
</tr>
<tr>
<td></td>
<td>These drugs decrease renal perfusion and inhibit the vasodilator prostaglandins</td>
</tr>
</tbody>
</table>

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Drugs and Renal Disease

<table>
<thead>
<tr>
<th>DRUG</th>
<th>SUGGESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>Reg. strength Acetaminophen or Codeine + Acetaminophen is safe</td>
</tr>
<tr>
<td></td>
<td>Extra strength Acetaminophen is contraindicated</td>
</tr>
<tr>
<td>Codeine</td>
<td>Safe to use in kidney disease</td>
</tr>
</tbody>
</table>

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Drugs and Renal Disease cont.

**Drug**

Propoxyphene:  
**Suggestion**  
Contraindicated in ESRD

Meperidine:  
**Contraindicated in ESRD**

Hydrocodone / Oxycodone: Safe when combined with Acetaminophen *only*

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Drugs and Renal Disease cont.

**Drug**

Pen. VK

Amoxicillin or Amox. + Clavulanic Acid

Erythromycin

Azithromycin

Clarithromycin

**Suggestion**

Contraindicated

Decrease the dose by 50%

Safe to use

Safe to use

AVOID with any kidney disease

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35. Drugs and Renal Disease cont.

Drugs and Renal Disease cont.

**Drug:**
Clindamycin

**Suggestion:**
No dose adjustment needed for mild / moderate kidney disease

Decrease the dose by 50% with E.S.R.D.

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36. Hypertension: Renal Disease

Hypertension: Renal Disease

- Clindamycin can be safely used in patients with mild to moderate kidney disease
- If Clindamycin is to be used in patients with severe kidney disease, then reduce the dose by 50%
- Clindamycin can be used in 50% dosage, if a patient has BOTH kidney and liver disease

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37. Drugs and Renal Disease cont.

**Drugs and Renal Disease cont.**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetracycline HCl</td>
<td>Contraindicated</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>Safe to use</td>
</tr>
<tr>
<td></td>
<td>No dose adjustment</td>
</tr>
<tr>
<td></td>
<td>needed</td>
</tr>
<tr>
<td>Diazepam</td>
<td>Safe to use</td>
</tr>
</tbody>
</table>

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38. Peripheral Circulation

**Peripheral Circulation**

- Intermittent Claudication:
- Caused by narrowing of the medium sized arteries of the legs
- Patient experiences pain in the calves or legs on walking
- Rest relieves the discomfort
- AVOID L.A. with Epinephrine

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Anesthetics & Hypertension

- Lidocaine with Epinephrine:
  ASA-I or II status with NO end organ problem
- Mepivacaine:
  In ASA III / IV status
  T.I.A. and recent C.V.A.s
  Taking Digitalis
  Unstable Angina
  MI
  CRF

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Anesthetics & Hypertension

- Prilocaine or Bupivacaine:
  For mild Htn with NO end organ problems
- Mepivacaine:
  For moderate Htn with NO end organ problems
- Defer routine dental treatment if the patient has severe Htn
  Triage to E.R. or P.C.P.

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Pulmonary Diseases

Asthma, COPD, MTB

Asthma Alert

Penicillin
Aspirin
NSAIDS

- These drugs can precipitate an allergy associated asthma attack
- Avoid in susceptible asthma patients
- Can be used in patients with NO adverse response

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Preparation for Dental Rx: Asthma

- Asthma attacks can be precipitated by:  
  Penicillins  
  Aspirin  
  NSAIDs  
- These drugs avoided ONLY if they cause allergies or asthma attacks

Avoid all Macrolides in asthmatics particularly in the presence of:  
- The β2 Adrenergic Agonists: Metaproterenol  
  Albuterol  
  Terbutaline  
  Perbutrol  
  Salmeterol  
- Methylxanthines: Theophylline  
  Aminophylline  
- Leukotriene Receptor Antagonists: Zafirlucast  
  Montelukast sodium  

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Asthma: Dental Aspects

AVOID Macrolides with:  
- β2 Adrenergic agents, Albuterol, Terbutaline, etc.  
- Xanthine derivatives: Theophylline, Aminophylline  
- Leukotriene antagonists: Zafirlucast, Montelukast Sodium  

- Do not use Diphenhydramine DURING an asthma attack  
- Diphenhydramine will cause further thickening of the mucus and worsening of the asthma

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Chronic Obstructive Pulmonary Disease (C.O.P.D.)

