Preparation for Treatment Planning Board

These are notes to expand on information in the template. The time to read this is long before you do your clinical exam...certainly before the write-up. Incorporate this into how you think about your exam.

**What Treatment Can I Do Before TPB?**

*Should be done:* Any Phase 1 tx- determine restorability, consults that will answer questions (Except Endo- wait on those. Don't send any requesting treatment such as OS.), all data gathering, especially perio.

*Can consider* doing any treatment that is **indicated no matter which Phase 3 treatment plan** is chosen. Example: Is removal of all teeth in the arch an option? Then wait.

**Overall concept for write-up:**

- **Chief Concerns**
  - Patient introduction
  - Patient’s concerns in their own words

- **History of Present Illness**
  - Background of chief concerns

- **Medical History**
  - Overall history, social history, surgical history, problem list
  - Patient’s medical problems, medications taking (both brand name and generic name if applicable) and dental implications. The indications for medication should match the patient’s problem(s).

- **Dental History**
  - Describe patient’s overall awareness of and interest in dental disease and treatment.
  - Past history with appliances- your evaluation (well designed?) and how pt functioned with them
  - Specifics of missing teeth, restorations, and esthetic concerns.

- **Dental Eval**
  - Description of findings of exam. Data only- no assessment or treatment planning here.

- **Diagnostic**
  - Risk assessment- overall eval of caries, perio, as well as occlusal and esthetic risk to success of the planned treatment
  - Diagnosis of each category of CMOREPOOOPE that applies

- **Treatment Overview**
  - A paragraph statement of the general plan to address each of the diagnostic issues, starting with the Chief Concerns. What is your "nutshell version" of your plan to treat this patient? This should stand alone to explain your plan of treatment. No sweeping generalizations, just specific plans.

- **Treatment Plan**
  - Preventive Treatment Plan- Oral Cancer, Caries, Perio
  - Treatment already performed
  - Most likely plan by Phase

- **Alternative Plans**
  - 1. No time constraints, no financial constraints- but must be dentally feasible!
  - 2, 3, 4... Other feasible alternative plans
Treatment plans will usually follow these general outlines:

1. **Most likely choice for the patient.** Given their current time and financial constraints, what is the patient’s most likely choice? This is the one you explain in the body of the write-up.

2. **Alternative 1.** No financial or time constraints. Treatments must be feasible: implants must have bone or feasible grafting sites; orthodontics can’t be placed on patients with active caries present; it can’t involve surgery that is contraindicated for their medical status, etc.

3. **Alternatives 2, 3, etc.** Alternate feasible options. As many as are reasonable in the discussion.

In your **written presentation**, focus on developing the most realistic plan for this patient, then explain reasonable variations based on their circumstances. Be prepared to explain your primary plan in detail and the general outlines, advantages and disadvantages of the alternative plans.

<table>
<thead>
<tr>
<th><strong>TPB Appointment: What to bring</strong></th>
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<tbody>
<tr>
<td><strong>Required</strong></td>
</tr>
<tr>
<td>o Adequate radiographs, including PAs on endodontically treated teeth</td>
</tr>
<tr>
<td>o Completed periodontal charting including probing depths, gingival recession, mobility, furcation involvement, Gingival Index and Plaque Index (approved by Periodontal Faculty).</td>
</tr>
<tr>
<td>o Completed Occlusal Analysis Form (swiped to &quot;In Process&quot; in axiUm)</td>
</tr>
<tr>
<td>o Compromised and Abutment teeth- In axiUm and in the write-up, document evaluation of teeth that may have pulpal compromise or that are being considered as abutment teeth, including teeth with large restorations or radiolucencies, with vitality testing, percussion, palpation, and perio probing.</td>
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<tr>
<td>o Evaluate existing endodontically treated teeth with (in addition to PA's per above):</td>
</tr>
<tr>
<td>▪ Percussion</td>
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<tr>
<td>▪ Palpation</td>
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<tr>
<td>o Careful perio probing (look for vertical root fractures!)</td>
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</table>

**Before appt**

Carefully read the instructions for how to name your documents and **turn them in to the D2L Dropbox by Sunday at midnight the week of your presentation appointment.**

1. TPB write-up using current template form
2. Work authorization- a scan or photo of large format page (pt number and initials only)
3. PowerPoint of your pictures (if possible).
4. AxiUm items completed as listed below

**At appt bring**

1. **Three copies of the treatment presentation,** but DO NOT print out axiUm pages (use as little paper as possible). **Upload documents into D2L.**
2. **RPD design** – use the large format design page (single sheet version from Module #2 on the D2L Course site) using correct colors and format. Scan or photo and include in Dropbox.
3. ** Mounted diagnostic casts** which accurately represent the patient, lightly marked with the highest smile line. Check the mounting intraorally by checking lateral movements and matching them with the patient’s movements.

