



Avoiding diagnostic errors: Strategies for dentists

Diagnosis is an essential part of dentistry. An accurate diagnosis serves as the basis for treatment and achieving optimal patient outcomes. Unfortunately, making a diagnosis can be a complicated process that can lead to errors. An inaccurate or missed diagnosis can result in a dentist being named in a lawsuit, which can have professional and personal consequences. But by understanding potential sources of error during the diagnostic process, dentists can help ensure patients receive optimal care and reduce their risk of legal liability.

A real-world issue

Diagnostic errors are a recognized source of preventable harm in medicine, yet, the frequency, severity, and causes of diagnostic error have not been as closely investigated in dentistry. The National Academy of Medicine's (formerly the Institute of Medicine) 2015 report, "[Improving Diagnosis in Health Care](#)," cites several statistics related to the prevalence of diagnostic errors, including that about 5 percent of adults who seek outpatient care each year experience a diagnostic error. In addition, postmortem examination research indicates that diagnostic errors contribute to about 10 percent of patient deaths. Perhaps most sobering is that the report committee concluded that most people will "experience at least one diagnostic error in their lifetime, sometimes with devastating consequences."

Similarly, a [2018 report](#) from the Pennsylvania Patient Safety Authority (PSA) found that 11.4 percent of events reported in 2016 that resulted in the death or unanticipated injury of a patient were related to "diagnostic process failure." Factors in this classification included failures during each phase of the diagnostic process: assessment, history, testing, hypothesis generation, referral, and monitoring/follow-up. Understanding factors that contribute to errors during the diagnostic process is to key identifying opportunities for improvement.

Causes of errors

Many factors can lead to errors in diagnosis, including lack of collaboration and inadequate communication between providers and patients. Clinicians' personal biases related to factors such as race, age, and gender can be another factor. The "Improving Diagnosis in Healthcare Report" provides several examples, including that older patients who have multiple comorbidities, medications, and/or disabilities are more likely to have atypical disease presentations, which can increase the risk of diagnostic errors. Testing also plays a key role. The 2018 PSA study found that failures in the testing process were the most common reasons for diagnostic failure, accounting for 68.1 percent of events. The fact that errors may not be reported compounds the problem because the opportunity to learn from the mistake is lost.

Dental malpractice claims and license protection matters are another source of diagnostic error data that can help identify causes of errors, which can, in turn, help prevent them. In fact, Dentist's Advantage and CNA's 2021 report, [Dental Professional Liability Claim Report: 2nd Edition](#), notes that diagnosis-related malpractice claims were one of the top reasons for allegations against dentists at 7.0 percent of claims in the report dataset, with an average total incurred of \$170,027. In addition to malpractice claims, the report also provides analysis of dental license protection matters involving actions associated with state regulatory agency civil investigations (i.e., dental licensing boards). The report explains that license protection matters involving allegations of failure to

diagnose or wrong diagnosis represent 6.9 percent of all matters in the report dataset. Top allegation subcategories related to diagnosis include failure to diagnose a periodontal condition, failure to assess a patient's expressed complaints/symptoms, and failure to diagnose oral cancer.

Understanding sources of errors is the first step to avoiding them. The next is to take a systematic approach to diagnosis, including assessment, testing, analysis, communication, monitoring, and follow-up. Collaboration supports this approach.

Collaboration is key

A major way to avoid diagnostic errors is ensuring that all members of the dental team, patients, and their families and caregivers collaborate in the diagnostic process. Communication provides the foundation for that collaboration. In fact, the "Improving Diagnosis in Health Care" report defines a diagnostic error as the "failure to establish an accurate and timely explanation of the patient's health problem(s) or *failure to communicate that explanation to the patient*" [emphasis added]. In other words, if patients don't receive the information they need—and understand it—they can't benefit.

Data collection through assessment

When a patient comes to the dentist with a problem, the first step in making a diagnosis is to obtain a detailed history and perform a thorough assessment. The time pressures that dentists face can make it tempting to abbreviate this process but doing so can lead to diagnostic error and patient harm. Furthermore, careful data collection at this stage can end up saving time by facilitating rapid identification of the correct diagnosis, leading to more successful treatment interventions.

The history should include not only questions related to the patient's current problem, but also those that address factors such as past and current medical conditions, family history, social history, medications (both prescription and over-the-counter), and dietary supplements. The dentist also needs to review relevant notes from previous providers.

The patient history and physical exam are essential tools for gaining valuable information, providing data that helps determine appropriate testing. A patient-centered approach during the history and exam, including ensuring privacy, will help dentists obtain the information they need. Ensure that patients understand the rationale for the questions and exam and the importance of providing accurate information. Dentists need to listen closely and tailor their communication to the patient's needs and preferences.

