TMD Screening:
Range of Motion (ROM) measurements
-Maximum opening
-Passive Stretch
TMJ Function
-Joint Sounds
-Deviations

Range of Motion
If maximum opening <40 mm or maximum stretch opening >3mm consider TMD problem

Range of excursive movements (Protrusive, or Rt & Lt lateral)
Normal population range = 8-17 mm
Restricted movement = less than 8 mm; consider joint problem

Identifying joint sounds
Feel angle of mandible while patient opens and closes
Ask patient if they hear a noise
Use a stethoscope to listen
OPTIONS: one click, two clicks, popping, grating, crackling, etc.

ADDWR
"Anterior displaced disk with reduction" (goes on and off the disk)
"Clicks" on opening and closing
No true CR exists, since condyle is posteriorly "off the disk"
These patients are mounted in MI, even if there is an "apparent CR-MI difference". However still evaluate first prematurity in most retruded position

Other option for "click" is an eminence click at max opening

Why do we deprogram?
Neutralizing Muscle Engrams:

Muscle Engrams: Adaptive closing protective reflexes present when there is a difference between CR and IP.
Once an efficient chewing pattern that minimizes damage to any structure is found, it is learned and repeated. This learned pattern is called a muscle engram

Deprograming:
Teeth apart for > 5 minutes with cotton…Lose proprioception until contact again…
Keeps teeth from telling muscles where to move jaw so as to avoid premature contact.
Returns with few seconds of contact, so must not allow teeth to contact until CR information gathered.

Deprogramming
Neutralization of engrams to allow for evaluation or adjustment of the occlusion, and to make interocclusal records

Deprogram with the "Leaf Gauge"
By trial and error, determine "X", the number of leaves where the patient can just barely feel a posterior tooth touch
-Add one more leaf = (X+1) Initially patient feels no posterior contact
-Have patient squeeze for 10-30 seconds, then relax.
-Patient feels new contact - 15 to 20 seconds
-Patient advises dentist when this occurs
-Add another leaf, repeat procedure
-Repeat with X+2, X+3,…X+n
-Keep adding leaves until patient closes, squeezes, relaxes for 3-5 minutes without feeling any posterior tooth contact
-Mandible is deprogrammed

Manipulation Options:
1. Terminal Hinge Arcing Technique: Gently grab the maxillary arch with the left hand. Place the right hand at the chin so the thumb is inside the mouth on the facial of the incisors and the index and middle fingers are under the chin.
2. Leaf Gauge (as in deprogramming)

3. "Romance the mandible"
A verbal-motor sequence
Prevent the patient's teeth from contacting
"Open and close";
"Move your jaw out" (forward and backward)
"Move your jaw in" – gentle pressure
Repeat – When you feel the mandible is in CR, have the patient close and identify first contact
Squeeze, look for a slide. Repeat the process.
Verify initial contact with articulating paper

4. Bi Manual manipulation (brace head)
Thumbs contact at chin while last three fingers are on angle of mandible; pressure down on chin and up on fingers rotates condyle into correct location in fossae.
DO NOT force the patient to close; remove hand pressure when resistance is felt, then continue

Reasons for Clinical Occlusal Analysis
1. Crowns are planned
2. Signs of pathology exist on teeth: cracks, abfractions, fractures, mobility, severe wear
3. Symptoms of dysfunction recorded in the history & screening: muscle pain (headache), sensitive teeth, chipped teeth
4. Patient complaints: cheek or lip biting, food packing (mobile teeth), headache

Occlusion form: two parts;
-Top part (Analysis) gathers data
-Bottom part (Summary) records diagnosis and treatment plans:
1. Is an occlusal treatment indicated? LOA or COA?
2. Are mounted diagnostic casts indicated? CR or MI?
3. What type of articulator will be needed if restorative work is indicated?

Determination of when to mount, either before or after LOA or COA
Determination of where to mount CR(CO) or MI
Diagnosis of further treatment
New casts and mounting

Why anterior guidance better than group function?
Less muscle activity
Less influenced by stress
Body builder vs swimmer muscles

What treatments might this occlusal exam suggest:
Splint (muscle pain; tooth wear)
Adjust bite (Equilibration) to protect teeth
Change habits (clenching, diet, gum)

Additional questions
1. If I have a click, can it be "fixed"?
-No, unless in 1-2 weeks after trauma
2. If you can't fix something, why would you identify it?
-Lessen impact
-Avoid habits that aggravate
-Baseline data of how enter practice
-Eliminate concern of patient for other disease

Areas often missed in Occlusion
-No anterior contact, but have late range anterior guidance; = group
-When CR does not equal MI and first prematurity is on tooth to be crowned
-Working and non-working contacts hidden in large MI contacts
-Unstable MI may be improved by closing vertical or adjusting CR = MI

Proper Articulation Marks
Dry teeth
-wipe with gauze
-blow air
Manipulate into CR
Mark first contact (CO) with articulating paper
Analyze and record contact(s)

If CR(CO) = MI, mark contacts by circling the pair in contact

Evaluate presence of a slide

Whether CR(CO) =
MI or not, mark all MI contacts by circling the pairs in contact
This aids in determining if casts are correctly mounted later

Mark contacts in excursions
Either ____Anterior guidance
Or   ____Group function
With or without
          ____Non-working contact

Armamentarium
Articulating paper (Bausch red and blue)
2x2 Gauze & Cotton rolls
Leaf gauge
Air/water syringe
Operator sitting down
Patient reclining 45 degrees back

Tooth Considerations:
1. Evaluate the wear of the teeth
2. Evaluate the Anterior Horizontal Overlap
3. Evaluate the Anterior Vertical Overlap

Evaluate Occlusal Trauma
Definitions:
Mobility: Movement of a tooth when the patient grinds in excursive movement: class I, II, or III
Fremitus – A vibration perceptible on palpation when the teeth come into contact in MI.
Abfraction: non-carious cervical lesion due to tooth flexure

LOA on mounted casts
If exam cannot determine Tx, mount original casts of patient in CR using FB and CR-IOR.
Set HCG with IOR
Duplicate casts with alginate or Putty/toothpicks
Cross mount duplicate casts
Adjust duplicate casts to determine amount of tooth structure lost and VDO loss

Ways to Verify the mounted casts are correct

Does the 2nd CR IOR match the mounting of the first?
Does the Clinical Occlusal Analysis Form list the same first prematurity?

Ultimate test is to compare the patient with the mounted casts

Comparing Patient to Mounted Casts
Bring patient and mounted casts to clinic…
First premature contact the same?
Amount of space between non-contacting teeth the same?
Articulator can slide from CO to MI the same as the mouth does?

To Preserve the Facebow for the mounting of the duplicate casts
-Use direct FB from mouth on second duplicated Mx cast
-Take FB from articulator on mounted Mx cast to mount duplicate Mx cast
-Seat CR record from clinic on duplicate mandibular cast to mount duplicate Maxillary cast
-Take CR record from mounted Mx-Md casts to seat on mandibular cast to mount duplicate Mx