**Optional, but really nice:**

1. **Clinical photographs** (in a PowerPoint in D2L, and bring your computer with you to the presentation)... this is really helpful in the presentation and discussion.
At the Appointment:  

**Diagnostic wax-up or set-up** if attempted in order to understand the occlusion or anterior spacing issues (diastema closure, for example) on a duplicate set of casts (NOT your originals!).

**At the Appointment:** Arrive at 8:50am/12:50pm - faculty will be present. If you have the first patient - Seat your patient, record the blood pressure, pulse and pencil the numbers onto the copies of the written presentation. There will usually be three faculty members present: a Periodontist, a Prosthodontist, and a Restorative faculty. Go to the presentation room and open the AxiUm chart at the designated time:

All students who are scheduled for TPB for the day will participate in the discussions by each presenting student. The schedule will be as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>0:00 – 0:25</td>
<td>Present the case (10 min), Discussion of the case.</td>
</tr>
<tr>
<td>0:25 – 0:40</td>
<td>Patient Examination</td>
</tr>
<tr>
<td>0:40 – 0:55</td>
<td>Final Discussion</td>
</tr>
<tr>
<td>0:55 – 1:00</td>
<td>Non-Presenting student released to seat next patient.</td>
</tr>
</tbody>
</table>

Be prepared to present the patient highlighting the pertinent information from the presentation (do not read the presentation verbatim) in a concise and professional manner (practicing shows!)-

"Ms Toothache is a 59 year old Caucasian female who presented to the school to get a new partial. Her medical history is routine except for …..

**-Questions to anticipate-**

**Guidelines Evaluation Rubric by Section.**

(Patient Interview Skills) Preliminary Discussions with the Patient. First, make sure you understand what the patient really wants and why. If they say they want a certain treatment, don’t take that at face value—ask follow up questions like why they think that is the best treatment, have they had one in the past and how did it work, has anyone in their family have this treatment/appliance and how did they do with it... and if they have done without teeth in a long time, try to find out what the trigger is seeking to replace those teeth now.

In the process of developing a treatment plan discuss the financial comfort zone with the patient. As taught in treatment planning class, the ethical practitioner always presents all feasible options with advantages and disadvantages of each starting with “No treatment” as the first option. You can develop these in axiUm as alternate Phase III options so the fees are printed out for the patient to evaluate side by side. But your write up will focus on the plan that is most feasible for this patient. Remember, make clear to the patient that these are only a “best guess” on what is feasible...the “experts” at TPB may see other difficulties, or the situation may be more complex. Do not promise the patient any specific plan or cost at this time. These estimates will help to determine the financial commitment level of the patient.

(Understanding of Medical History) Medical History-

- Reconcile your medication list with the patient’s list of medical problems. For each medical condition, how it is being treated (which medication). For every medication, know whether it was prescribed by a medical provider or not, and what condition the medication is intended to treat. By the way, food is not a medicine. No need to list “honey” for example, no matter how useful they think it is...put it in the CRA.

- Determine if each medical condition is currently well-controlled. This is crucial to understanding where your medical risks are most likely to come from, as well as threats to the success of your treatment plan. Be prepared to defend your opinion. Examples:
- **Diabetes** - When did they have their last HbA1c? What was it? What was their last blood sugar reading? When? Ex: “Ms. Toothaker is not controlling her diabetes well. Although her blood sugar today is normal at 119, her A1c from a month ago was 9.3, which is out of the high range of normal, probably due to her sweet tea and Oreo cookie intake.”