- Rx: Theophylline, Aminophylline or Steroids
- Do not use EPINEPHRINE
- Do not give $O_2 + N_2O$ to COPD patients during non emergency states
- $O_2$ however can be given during a respiratory emergency
- Inhalants can be used as prophylaxis for stress management

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Contraindicated with COPD:
- Narcotic Analgesics
- Diazepam / Lorazepam
- $O_2 + N_2O$, for stress management
- Epinephrine

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47. Tuberculosis (MTB): Diagnosis

Tuberculosis (MTB): Diagnosis

- History
- PPD Skin Test
- Chest X-ray
- Sputum Culture

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48. Tuberculosis (MTB): Facts

Tuberculosis (MTB): Facts

- Always use universal precautions in *all patients* being treated in the dental environment
- Only *open* cases of MTB are a threat in the dental setting
- An open case can safely be treated AFTER 2 weeks of continuous anti-TB treatment
  The bacteria no longer persists in the sputum

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MTB: Dental Aspects

- Avoid hepatotoxic agents
- Use only 2 carpules of Lidocaine with epinephrine
- Avoid aspirin, NSAIDS, Indomethacin
- Use regular strength Acetaminophen only for pain
- AVOID Macrolides, Ampicillin, Tetracycline and Metronidazole
- Penicillin and Clindamycin are fine

NOTE: Decrease the Clindamycin dosage with extreme liver depression

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Medications to be Evaluated

1. Prescribed Medications
2. OTC Preparations & HERBALs
3. Recreational Drugs
4. Anesthetics, Analgesics, Antibiotics
5. Drugs Associated with ALLERGIES
6. STEROIDS: P.O. or SYSTEMIC

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Corticosteroids

- Corticosteroids are stress fighting hormones
- Endogenous output occurs between 2-8 am
- The endogenous secretion is increased with:
  Intense fear, fever, infection, inflammation, trauma or bleeding
- Endogenous secretion can be inhibited if the patient has taken steroids for 2 weeks or longer within the past 2 years

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Corticosteroids

- It takes 2 weeks to 2 years for endogenous secretion to normalize under such circumstances
- Exogenous steroids will cause minimal endogenous secretion suppression when the steroid dose is given before 9am
- These patients benefit being treated as the first appointment of the day
- Always determine the MAXIMUM dose of steroid the patient has taken within the past 2 years
- Always consult with the patient’s MD to determine the amount of steroid boost needed for major dental surgery

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Corticosteroids

- The maximum amount of Cortisol released in response to severe stress by a normal adrenal gland is equivalent to about 60 mg Prednisone
- 60 mg Prednisone should be the maximum amount prescribed

Use these guidelines to determine the approximate amount of steroids needed:
- Use 20mg on the day of surgery for 1 quadrant flap surgery or up to 4 extractions
- Use 40mg on the day of surgery for 2 quadrant flap surgery or up to 16 extractions
- Use 60mg on the day of surgery for 3/4 quadrant flap surgery or more than 16 extractions

- The anti-inflammatory potency of Prednisone is four times that of Hydrocortisone Sodium Succinate

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Corticosteroids

- Patients on alternate day steroid intake have lesser degree of inhibition of endogenous steroid secretion
- Schedule surgery on the day of steroid intake
- DOUBLE the routine dose
- Always consult with the patient’s MD prior to the dental treatment to confirm the amount of steroids needed

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55. Alternate Day Steroid Intake Examples

