Sorting Out Endodontic Symptoms
Approach each case in the same order- don’t allow yourself to get distracted by chasing down the chief complaint too much. Make sure you have their story, then hit the checklist.

1. Medical History. As with all patients, review the patient’s medical history, current medications, and take a blood pressure if indicated (patients with a history of hypertension). Special concerns about infection?

2. Dental History. Ask a series of questions to create a picture of the history of this complaint.

<table>
<thead>
<tr>
<th>Question</th>
<th>Leads you to think of…</th>
<th>Which tooth?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration- history.</strong> &quot;How long has it been hurting?&quot; (Prompt them: &quot;Days, weeks, or months?&quot;)</td>
<td><strong>Days</strong>- Irreversible pulps if worsening and severe, reversible pulps if less severe. <strong>Months</strong>- Sinus pain, cracked tooth, TMD all tend towards a cyclical pattern; possibly angina if worse with exertion and history of heart disease; others. <strong>Weeks</strong>- could be either. <strong>Past history of pain</strong>- severe pain which then stopped can indicate a necrotic pulp.</td>
<td>Cold test&lt;br&gt;Percussion&lt;br&gt;Palpation&lt;br&gt;Periodontal probing</td>
</tr>
<tr>
<td><strong>Onset.</strong> &quot;Does anything bring the pain on? How about when you’re eating? Hot or cold food?&quot;</td>
<td>If it hurts with <strong>every bite</strong>, usually periapical or periodontal inflammation. <strong>Dull, aching pain</strong> usually early periapical inflammation- look for necrotic tooth. If a <strong>sharp, electric, or shooting pain</strong> occasionally, to certain types of food (usually dry bread, crackers) with a cyclical history- think cracked tooth. If <strong>sensitive to hot or cold</strong>, think pulps. If it still hurts <strong>more than 30-60 seconds</strong> after you’ve removed the cold, think irreversible pulps.</td>
<td>Percussion&lt;br&gt;Palpation&lt;br&gt;Percussion&lt;br&gt;Palpation&lt;br&gt;Tooth Slooth®&lt;br&gt;Cold test&lt;br&gt;? Hot test</td>
</tr>
<tr>
<td><strong>Character.</strong> Describe the pain: o Sharp or dull? o Throbbing? o Constant, or intermittent? o Does it ever wake you up at night?</td>
<td><strong>Sharp (A delta fibers),</strong> intermittent- usually means cranky dentin (exposed tubules, cracks…) but still reasonably healthy pulp- think reversible pulps. <strong>Dull (C fibers or pulpal inflammation),</strong> achy, throbbing, spontaneous- think irreversible pulps.</td>
<td>Cold test</td>
</tr>
<tr>
<td><strong>Does anything make it worse?</strong></td>
<td><strong>Positional changes</strong>- think sinus or irreversible pulps</td>
<td>Lean over, tap head</td>
</tr>
<tr>
<td><strong>Location.</strong> &quot;Can you take one finger and point to where it hurts?&quot;</td>
<td>Test the quadrant + referred area *</td>
<td></td>
</tr>
</tbody>
</table>

* Referred Areas- Pain refers from tooth to tooth…

- Within a quadrant –frequently
- Maxillary to mandibular- not uncommonly in posterior, rarely in anterior
- Across the midline- rarely

3. Dental Exam. At this point, you are looking for things that might be the cause of pulpal problems in the area to which your patient pointed, or where referred pain is a reasonable possibility.

- **History of carious damage to pulp.** Obvious deep caries, deep restorations, large restorations, or crowns.
- **History of trauma.** Discolored tooth (bleeding inside the pulp leaves stain behind); radiographic evidence of change in pulp size or different pulp size from contralateral teeth, either larger (pulp necrotic and stopped normal secondary dentin formation) or smaller (trauma can cause excessive secondary dentin formation, which can strangle the pulp).
- **Vertical root fracture or crown fracture.** Bacteria can enter the pulp through crack, and pulp becomes necrotic. Ignore craze lines, however; commonly found in ant. teeth but not significant.
- **Evidence of necrotic pulp.** Swelling, sinus tract.

4. Diagnostic Tests. These tests should be done on all suspect teeth as well as normal adjacent teeth and the contralateral tooth for comparison. Usually you do all the teeth in the suspect quadrant, the opposing quadrant in the posterior, and the contralateral tooth in any case.

- **Cold test.** Tests pulpal response (A-delta fibers). Skin refrigerant is best (Endo-Ice® is a brand name). Normal response is that your patient feels it within a few seconds, you remove the pellet, and the sensation goes away within 10-30 seconds. An exaggerated response is when your patient thinks the cold really hurts, and lingering pain to the cold indicates pulp pathosis, usually irreversible pulps. No response can mean a necrotic pulp or just an old pulp. Always test the contralateral and adjacent teeth as well.
- **Percussion.** Tests periapical tissue inflammation. Tap on the crown of the tooth down towards the root lightly. If there is a tooth that is more tender, that usually indicates periapical inflammation, pathosis or traumatic occlusion.
- **Palpation.** Tests for inflammation just under bone. Firmly roll the pad of your index finger over the bone just over the apices of the suspect quadrant teeth. Tender areas indicate inflammation.
- **Periodontal probing.** Tests for an intact periodontal apparatus. Is periodontal disease present? Are there narrow defects that might indicate a vertical root fractures?

5. Radiographs, if indicated. If a non-pulpal diagnosis or reversible pulpitis has been ruled out, then periapical radiographs should be taken.