- **Hypertension (HTN)** - How many medications are they on? (Usually, more meds=more difficult HTN to control). How does their HTN affect their activities of daily living? Ex: “Mr. Linebacker is on four medications to control his HTN, but today and it was 164/102 which is what it has been the last two times I’ve seen him. He says he has had to stop doing his own yard work cause ‘he got too tired’ and I noticed he got winded when we walked down the stairs to Radiology. I have a consult in to his physician concerning his current level of HTN control as I feel it is not adequate.”

- **Anti-coagulation** medications - When was the last INR (if required for that med-- not all do) and what was the number? Why are they being anti-coagulated?

*(Dental History, Exam, Data Collection)*  Dental History and Examination

- **History.**
  - What prompted them to seek care NOW? Was there some precipitating event/pain/complaint?
  - Why did the patient lose their teeth in past- caries, periodontal disease, or trauma?
  - Evaluate all existing prosthetic treatment: how long has it been there? Is it a replacement for another appliance/ crown/ FPD? What happened to previous treatment? This will give you a good predictor for what might make you concerned about your treatment plans as well- if the previous treatment broke under occlusion, then maybe yours will too... if the previous one failed due to caries, then the odds are good something needs to change or the same thing will happen again.
  - **How is the patient currently functioning?** Can they eat anything they want, or are they avoiding certain foods?
  - What are the patient’s esthetic concerns? Review the Esthetic Evaluation (Student Resources) for ideas of how to evaluate. Complete correct forms if there are feasible plans for significant amounts of anterior fixed pros.

- **Occlusal exam and evaluation.** You will do the occlusal evaluation in clinic when you do the transfer to the articulator, and it must be accurate. There is no point in presenting an articulator that does not represent the patient. Additionally, evaluate and document any occlusal trauma issues.
  - **History:** Do a careful screening for occlusal concerns:
    - Ask patient if their teeth have changed in the past 5 years- become shorter, thinner, more worn, or more crooked, crowded, overlapped, or developed spaces.
    - Ask patient about traumatic habits: chewing ice, biting nails, using teeth to hold objects, clenching teeth in the daytime.
    - Ask patient about sleep issues: restlessness, wake up with headaches or awareness of teeth.
    - Ask if they have ever work a “bite appliance,” and if so why, and how they did with it.
  - **Examine the patient:** Look at their musculature: large masseter muscles? Active muscles at rest? Clenching? Consider any signs of occlusal trauma, look at evidence of past trauma or traumatic occlusion: wear and attrition, multiple fractured restorations. Are there mobile teeth that don't seem to have significant bone loss to account for it?
  - **Evaluate the radiographs:** Evaluate the evidence of bone loss around teeth, and describe the pattern of bone loss. Are there widened PDLs around teeth? Does that correlate with mobile teeth? Integrate those observations with your perio findings and if there is evidence of occlusal trauma, decide if this patient has primary or secondary occlusal trauma: Primary occlusal trauma is evidence of damage in the absence of periodontal disease: secondary occlusal trauma has periodontal disease present with occlusal trauma as an aggravating factor.
- Evaluate your articulator mounting: The trick is to make sure that your articulator mounting matches the patient. How? Lots of ways. First of all, know if you have mounted the casts in CR or MI, and why. Look really hard and make sure the teeth are in exactly the same places on both when in occlusion. Have the patient move in lateral and protrusive and look for wear facets that match up. Do your models match up that way?
- Double check your mounting: Check the patient with articulating paper. Now check your models with shim stock. Do the same places match up? If not, you've missed the mounting and you need to try again before dismissing the patient.
- axiUm entry: Make sure the faculty leaves the occlusal exam "IN PROCESS" until after TPB.

- Caries Risk Assessment: If the patient has active caries, it's your job to determine the reason, and that reason is NOT solely poor oral hygiene! Don't just list the items from the CRA. Think it through, and figure out how to factor in the major issue(s) with the Preventive Plan later:
  - Salivary flow reduction. Remember that patients' feelings of dry mouth do not correlate well with whether or not they have actual salivary reduction. Usually, they must lose more than half of their flow to feel like they have dry mouth, but they have lost a significant amount of buffering and remineralization at far less reduction. The unstimulated level of salivation can be difficult to evaluate. Why? Just doing a dental exam stimulates salivary flow, so you are not getting an accurate picture of their baseline level of secretion.
  - Diet. It's your job as a doctor to figure out what in their diet is contributing to their disease. Otherwise, you are just making dental jewelry. Work through their day with them and see if you can spot the trends and issues and see if they are going to be willing to change.