Appropriate testing

Laboratory tests, radiography, and other tools help the dentist make an accurate diagnosis. Further, choosing the correct diagnostic tools helps ensure the patient isn't exposed to unnecessary testing, which can cause harm and drive up costs. The choice of tools should be based on the information gathered through the history and assessment. It's also important to order and process tests correctly. For example, sufficient samples must be drawn for the ordered test, and the specimen needs to be labeled and stored correctly before it's transported to the lab. Samples also need to be delivered within the time frame specified for the test.

Accurate analysis

The 2018 PSA study found that the most common reason for testing process errors was misreading or misinterpreting results. This supports the need to consider test results within the context of the patient's signs and symptoms. If there seems to be a mismatch between the results and what might be expected based on data from the history and exam, the dentist should consider repeating the test.

Once data from the history, exam, and tests are in hand, the next step is to determine the potential diagnosis or diagnoses. More information from the patient and additional testing may be needed before the diagnosis is finalized.

During the analysis, dentists should be aware of possible biases that may affect making the correct diagnosis. For example, the *Dental Professional Liability Claim Report* provides an example of a case where a dentist assumed that an elderly patient's problems with his removable full and partial dentures were due to poor tissue health, failing to complete a comprehensive oral exam which would have revealed signs of oral cancer. Another example is the dentist who attributes a patient's reported physical symptoms to a psychological source because the patient has a history of substance use disorder.

It's also vital that dentists don't rush the process. Taking time to thoroughly analyze and reflect on information obtained is essential for obtaining a correct diagnosis. Again, it may be helpful to consider whether the information matches what would be expected. Dentists should consider how confident they are with the diagnosis; a lower confidence might prompt further testing or consultation with other providers.

To help improve the diagnostic process, consider potential unintended consequences of pursuing a specific diagnosis:

- Are factors present that do not align with the diagnosis?
- Are there elements that cannot be explained?
- Are there symptoms that are inconsistent with the current diagnosis?
- Is there a life-threatening condition with similar signs or symptoms that hasn't been considered?
- Is it possible that there are multiple, concurrent issues ongoing?

Communication and follow-up

The 2018 PSA study found that monitoring and follow-up failures were associated with the highest risk of patient harm, so this step is vital. The dentist should share potential and confirmed diagnoses with patients. This includes sharing test results and explaining how they relate to the patient's signs and symptoms. Patients also need to receive a copy of their test results, whether through a secure patient portal or a paper copy, depending on the patient's preference.

Dentists also should share with patients how they arrived at the diagnosis. For example, a dentist might note that she consulted with a specialist to ensure she was correct in her analysis of the data and the conclusions drawn. This example has the added benefit of showing the patient that you are taking a

team approach to their care. After the discussion, ask patients to explain to you what they believe the diagnosis is to ensure understanding.

The danger of missed and delayed diagnoses can be mitigated through appropriate follow up. For example, ensure that all test results have been received. Follow up may also include obtaining a second opinion, which should be shared with the patient. In addition, as a professional, the dentist needs to be comfortable with transferring a patient to a specialist if a diagnosis is particularly challenging.

Patients play an important role in follow up. Give them specific instructions as to when they should contact a provider should their condition change. Dentists typically think of this in terms of complications from existing diagnoses, but it also can help in identifying a condition that may have been missed on the initial assessment. Dentists should also monitor patients for response to treatment interventions and revise the plan of care as needed.

Documentation

In the *Dental Professional Liability Claim Report*, one of the underlying threads for the diagnosis-related claims was the lack of documentation that supports the decision-making process related to diagnosis. The most common problems with missing or incomplete documentation related to:

- Lack of a complete patient and family history
- Incomplete patient assessment
- Failure to list current medications and/or complaints
- Failure to document patient nonadherence with appointments, ordered diagnostic tests and/or prescribed medications
- Absence of notification of diagnostic test results and recommendations for further treatment or testing

This is an excellent list for dentists to keep in mind when documenting in the patient's record. Other items include documentation of reports from specialists who have been consulted, results of tests, and any reassessment related to patients returning with signs and symptoms that have not been resolved or have worsened. For regular patients, it is also wise to update the history and examination regularly.

Remember that the goal is for another clinician to be able to follow the dentist's train of thought from signs and symptoms to test results to diagnosis.

Ensuring quality care

Diagnostic errors can cause harm to patients and result in dentists facing legal action. Dentists can avoid these errors (and their negative effects) by conducting a thorough assessment, ordering appropriate tests, interpreting data obtained through assessment and testing, communicating results, and following up as indicated. This methodical approach will help protect patients and help dental professionals mitigate their liability risks.