6. Now, pull the information together and diagnose BOTH the pulp and the periapical regions.

**Pulpal Diagnoses**
- Normal
- Reversible Pulpitis
- Irreversible Pulpitis
  - Symptomatic
  - Asymptomatic
- Necrotic Pulp
- Previously Initiated
- Previously Treated

**Periapical Diagnoses**
- Normal
- Apical Periodontitis
  - Symptomatic
  - Asymptomatic
- Apical Abscess
  - Symptomatic
  - Chronic
# Formulation of Pulpal and Periradicular Diagnoses

<table>
<thead>
<tr>
<th>Pulpal Diagnosis</th>
<th>Signs and Symptoms</th>
<th>Radiographic Appearance</th>
<th>Response to Pulp Tests</th>
<th>Response to Periapical Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Pulp (NP)</td>
<td>None</td>
<td>No radiographic changes on radiographs</td>
<td>Response</td>
<td>No changes in responses to periapical tests</td>
</tr>
<tr>
<td>Reversible Pulpitis (RP)</td>
<td>May have Sharp Pain</td>
<td></td>
<td>Response</td>
<td></td>
</tr>
<tr>
<td>Symptomatic Irreversible Pulpits (SIP)</td>
<td>Sharp Pain, but may have Deep, Dull, Gnawing Pain, Spontaneous Pain, Referred Pain, or a Past History of Pain</td>
<td></td>
<td>Response (may be extreme and/or lingering)</td>
<td></td>
</tr>
<tr>
<td>Asymptomatic Irreversible Pulpits (AIP)</td>
<td>None, but may have a Past History of Pain</td>
<td></td>
<td>Response</td>
<td></td>
</tr>
<tr>
<td>Pulp Necrosis (PN)</td>
<td>No Response</td>
<td></td>
<td>No Response</td>
<td></td>
</tr>
<tr>
<td>Previously Treated (PT)</td>
<td>No Response</td>
<td></td>
<td>No Response</td>
<td></td>
</tr>
<tr>
<td>Previously Initiated Therapy (PIT)</td>
<td>No Response</td>
<td></td>
<td>With or Without Response</td>
<td></td>
</tr>
</tbody>
</table>

## Periapical (Periradicular) Diagnosis

<table>
<thead>
<tr>
<th>Normal Apical Tissues (NAT)</th>
<th>None (WNL)</th>
<th>No Periapical Changes</th>
<th>None (WNL)</th>
<th>Painful Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptomatic Apical Periodontitis (SAP)</td>
<td>Pain</td>
<td>1. No Significant Changes (may have widened pdl) or 2. Apical Radiolucency</td>
<td>Painful Response</td>
<td></td>
</tr>
<tr>
<td>Asymptomatic Apical Periodontitis (AAP)</td>
<td>None (WNL)</td>
<td>Apical Radiolucency</td>
<td>None (WNL)</td>
<td>With or Without Painful Response</td>
</tr>
<tr>
<td>Acute Apical Abscess (AAA)</td>
<td>Swelling With or Without Pain</td>
<td>With or Without Apical Radiolucency</td>
<td>With or Without Painful Response</td>
<td></td>
</tr>
<tr>
<td>Chronic Apical Abscess (CAA)</td>
<td>Sinus Tract Without Pain (usually)</td>
<td>With or Without Apical Radiolucency</td>
<td>Usually No Response</td>
<td></td>
</tr>
<tr>
<td>Condensing Osteitis (CO)</td>
<td>With or Without Pain</td>
<td>Radiopacity, may be framing a coexistent radiolucency</td>
<td>With or Without Response</td>
<td></td>
</tr>
</tbody>
</table>

---


2. Pulp Tests are sensitivity tests that include thermal (hot and cold) and electrical (EPT) stimulation and responses are categorized as None (-), Responsive (+), Hyper-Responsive (+++), or Not Applicable (NA).

3. Periapical (Periradicular) Tests include percussion and palpation and are categorized as None (-), Mild (+), Moderate (+++) or Severe (++++).

4. Also referred to as Healthy Pulp (HP) UNC 2006.

5. Also referred to as Irreversible Pulpitis, Symptomatic or Asymptomatic Pulpotitis; Note: Hyperplastic Pulpitis (Pulp Polyp) is a form of Irreversible Pulpitis.

6. More a finding or observation, but used as a diagnostic term.

7. Radiolucencies and/or Radiopacities of Non-Endodontic Origin that normally respond to Pulp Tests are not included. Other terms include Non-Endodontic Pathosis or Lesions of Non-Endodontic Origin.

8. Also referred to as Healthy Periodontium, Normal Periodontium.

9. WNL = Within Normal Limits; usually includes none to mild signs, symptoms, or responses.

10. Also referred to as Acute Apical Periodontitis, Acute Periradicular Periodontitis, Subacute Periradicular Periodontitis. When associated with an apical radiolucency, also termed Acute Exacerbation of Acute Apical Periodontitis (AEACP) UNC 2006.

11. Also referred to as Chronic Apical Periodontitis, Chronic Periradicular Periodontitis.

12. Also referred to as Acute Periodontitis with Abscess, Acute Periradicular Abscess.

13. Also referred to as As Apical Periodontitis with Sinus Tract, Chronic Periradicular Abscess, Suppurative Periradicular Periodontitis, Suppurative Apical Periodontitis.

14. Also referred to as Sclerotic Apical Periodontitis, Condensing Apical Periodontitis, Focal Sclerosing Osteomyelitis, Periapical Osteosclerosis.