- Pulp and Endodontic Status. Evaluate all abutment teeth and any teeth with a questionable endodontic status (very deep restorations, possible periapical pathosis) and all existing endodontic treatment clinically with appropriate percussion, palpation, careful perio probing (assume there may be a root fracture), pulp vitality tests and radiographs if indicated (usually it is if radiographs are more than a year old). Is existing endo treatment adequate? If not, does it require an endodontic evaluation? Why?

To be able to easily answer questions, keep clear and complete records of your findings in a table, which could look like this:

<table>
<thead>
<tr>
<th>Tooth #</th>
<th>Cold test</th>
<th>EPT</th>
<th>Percussion</th>
<th>Palpation</th>
<th>Probing</th>
<th>Radiograph</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>+</td>
<td>30/80</td>
<td>-</td>
<td>Normal</td>
<td>WNL</td>
<td>Normal</td>
</tr>
<tr>
<td>12</td>
<td>-</td>
<td>80/80</td>
<td>+</td>
<td>Positive</td>
<td>WNL</td>
<td>PARL</td>
</tr>
<tr>
<td>15</td>
<td>Prev tx'd</td>
<td>NA</td>
<td>-</td>
<td>Positive</td>
<td>6 mm narrow pocket on MF</td>
<td>Diffuse J-shaped lesion</td>
</tr>
</tbody>
</table>

Codes:
+ = Feels cold, <30 sec duration=normal
++ = exaggerated response or >30 sec duration
* = Unable to feel cold
+ = painful to percussion
* = not painful to percussion
+ = painful to palpation
* = not painful to palpation
WNL = similar to adjacent and contralateral teeth

- Periodontal evaluation. Whether or not the patient's level of disease justifies a D0180, you must have a completed periodontal chart, including clinical attachment levels for all teeth, GI and PI, and careful recording in the perio chart of the attached gingiva.
- Esthetic evaluation. Determine what the patient's expectation are: possible questions include:
  - Is there anything about the appearance of your teeth that you would like to change?
  - Have you ever whitened your teeth? Have you considered it?
  - Have you felt self-conscious about the appearance of your teeth?
  - Have you been disappointed with the appearance of previous dental work?
Would you like to create the smile you used to have or a smile you never had? Are the patient expectations and the treatment plan such that a full esthetic evaluation is indicated? If so, find the Smile Analysis and Esthetic Evaluation on the Student Resources page in AxiUm. Consider what clinical factors that may affect your ability to create a successfully “ideal” smile:

- What is the tooth position in relation to smile line (gingival display)? Significant amount of gingival display also means margins show.
- Consider spaces and crowding. What will it take to successfully manage them?

(Diagnosis and Risk Assessment)
Risk Assessment:
- What is their systemic risk? Are there medical issues which are not controlled and/or may impact the success of your planned treatment?
- What is their Caries Risk Assessment? If they are currently caries active, is the source low saliva or high sucrose or both? Is the oral hygiene issue under control? Note special issues like root caries, extensive white spot lesions, and multiple incipient radiographic lesions.
- What is their Periodontal Disease risk? Evaluate the overall periodontal diagnosis and clinical attachment loss against the patient's age; is it what you would expect? Give a correct diagnosis, generalized and localized (if appropriate)
- What is their Occlusion Risk? If there is evidence of occlusal trauma, is it primary or secondary? Based on the results of your occlusal exam, how likely is it that occlusal hyper function or traumatic habits will jeopardize the success of your plan?
- What is their Esthetic Risk? Considering their current situation, their expectations, your planned treatment options, what is the likelihood that you will be about to achieve an esthetic result that will meet the patient’s expectations within their financial constraints: low, moderate, or high risk of failure? Be very honest here. Setting expectations up front with patients is crucial.

Diagnosis: Any of the "MOREPOOPE" categories that apply. Most common ones are already in the template.