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Tips to help avoid diagnostic errors

Follow these steps to help ensure you make the right diagnosis:

- Complete a thorough patient assessment in order to determine the recommended treatment approach and acceptable alternatives.
- Use mnemonics, checklists, templates (such as those for an exam), and other tools to ensure a complete, accurate assessment.
- Review prompts received in an electronic health record system. Don't override a suggestion without careful consideration.
- Don't practice in a vacuum. Other members of the dental care team and other clinicians all can have valuable insights.
- Consider appropriate consultations/referrals for a second opinion if you are unsure.
- Utilize additional diagnostic information, such as CBCT imaging, when necessary and appropriate to prevent or minimize the risk of injuries.
- Be aware of the danger of care transitions. If you are receiving a patient from another dentist, double check to ensure you have the information you need. If you are sending a patient to another provider, provide a complete report.
- Empower your patients and encourage them to be active participants in their care. For example, encourage them to speak up if they don't understand their test results or diagnosis. Patients also need to understand the importance of sharing all information with providers, including use of illicit substances.
- If you work in a multi-doctor office or group practice, lead initiatives to help ensure testing processes do not break down. An excellent resource is "[Improving Your Laboratory Testing Process](#)" from the Agency for Healthcare Research and Quality.

And don't forget the basics:

- Ensure thorough documentation of diagnosis and treatment rationale.
- Annually review the dental practice act in the state(s) where you hold a license.
- Practice in accordance with your organization's policies and procedures.
- Practice within your scope.

RESOURCES

Agency for Healthcare Research and Quality. Tools to improve diagnostic safety. n.d. <https://www.ahrq.gov/professionals/quality-patient-safety/diagnostic-safety/tools.html>

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Jones R, Magee MC. Identifying and learning from events involving diagnostic error: It's a process. Pa Patient Saf Advis. 2018;15(Supple 1):3-15. http://patientsafety.pa.gov/ADVISORIES/documents/201810_IdentifyingandLearning.pdf

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World Health Organization. Diagnostic errors. 2016. <https://apps.who.int/iris/bitstream/handle/10665/252410/9789241511636-eng.pdf;jsessionid=621373C9C6EEF5B5C6D0F9CB796C07CB?sequence=1>

Dental Expressions® – From the CNA Claim Files

Failure to Diagnose Metastatic Disease Allegedly Leads to Patient Death.

Statistics reported on types of cancer by various organizations and government entities customarily represent information about primary disease ("[primary tumor](#)"), which is the original, or first, tumor location in the body.

According to [the National Cancer Institute](#), the top 3 primary cancer diagnoses in the U.S. are breast (15 percent), prostate (14 percent) and lung cancer (12 percent). Cancers arising in the pharynx and oral cavity represent less than three percent of all new cancer cases.

In addition to oral and pharyngeal cancer, dentists must also consider the possibility of metastatic disease. A recent [study in the Journal of the National Cancer Institute](#) estimates that the number of individuals living with metastatic cancer in the U.S. is increasing and will approach 700,000 by 2025. Understanding a patient's risk factors for all types of cancer, and any previous cancer diagnosis and treatment, should be integral to a comprehensive dental and medical history. Moreover, this history should help to inform a dentist's risk analysis, treatment recommendations and other actions to minimize or prevent patient harm.

CLAIM CASE STUDY

Practitioners: General practitioner dentist (GP); periodontist

Claimant: Female, aged 68 years, history of breast cancer (lumpectomy, radiation), periodontitis, hypertension

Risk management topics: medical history, oral cancer guidelines, communication, documentation

Facts: A long term patient of the insured GP was being concurrently treated by a periodontist every two to three months. In May, during a periodic exam with the GP, the patient complained of discomfort due

to a recurrent "cold sore". The GP recommended that the restoration replacement that was originally planned for that day be delayed for about two weeks. The patient also complained of recent bleeding while brushing. An examination revealed a healing lesion in the buccal area of tooth 30. After obtaining a clinical photo, the dentist recommended that the patient should exercise caution while brushing the area until the next visit in June.

For the June visit, the dental patient healthcare information record indicated that the lesion was "much improved". The record stated that a biopsy would be considered in a few weeks if bleeding continued or increased. In late July, the patient called to report the area was "still bleeding". The patient stated that she was scheduled for her next periodontist visit in a few days. The office advised her to keep this appointment and to discuss the history with the periodontist.

The patient was late for the periodontist visit due to a family matter. Unfortunately, the periodontist had a commitment outside of the office and was unable to accommodate the patient's late arrival. A hygienist in the office observed the lesion, which was documented in the patient's record. The periodontist recommended that the patient use a steroid cream and an appointment was scheduled for August.

In August, periodic periodontal maintenance was completed. However, the periodontist did not perform an examination. The patient dental healthcare information record reflected a plan to evaluate the lesion at the next scheduled visit in approximately 2 months. In October, the patient returned for the next visit. She had not been back to the GP's office since the August periodontal visit. As a result, the hygienist at the periodontist's office decided to send a letter to the GP to advise him of the patient's periodontal status and the lesion at tooth 30.