Alternate Day Steroid Intake Examples

- The step-up step-down examples for 3 levels of surgery in a patient on
  0-10-0 mg alternate day steroid intake

```
0  0  10  10  0  20  10  0  10
10  0  10  20  30  40  30  20
50  0  10  20  30  40  50  60
40.....
```

- It is always better to err on the side of giving more steroids than less

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56. Patients on Daily Steroids

Patients on Daily Steroids

- For planned surgical procedures:
  Use a step-up and step-down intake
  Start the dose increase 48 hours pre op. and reach the baseline intake 48 hours post op.

```
Day of surgery

20 mg Prednisone

Day 2
5 mg Pre-Op

Day 1
10 mg Pre-Op

Day 2
5 mg Pre-Op

Day 1
10 mg Pre-Op

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```
57. Corticosteroids cont.

Corticosteroids cont.

Emergency Surgery Protocol:
• **HALF to ONE hour prior to surgery inject:**

  40 – 60 mg Prednisone, IV or IM
  or
  100-200mg Hydrocortisone Sodium Succinate IV / IM

• Use Prednisone P.O. to do a step-down over 48 hours, post op.

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58. Endocrine Conditions

Endocrine Conditions

DIABETES
HYPER & HYPOTHYROIDISM

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59. Insulin

Insulin

Insulin is used for ALL Type I & for SOME Type II DM

Types of Insulin:

- **Short Acting:**
  - Insulin Lispro
  - Insulin aspart
  - Regular

- **Intermediate Acting:**
  - NPH / Lente

- **Long Acting:**
  - Ultralente
  - Glargine

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60. D.M. Medications

D.M. - Dental Mgmt. Guidelines

- Always treat a diabetic on a FULL stomach
- Never forget to ask if the patient has eaten
- Always compensate for the snack time around 10am and 3pm
- Follow the “sick day rules of insulin” when required
- The patient consults with the MD if the blood sugar levels are elevated
- The MD will advise a temporary increase in the insulin intake

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Dental Aspects of Diabetes

Determine the F.B.S., P..P – B.S. & the HbA$_1$C

- FBS normal is <125 mg/dL
- PP in controlled patients is <140 mg/dL
- HbA$_1$C is <7% in controlled patients

If HbA$_1$C values are >8%, patient has been uncontrolled for the past 2-3 months

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D.M. - Dental Mgmt. Guidelines

- Always treat a diabetic on a FULL stomach
- Never forget to ask if the patient has eaten
- Always compensate for the snack time around 10am and 3pm
- Follow the "sick day rules of insulin" when required
- The patient consults with the MD if the blood sugar levels are elevated
- The MD will advise a temporary increase in the insulin intake

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DM - Management Guidelines

- Use stress management, when needed
- Maintain hygiene recall at 3-4 or 4-6 months intervals
- Diabetics that are not well controlled heal slowly, so use non-absorbable suture materials

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Diabetes

- Uncontrolled diabetes is associated with delayed healing and increased incidence of opportunistic infections
- Uncontrolled diabetes causes decreased Neutrophilic action and decreased WBC migration to the site of the lesion
- Any infection must be treated with antibiotics for 3-5-7 days
- Failure to treat infections can promote the occurrence of Acute or chronic Osteomyelitis and worsen the Diabetes control

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Diabetes

Pain must be controlled immediately

- Pain, infection, inflammation cause epinephrine release

- Epinephrine causes glycogen breakdown to glucose and this results in hyperglycemia

- AVOID the chronic use of NSAIDS & Steroids

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Blood Sugar Values and Dental Management

The Well Controlled Patient:
FBS:  < 125 mg / dL
PP:  < 140 mg / dL
HbA1C: < 7%

- Use Lidocaine or Prilocaine or Bupivacaine:
  Maximum 2 carpules

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Blood Sugar Values and Dental Management