-Thoughts on Treatment Planning-

(Treatment Plan)
Preventive Treatment Plan:
- Oral Cancer.
  - Follow up on any tobacco issues. Recommended for cessation classes? Documented in the chart?
  - Any lesions noted must have a notation from Oral Medicine in the chart that the lesion is of no concern or a follow-up plan in place, preferably an appointment with OMed or Oral Path.
- Periodontal. If they are currently disease active, what is planned or started to improve their oral hygiene? Is there a home care plan documented in your chart notes (ie, Proxibrush instructions for a bridge, C-shaped flossing, etc) Are there any contributing factors that a dental care provider can influence? Will non-surgical therapy alone can take care of patient's periodontal problem or should the plan anticipate surgical therapy as well? If there are associated systemic risk factors (ex: diabetes, smoking etc.) address those issues as well and how to modify them to get better results.
- Caries: Should flow from your clinical and CRA findings, namely diet, saliva, hygiene?
  - Oral hygiene is the backbone of any caries plan. What can you do to help increase their efficiency at removing plaque? Are those recommendations documented in the chart notes?
  - If frequent sucrose is a factor, what precisely are the items and how what is the plan to help them eliminate this or find substitutes for these items?
If meds that affect salivary flow have been prescribed, assume their baseline flow has been affected, whether they complain of dry mouth, deny dry mouth, or whether you see saliva or not. (Remember why??) Considering the salivary flow, develop your Preventive Plan:

### Preventive Treatment Planning

<table>
<thead>
<tr>
<th>Risk Category (CFA #)</th>
<th>Adequate saliva</th>
<th>Reduced salivary flow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong> (0-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Brush 2-3 x per day with 1000 ppm toothpaste (pts &gt; 6 yrs) Advise &quot;Spit, don't rinse&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Diet: Advise to keep simple carbs to less than 3-5 per day</td>
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</tr>
<tr>
<td></td>
<td><strong>Every patient!</strong></td>
<td></td>
</tr>
<tr>
<td><strong>To Low Risk items add:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Analyze diet</strong> for current sources of simple carbs; advise substitutions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Bedtime:</strong> Rinse with 0.05% Na F OTC rinse (ACT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Office F varnish q 6 months</strong></td>
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</tr>
<tr>
<td></td>
<td>• Recommend xylitol or other sugarless gums, mint, candy</td>
<td></td>
</tr>
<tr>
<td><strong>Mod</strong> (3-9)</td>
<td></td>
<td></td>
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<td></td>
<td><strong>High</strong> (10+)</td>
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<tr>
<td></td>
<td>• <strong>Bedtime- 5000 ppm F toothpaste</strong> (any type) Advise “Spit, don’t rinse”</td>
<td></td>
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<tr>
<td></td>
<td>• <strong>Bedtime:</strong> Brush with 5000 ppm F toothpaste with additional Ca and P. Listed under “Toothpaste” in axiUm Medication list.</td>
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</tr>
<tr>
<td></td>
<td>• Consider Rx salivary meds: pilocarpine or cimetidine</td>
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<td></td>
<td>• <strong>High risk patients with salivary hypofunction:</strong> History of radiation, Sjogren’s disease, meth use, or Chemo with significant salivary gland damage. Follow High risk, except add:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Phase 1 plan for a &quot;protective restoration&quot;</strong> (can do before TPB) and find out! It’s much easier for TPB to give you an opinion when the final decision is made on each tooth for restorability. Just don’t do the ENDO!!!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Even if it is restorable, <strong>should</strong> it be restored? Or is extraction and replacement the better plan? Think through the periodontal considerations, the prognosis of the adjacent teeth, overall caries and periodontal risk, patient interests, and the overall plan for restoration. Don’t get tunnel vision on one tooth!</td>
<td></td>
</tr>
</tbody>
</table>

### Treatment Plans- Notes, Hints, and thoughts by Section:

#### A. Endodontics

1. Consider doing **pre-emptive endodontic treatment** on teeth if it will significantly impact the quality of the final restoration to do endo/post/core later rather than sooner, especially if the tooth already has had significant pulpal insult (deep restorations, change in pulpal size, calcification, etc)

2. In teeth with **questionable endodontic prognosis** (i.e., calcified canals, possible split root, perio/endo lesions, etc.) do endodontic procedures early in treatment, especially if the teeth are critical to the plan. If the treatment is not going to be possible, that information is critical to the treatment plan.