No follow-up or treatment occurred in either office from October until January of the next year. At the January GP office visit, the lesion at tooth 30 was not mentioned in the chart. However, the patient stated that a “lump” had recently developed on her tongue, that had bled spontaneously a few days prior to her visit. The dental healthcare information record included a photo and chart note documenting a 10 mm diameter indurated lesion, with no bleeding or ulceration present at the time of the examination. The GP recommended a biopsy if no improvement ensued.

At a February follow-up visit with the GP, the tongue lesion was improving and the patient mentioned that she planned to speak with her oncologist about the mouth sores at an upcoming visit. The GP recommended that the patient have the periodontist check the tooth 30 area at her scheduled March visit.

The patient treatment history from March until May of the following year revealed:

- **March (periodontist):** tongue lump barely palpable; white erosive lesion at tooth 30 remains—recommend biopsy if present in a few weeks
- **April (oncologist):** possible biopsy in a few weeks
- **Early May:** breast reconstructive surgery completed; oral lesion biopsies a few days later (approximately a year after first complaint)
- **May:** biopsy results reveal metastatic breast cancer diagnosis
- **August:** resection of mandibular bone/tissues with clear margins; negative neck dissection findings
- **October:** neck mass—malignant lymph node; chemo and radiation therapy initiated
- **January:** completed chemo/radiation therapy
- **May (2 years from first complaint):** patient death

Key Allegations: Negligent care including: failure to diagnose metastatic lesions; failure to act/refer, breaching the standard of care.

Alleged Injury/Damages: Alleged damages against the insured GP and the co-defendant periodontist included medical expenses (surgery, chemo/radiation therapy, multiple hospitalizations), pain and suffering, funeral and burial expenses, wrongful death. The plaintiff’s global demand approached \$2 million.

Analysis: The facts of the case and additional information compiled during the course of the claim investigation led to defense concerns. It could have been argued that the patient visited the co-defendant periodontist’s office more often from the time of her first complaint about bleeding at tooth 30 until her death. The multiple visits may have indicated a greater responsibility for the periodontist to take definitive action. Nevertheless, the insured GP saw the lesion first and was responsible for appropriate follow-up until resolution. Moreover, as the patient’s primary care dentist, he was responsible for monitoring the

patient’s status as she proceeded to treat with a specialist to whom he had referred the patient.

A plaintiff must establish four elements to prove professional negligence: 1) the dentist(s) owed a duty to the patient 2) the dentist(s) breached this duty (breach of the standard of care) 3) there is a causal connection between an act or omission (breach) and the resulting injury; and 4) the plaintiff must prove an actual loss or injury occurred due to the breach.

In some cases of alleged malpractice, a valid defense may be based upon the theory that a dentist’s actions (or failure to act) would not have made a difference in the patient outcome. This defense theory may be supported by expert testimony or other evidence that refutes the “causal connection” between the injury and a provider’s act or omission.

In this case, dental defense experts noted failures on the part of both co-defendants with respect to examinations, follow-up, treatment, referral recommendations and documentation. A medical expert opined that timely biopsy and diagnosis would have made a difference in the patient’s outcome. The trial venue also became an important consideration in the case analysis. Defense counsel for both defendants strongly recommended early settlement inasmuch as the ability to obtain a defense verdict at trial was estimated to be very low.

Outcome: The case went to mediation, resulting in a global settlement in the low seven figures, below the original \$2 million demand.

Risk Control Comments: According to current guidelines and recommendations of the American Dental Association (ADA), performance of a conventional intraoral and extraoral visual and tactile examination remains the preferred approach for the identification of potentially malignant disorders. See the end of the article for a hyperlink to the ADA guidelines and other useful resources.

Cancer-related “failure to diagnose” or “failure to refer” allegations often involve cases in which lesions were initially identified. However, due to poor communication, incomplete documentation and/or inadequate referral processes, the dentist(s) failed to take the actions required to either confirm lesion resolution or to obtain a definitive diagnosis. In the patient’s best interest and in view of severe claim trends related to oral and pharyngeal cancer, dentists must remain vigilant in the identification of and follow-up of potentially malignant disorders.

ADDITIONAL RESOURCES:

ADA website—[Oral Health Topic: Head and Neck Cancer](#) (Extensive list of resources available to all dentists, including bulleted items below.)

- [Evidence-based Clinical Practice Guideline for the Evaluation of Potentially Malignant Disorders in the Oral Cavity](#)
- ADA Clinical Practice Guideline—[Chairside Guide for Evaluation of Potentially Malignant Disorders in the Oral Cavity](#)
- ADA instructional video—[How to Evaluate for Potentially Malignant Disorders and Oral Cancer](#)
- National Institute of Dental and Craniofacial Research—poster and protocol, [Detecting Oral Cancer: A Guide for Health Care Professionals](#)

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