

Endodontic Competency

Purpose

Establish standards for requisite knowledge and skills required by all practitioners for competence in endodontic diagnosis, treatment, and prognosis.

Competence in the Diagnosis of Endodontic Treatment

Intent

The dentist *should be able to*:

1. Assimilate subjective, objective, and radiographic info to establish pulpal/periapical diagnoses.
2. Provide and manage urgent and emergent care to patients with symptoms of pulp and or periapical pathoses.
3. Evaluate, diagnose, and provide emergency care or refer patients presenting with traumatic injuries.

Key Indicators of Competency

The dentist *should*:

1. Differentiate between odontogenic and non-odontogenic pain. Note: If symptoms do not correlate with normal odontogenic descriptors of pain, dentist should consult with specialist before initiating endodontic treatment.
2. Perform pulpal and periapical testing to establish an accurate diagnosis.
3. Consider medical contraindications for endodontic treatment. Note: Only a recent myocardial infarction, uncontrolled hypertension, and uncontrolled diabetes have been identified as systemic contraindications.
4. Evaluate if pre-medication is needed before diagnostic examination or clinical treatment.

5. Evaluate potential effect of electrically powered instruments such as ultrasonic units or electrosurgical instruments on a patient's pacemaker function, or cochlear ear implants.
6. Evaluate radiographs and recognize the potential influence of previous extensive restorations on pulpal health.
7. Utilize radiography, including cone beam computed tomography (CBCT), where appropriate:
 - a. A cause of failure of molar endodontics is failure to locate and treat all parts of the canal system. The appropriate radiographic imaging techniques (periapical and/or CBCT imaging) will provide the clinician who utilizes this technology with the information to address these shortcomings.
 - b. Well-angulated periapical images should be captured with the cone directed straight on, mesio-oblique, and disto-oblique.
 - c. In difficult instances of diagnoses such as internal or external resorption, which often superimposes itself over pulpal anatomy, a 3-D image defines extent of disease and amount of resorptive invasion.
 - d. Pathoses and anatomic entities are often missed in two-dimensional radiographic surveys, both by the operator and the limitations of the technology when encountering differences in anatomic variation.
 - e. CBCT can image periapical lesions and other anatomical structures in horizontal, vertical and sagittal sections.

- f. Assessment and differentiation of periradicular lesions in multi-rooted teeth from non-odontogenic pathoses, and understanding size and distances are predictably possible with limited field CBCT.
 - g. In addition to spatial relationships of root apices to anatomical structures, accessory canals, location of root canals and canal obstructions can be viewed with CBCT.
 - h. Healing and repair of pathoses after non-surgical and surgical endodontics can be observed more predictably with CBCT, dramatically aiding in treatment planning and predicting prognosis.
8. Comply with protocols and recommendations published by the International Association of Dental Traumatology (IADT) and the AAE with regard to dental trauma.

Competence in Endodontic Treatment Planning and Treatment

Intent

The dentist *should be able to*:

1. Use the AAE Case Difficulty Assessment Form (CDAF) to establish a rationale for appropriate treatment and or assess the need for referral due to anticipated case complexity.
2. In the diagnosis and treatment of root resorption as a sequelae of trauma, make a differential diagnosis of the different types of root resorption, and display knowledge as to the management of resorptive lesions, including referral to a dental specialist as necessary after appropriate imaging.

Key Indicators of Competency

The dentist *should*:

1. Utilize the CDAF to assess case difficulty and need for referral.
2. When confronted with a case beyond his/her capabilities:
 - a. Discuss relevant benefits and risks of treatment options and limitations with the patient, ensuring that patient understands the info before giving informed consent; and
 - b. Refer the patient for consultation and/or treatment to an endodontist; and/or
 - c. Upgrade one's skills to meet the standard of practice established by the endodontic specialty.
3. Record departures from expected outcomes in the patient record at the time of service and advise patients of compromised results. In these circumstances, all information presented to the patient must be documented.
4. Refrain from endodontic treatment on an unrestorable tooth, except in cases where a tooth cannot be extracted without significant risk of post-operative sequelae, like BRONJ or Osteoradionecrosis. The long-term prognosis for an endodontically treated tooth is dependent both on the coronal restoration and the quality of the endodontic treatment itself.
5. Consider: treatment complications include medical complications, difficulties with anesthesia, behavioral management issues, limited opening, previous endodontic treatment, history of trauma, and periodontal-endodontic conditions.
6. Refrain from utilization of implants on restorable teeth, whenever possible. Implants should never become an insurance policy for inadequate endodontic treatment.