3. **Restorability.** It’s always a two part question:
   - Is the tooth restorable? If you really aren’t sure, and your DXR faculty wasn’t sure, create a Phase 1 plan for a "protective restoration" (can do before TPB) and find out! It’s much easier for TPB to give you an opinion when the final decision is made on each tooth for restorability. Just don’t do the ENDO!!!
   - Even if it is restorable, **should** it be restored? Or is extraction and replacement the better plan? Think through the periodontal considerations, the prognosis of the adjacent teeth, overall caries and periodontal risk, patient interests, and the overall plan for restoration. Don’t get tunnel vision on one tooth!
4. Is the tooth important enough (and the result predictable enough) to the total plan to warrant the effort and cost of endodontic therapy and cusp coverage? See previous point again. Measure twice, cut once.

B. Periodontics. You will be expected to have thought through all the perio implications, including prognosis, of these teeth in terms of suitability for abutments.
1. Can the diagnosis and prognosis of each individual tooth be defended based on the charted periodontal findings in light of the planned treatment?
   a. Factors that downgrade the prognosis of a tooth: Attachment loss, furcation involvement, mobility, oral hygiene, systemic factors like smoking or diabetes.
   b. Consider the occlusal and lateral force load of the planned treatment. In other words, what will be expected of the tooth? For example, if #25 has grade 2 mobility – the tooth can be maintained for a long time by adjusting occlusion and splinting it to the adjacent teeth. But, if #3 has a grade 2 mobility and it is planned as an abutment for RPD – the long term prognosis of that tooth is poor.
   c. Not every class 2 mobility is automatically a hopeless prognosis and not every grade 2 furcation is a poor/hopeless prognosis.
2. Consider the amount of attached tissue in any area where there may be clasps, implants, or crowns. Is it adequate for a healthy prognosis?
3. Patient motivation and compliance plays a major role in being able to maintain the periodontally compromised dentition long-term. Be able to realistically evaluate how compliant this patient will be long term.

C. Orthodontics. The following situations may benefit from consideration of minor tooth movement, and treatment should be offered to a patient if appropriate (see below for criteria).
   a. Tipped Molars - to correct periodontal defect or improve FPD path of insertion
   b. Anterior Spacing - to consolidate space for FPD or redistribute space for closure with composite resins
   c. Cross articulations - to gain a vertical occlusal stop (posterior) or esthetics (anterior)
   d. Root Proximity - to gain room for margin placement
   e. Lost Interproximal Space - to regain space for interdental tissue
   f. Crowding - to improve either esthetics or access for hygiene

To decide if adjunctive orthodontics is appropriate, ask the following questions:

1. Is the patient totally committed and motivated? Are dietary factors/caries controlled? Hygiene excellent? No active periodontal disease?
2. Is adequate anchorage available? Would the treatment need implants (TADs -Temporary Anchorage Device- that would add surgery and cost and if so, is the patient willing to bear the cost and surgery)
3. Will the result be retainable? Think how it can be fixed into place...an FPD? Fixed retainer? An RPD will not hold it in place.
4. Is there an easier solution to the problem, e.g., a restorative solution, extraction?
5. (After consideration of all the above) Will the time and effort required for tooth movement be worth the result? The patient may be the only one who can make this decision.

If orthodontic therapy is chosen, this is the correct sequence of Orthodontic /Periodontal care:
   1. Periodontal Initial Therapy (scaling/root planing)
   2. Orthodontic treatment
   3. Periodontal surgery for pocket elimination
D. Prosthetics Overview. First, decide if missing teeth need to be replaced— not all do. Patients can do well with first molar occlusion, or if the patient has relatively weak biting force [smaller, older patients] second premolar occlusion. Does the patient need a limited occlusal adjustment or complete occlusal adjustment (Only after careful analysis!) before making final decisions? Is a diagnostic wax-up or set-up needed to determine the feasibility of the treatment that is planned? Then the decision is Implant vs Fixed vs Removable. Considerations:

- **Implants.** Is there adequate bone, both length and width, and no anatomic structures would be invaded? Review how to do “implant math”: the width of the implant (3.5, 4.3, or 5.0) + 1.5 mm “halo” in all dimensions. If bone augmentation might be needed, make sure patient would be interested in the additional surgery, time, and cost involved. Make sure patient’s medical history has no significant contraindications (i.e., bleeding, uncontrolled diabetes, smoking). Can an implant be used with an RPD to remove the need for a visible clasp (maxillary) or to support a distal extension? Especially on the lower, a single implant per distal extension can be a significant improvement.