The Moderately Controlled Patient:
FBS: 125-140 mg / dL
PP: 140-200 mg / dL
HbA₁C: Between 7-8%

- Use Prilocaine or Bupivacaine only:
  Maximum 2 carpules
- Use the full dose antibiotics when needed following major procedures or for infection management

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Blood Sugar Values and Dental Management

The Uncontrolled Patient:
- FBS: > 140 mg / dL
- PP: > 200 mg / dL
- HbA₁C: > 8%

- Treat ACUTE dental infections ONLY
- Use Mepivacaine ONLY
- Use low dose antibiotics for 3 / 5 / 7 to promote healing

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Uncontrolled Patient: Management

• DELAY dental treatment if no dental emergency is present
• The Diabetes needs to be brought under control FIRST

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Hyperthyroidism & Hypothyroidism

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71. Thyroid Dysfunction Treatment

Thyroid Dysfunction Treatment

Hyperthyroidism, Medical Management:
• Childbearing age:
  Treated with surgery or antithyroid agents: Propyl Thio Uracil
• Non-childbearing age:
  Treated with Radioactive Iodine $^{131}$
  25% of patients become hypothyroid, in one year

Hypothyroidism, Medical Management:
• Treated with Levo Thyroxine

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72. Thyroid Dysfunction Dental Aspects

Thyroid Dysfunction Dental Aspects

• A Hyperthyroid patient on PTU should be given stress management with Diazepam or Lorazepam

• For L.A. use Mepivacaine ONLY

• Once the Hyperthyroid patient is off the anti-thyroid medication THEN you can use Lidocaine or Prilocaine or Bupivacaine, maximum 2 carpules

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73. PTU Side Effects

PTU Side Effects

- PTU causes: Agranulocytosis
  Thrombocytopenia
  Anti-Vitamin K activity

- Always check the CBC with Platelet count and PT/INR

- Follow the ANC guidelines in the presence of Agranulocytosis

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74. Hypothyroidism: Dental Aspects

Hypothyroidism: Dental Aspects

In the CONTROLLED Hypothyroid patient:
- Use Lidocaine or Prilocaine or Bupivacaine, maximum 2 carpules
- For stress management use 2 / 5 mg Diazepam
  OR
  \[ O_2 + N_2O \]
- For moderate to severe pain, use Acetaminophen with codeine

In the UNCONTROLLED Hypothyroid patient:
- Use MEPIVACAINE for L.A.
- AVOID CODEINE, MORPHINE AND DIAZEPAM

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Hepatitis & Cirrhosis

In patients with Cirrhosis:

- Minimize the bleeding and use the suction judiciously
- Patient should not swallow blood, as encephalopathy can occur
- Patients may have decreased Platelets & / or decreased Clotting Factors with cirrhosis

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## AAAs and Liver Disease

| Lidocaine | Max. 2 capsules with hepatitis
| Contraindicated in cirrhosis of the liver |
| Propoxycaine | The L.A. for cirrhosis |
| Aspirin / NSAIDS | Contraindicated in ALL liver disease, hepatitis or cirrhosis of the liver |
| Acetaminophen | Regular strength only |
| | Cirrhosis: <1-1.5 g/day in divided doses, PRN |
| | Hepatitis: 2-2.5 g/day in divided doses, PRN |

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## AAAs and Liver Disease

| Codeine | Cirrhosis: Acetaminophen 300mg + Codeine 7.5mg q8h |
| Amoxicillin | Hepatitis: Acet. 300mg + Codeine 30mg q6h |
| Macrolides, Tetracycline HCl Metronidazole | Safe |
| Doxycycline | Contraindicated in patients with liver disease |
| Clindamycin | Regular dose with hepatitis; 50% reduction with cirrhosis |
| | Regular dose with hepatitis; 50% reduction with cirrhosis |

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Doxycycline & Liver Disease

- Doxycycline can be used in patients with liver disease
- Avoid using other hepatotoxic drugs with Doxycycline
- Be certain that the patient has no co-existing kidney disease
- Even though Doxycycline is fine with kidney disease, Doxycycline CANNOT BE USED in a patient having both kidney and liver disease

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