7. Remove only minimal tooth structure while achieving debridement, disinfection, and obturation.
8. Before commencing endodontic treatment, consider: altered physical properties of tooth tissues following endodontic treatment; extent of remaining dentin following caries and/or restoration removal and access cavity preparation; existence and extent of fractures/cracks; functional demands will be placed on the restored tooth; feasibility of ensuring that biologic width is respected when restoration is placed with adequate ferrule; feasibility of restoring/maintaining an ideal embrasure space and emergence profile; and the patient's understanding that the endodontic treatment is not complete until a permanent restoration is placed. Note: Endodontically treated teeth must be restored to improve their prognosis.
9. Understand that outcome expectations of traumatized teeth are different than non-traumatized teeth. Pulp necrosis, root resorption and ankylosis are the most common sequelae causing a major clinical challenge due to the high risk of infraosition and under development of the alveolar bone.
10. Refrain from performing dental services which the practitioner deems contrary to patient's health.
11. Meet standards for treatment established by the AAE.

Competence in the Prognosis of Endodontic Treatment

Intent

The dentist *should be able to*:

1. Forecast the outcome of initial nonsurgical root canal treatment based on the pulp and periapical diagnosis, tooth anatomy and morphology, remaining tooth structure, and periodontal support.
2. Assess treatment outcomes through clinical and radiographic measures and identify healing vs. non-healing of non-surgical root canal treatment. When non-healing occurs, the dentist should be capable of identifying the etiology and recommend corrective treatment strategies or refer to an appropriate dental specialist.

Key Indicators of Competency

Demonstration of competence in endodontic prognosis (prediction of outcome) and outcome assessment (post-treatment evaluation) is demonstrated by the following knowledge, skills, and behaviors.

1. Describing prognosis and outcome assessment based on the best available current evidence
2. Recognizing restorability of a tooth and possible need for crown lengthening
3. Evaluating periodontal status
4. Assessing the quality of previous endodontic treatment
5. Understanding past traumatic dentoalveolar injuries
6. Recognizing the presence of incomplete crown/root fractures
7. Assessing the presence of internal or external root resorption

In addition, the practicing dentist *must* be able to:

1. Explain benefits, risks, alternatives, and prognosis of treatment options in terms that are appropriate to patient's background and knowledge of dentistry
2. Compare prognosis and cost effectiveness of initial root canal treatment, retreatment, surgical treatment, and tooth replacement options
3. Explain the difference between success and survival as outcome measures
4. Determine patient preferences for treatment options
5. Evaluate immediate post-treatment outcome and explain the influence of procedural errors, missed canals, quality of canal obturation, and significance of coronal restoration on treatment outcome
6. Evaluate post-treatment healing and recognize situations where referral for possible treatment revision and/or surgery is indicated
7. Describe potential causes of persistent pain following root canal treatment and explain diagnostic tests and methods to distinguish between pain of odontogenic origin and non-odontogenic pain.

Conclusion

Endodontists set the standard of practice for conventional endodontics; if the endodontist's standard cannot be met, such as the need for microscopy or 3-D imaging, regenerative procedures, apical surgery, or treatment of complex traumatic injuries, the generalist should refer the patient to an endodontist.

Planned endodontic cases should not be doomed to failure due to a lack of understanding of what is required for high quality treatment. Implants should never become an insurance policy for inadequate endodontic treatment.

This executive summary is not intended to replace or supplant the AAE's white paper on Endodontic Competency. For more information on Endodontic Competency, please read the white paper available at aae.org/competency. Further, nothing in this executive summary or the white paper is intended to replace or supplant the knowledge and experience of the practitioner, including the specialized knowledge and experience of the endodontist, or the relationship between practitioner and patient or between general dentist and endodontist.

The guidance in this statement is not intended to substitute for a clinician's independent judgment in light of the conditions and needs of a specific patient.

Access additional resources at aae.org.

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