- **Fixed Partial Denture.** Use the most current evidence based literature to determine if an implant or fixed partial denture is the best treatment for the patient. Be able to explain the advantages and disadvantages of each. For example current literature supports single crowns on potential abutment teeth if full coronal restoration is required with an implant between as a more survivable treatment than a fixed partial denture (if the implant placement is possible).

- **Removable Partial Denture.** Of course it has a cost advantage, but there are also some esthetic advantages. If there has been bone or soft tissue loss in the anterior, an RPD can provide a better result because the soft tissue can be reproduced along with the teeth. Don’t just think of it as the “cheap-out” option!

- **Missing maxillary anterior teeth?** First, know where the smile line is. Mark it on the cast and preferably have high smile line photos. Think of all these options:
  1. **Fixed partial denture.** If there is already a crown on one abutment, or both abutments, and the pontic space is not adaptable for an esthetic implant there should be a really good reason not to have this at the top of the list. AVOID if abutment teeth are essentially intact, or if patient has a high caries rate, esp on abutment teeth unless things (particularly dietary habits) have changed.
     - **Pros:** Faster, good esthetics, no surgery involved
     - **Cons:** Removes more tooth structure, risks future endodontics in approx. 25%+ teeth, higher failure in high caries rate patients
     - **Design:** Almost always single abutments on each end. Double abutments tend to fail. The most common cantilever design is a lateral incisor cantilevered forward from a natural canine if the lateral is kept out of occlusion. There are other acceptable variations but that is an advanced concept for graduate prosthodontics students.
     - (Remember these rules are very different for implant FPDs!)
  2. **Resin Retained FPD.** Sometimes called a “Maryland Bridge” these have gotten a bad rap because sometimes done poorly, without preparation of abutment teeth. If carefully prepared and in the right location, they can be a good alternative on intact abutments. AVOID if occlusion is heavy on anterior teeth. Best in canine guidance.
     - **Pros:** Saves tooth structure, bonded mostly in enamel. Excellent esthetics.
     - **Cons:** Usually only for single tooth replacement. Must have good enamel on all margins, so requires virtually virgin abutment teeth, so consider implant in that situation first. Tricky preparation, difficult to hide margins. Be sure and practice on patient’s casts several times before going to clinic if this is the anticipated treatment.
3. **Implants.** In an intact dentition, this is usually the first choice to maintain the integrity of adjacent teeth. AVOID if another restoration is a better option, patient is a poorly controlled diabetic, there is not enough bone and the patient is not interested in grafting, or the smile line is high and shows gingival margins. Think hard if the patient is a smoker. Have a periodontal consult to see if a good result is possible in that case.  
**Pros:** Do not have to prepare adjacent teeth. Less likely to promote caries in high risk patients  
**Cons:** Requires more surgery, more time. Esthetics can be tricky. Treatment planning of gingival architecture critical in high smile line cases. Consult with Perio!  
4. **Removable Partial Dentures.** This can be the top choice if loss of bone and soft tissue has made esthetics difficult with an FPD or if an implant is not feasible. RPD esthetics is frequently excellent if the clasp visibility can be minimal.  
**Pros:** Can replace missing teeth and soft tissue for reasonably nice esthetics. Can get as many teeth, anterior and posterior, as needed for an economical cost!  
**Cons:** Tends to increase caries rate. Have to take it out at night. Patients cope well with maxillary RPDs and usually have more problems with mandibular RPDs except Class IIIIs.

**E. Fixed Prosthodontics:**
1. **Identify the teeth critical to the success of the plan.** These will usually be canines and terminal abutments. Spend the time and money to make certain that these have a good prognosis. Don't plan a complex treatment that depends on these teeth for success unless they have a good prognosis.  
2. **Have a "back-up" plan.** Look for possible areas of future failure. When feasible, plan ahead for this possibility. For example: If a tooth is to be a RPD abutment (especially if its prognosis is only fair) and another tooth elsewhere in the arch is to receive a casting, consider its future use as a potential abutment. It may warrant a surveyed crown.  
3. **Occlusal Plane:** Does it need alteration due to extruded teeth? Will a restoration, endodontics, or crown-lengthening surgery be needed to correct the extrusion?  
4. **Anterior Tooth Replacement:** esthetics, function, and phonetics - use the provisional restorations (based on the diagnostic wax-up or pre-operative casts) to guide the lab.  
5. **Avoid crowns and FPD abutments on mandibular incisors,** if possible. Acceptable esthetics is nearly impossible to achieve without endodontics and a post and core.  
6. **Abutment Factors to Think About:**  
   b. Periodontal support. Start with Ante's "rule of thumb" then look for offsetting factors.  
   c. Periodontal problems (fluting, furcations, attachment loss)  
   d. Pulp/endodontic prognosis  
   e. Biologic Width: Examine radiographs prior to tooth preparation. If it is impossible to place a crown margin without encroaching on the biologic width, design a strategy for assessing this problem. If the tooth requires a substructure, plan on placing the substructure at an appointment prior to preparation/impression. If a new substructure is not needed an initial crown preparation and provisionalization can be accomplished. This latter technique not only allows assessment of potential biologic width violation but offers other advantages as well. First, if crown-lengthening surgery is needed, removal of the temporary crown allows improved surgical access. In addition, the margin preparation can be refined at the time of surgery aiding in a more precise judgment of osseous reduction.  
   f. Functional load  
7. **Occlusion**  
   a. **Changing the occluding vertical dimension (OVD).** General Rule: Don't change the OVD. Change it only when absolutely necessary (may require your case to be transferred to a resident). When in doubt, refer to General Rule.
b. **Preserving the OVD:** If there are very few occlusal holding stops, think about how to maintain the OVD when these "holding" teeth are prepared. Think about ways to keep from getting "lost in space." Example: Do the left side independently of the right side or leave a tooth unprepared to hold a stop and don't prepare that "holding" tooth until other castings or temps are in place to hold the OVD. Other ways are available to keep from losing the OVD references but they're more complicated (positioning jigs, measuring techniques).

c. **Centric Occlusion vs. Maximum Intercuspation:** If no pathology is present and not many occlusal surfaces are to be restored, MI is preferred. But, if the plan is restoring many occlusal surfaces and the patient can be adjusted to the centric occlusion position, then create a Centric Occlusion. The reason is: MI doesn't exist after preparing all occlusal proprioceptive guides to the habitual occlusion. In that case, the patient needs to be restored in the centric arch of closure.

**(RPD Design) F. Removable Prosthodontics:**

Removable partial dentures should be designed using the principles taught in the Preclinical Removable Partial Denture Course. Removable partial dentures can benefit from implant placement to supplement support, retention and stability using tissue level “snap” attachments. If critical abutment teeth are missing (canines for example) consider this option.

**Survey the diagnostic casts.** Designing retention where it does not exist (tooth modification alone may not provide the proper contour) is not a solution. Surveyed crowns must be considered when the proper contours are not available for retention or guide planes. Existing crowns and FPDs can be modified for RPD support but the patient must be made aware that the crown may need to be replaced (at patient’s cost) if necessary modification to the crown causes a hole or other clinically unacceptable situation.

**Occlusal plane discrepancies.** Removable partial dentures are not designed to function with distorted or inadequate occlusal planes. Occlusal planes need to be corrected for RPDs to function properly. Diagnostic set-ups are frequently needed to assess the changes that will be needed to the opposing teeth so that the occlusal plane is restored correctly.

**(Maintenance Plan) Maintenance**

When all active treatment is complete, you should be aware of and list your maintenance and recall plan. Specifically:

1. **Caries:** What is your long term plan to decrease the patient’s susceptibility for future caries? Include schedule for recall, F varn, dietary counselling, radiographs (what kind?) and prescriptions for F toothpaste.
2. **Periodontal:** What is the maintenance plan? Schedule, what procedure will be done, radiographic follow up schedule?
3. **Prosthetic:** What is your plan to monitor and assess health of your fixed and removable prostheses? Predict need for relines based on patient history.
4. **Endodontic:** Many endodontists like to periodically evaluate the status of their completed endodontic therapies, so include a schedule for that.
5. **Orthodontic:** If orthodontics is a consideration, consult with the orthodontist on retention/stability issues following active orthodontic treatment.