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Differential diagnosis versus Causation

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The courts continue to struggle with the distinction between differential diagnosis and causation assessment. In a recent case Best vs. Lowe's Home Centers, 563 F.3d 171 (6th Cir. 2009), the Appellate Court overturning the District Court's exclusion of a plaintiff ENT expert, Dr. Moreno, again found equivalency between the two. Other cases have found them to be separate processes as they, in fact, are.

I have written about this distinction many times, but have never before drawn a picture. Attorneys like words. Scientists like pictures. I cannot imagine describing a biochemical pathway, for example, with words alone. So, I am going to try this the medical way: with a picture. I am hoping that this diagram showing the differential diagnostic pathway, versus the causation methodology pathway clears the matter up. This may be useful to attorneys attempting to exclude medical experts who, in toxic tort matters, are claiming that "differential diagnosis" is their "causation methodology."

The patient comes to the doctor with symptoms. Symptoms are physical complaints such as: headaches, joint pain, fatigue, insomnia, diarrhea and many, many others. The physician carries out an analytical process comprised of taking a history, performing a physical examination and ordering various tests. This approach constitutes the differential diagnostic process or Clinical Methodology (shown on the diagram) and leads to a diagnosis which is "the actual medical condition." This is the medical condition which accounts for the symptoms. It is not the cause of that condition. Causation methodology, by contrast, asks:" What caused or contributed to the medical condition elucidated through the clinical process of differential diagnosis?" That requires a separate process (shown on the diagram as "Causation Methodology") which must consider elements such as: 1. Proof that there is an established, known relationship between the agent at issue and the disease " General Causation" 2. Proof that the claimant inhaled, ingested or was exposed dermally to an amount of the agent sufficiently high to produce a dose capable of causing the clinical disorder. 3. A finding that the temporal relationship between the exposure and the onset of the disease followed a recognized exposure-disease relationship. and 4. Establishing that other, more or equally-likely causes of the clinical disorder were not present.

In a medical malpractice case, if a patient is harmed, liability may depend upon differential diagnosis alone: e.g. failure to diagnose or reaching the wrong diagnosis (actual medical condition.) By contrast, in a product liability case involving chemicals or pharmaceutical agents, a separate and distinct causation analysis is essential for the determination of what was responsible for the actual medical condition.

In Best v. Lowe's, the Appellate Court was partially correct and partially incorrect when it overturned the trial court's exclusion of the ENT expert. It reached a proper conclusion, but its reasoning and its discussion of differential diagnosis were incorrect.

The case involved a claimant who lost his sense of smell allegedly because of exposure to a chemical released in an accident in a Lowe's store. An ENT physician, Dr. Moreno, worked the patient up (clinical methodology = differential diagnosis) and concluded that the diagnosis was, indeed, anosmia (lost sense of smell). He thereby arrived at the Actual Medical Condition through the differential diagnostic process. He then carried out a causation analysis in which he evaluated alternate causes and discussed them, eliminated them for a variety of reasons, reasoned that the agent was capable of causing the disorder ("general causation") and concluded that the chemical was the culprit.

The District Court did not argue with the diagnosis or the differential diagnostic process. Rather, it excluded Dr. Moreno's testimony for lack of proper causation methodology (although, while noting the elements, it did not call it "causation methodology.") I am not commenting here about the quality of that causation reasoning, having not reviewed all of the underlying facts of the case. From a superficial discussion by the Appellate Court, it would appear that Dr. Moreno may or may not have been wrong in

his causal conclusion, but his methodological reasoning seems sound. Thus, this would, I believe, likely go to the quality of the analysis, not to the methodology: a question of fact for the jury. So, it seems that Dr. Moreno actually conducted both a differential diagnosis and a causation analysis. The appellate court, however, did not understand that. They saw his reasoning as a single methodological process which they placed under the rubric of "differential diagnosis." To that extent they erred. Their conclusion overturning the District Court's ruling that the testimony was inadmissible was probably correct: their explanation was not.

Another case Lee v. Marlowe, No. 3:08-CV-1739, 2009 WL 2591668, (N.D. Ohio Aug. 20, 2009) illustrates that it is easier for the Court to recognize the nature of differential diagnosis in a more commonly-understood event: an automobile accident as opposed to a chemically-induced injury.

During the evening August 31, 2007, the defendant was traveling westbound on the Ohio Turnpike when his vehicle struck a right-hand guardrail three times, and then swerved across two lanes of traffic, crossing the median separating the eastbound and westbound lanes of traffic, and struck Plaintiff's decedents' vehicle head-on, causing their deaths.

The question was why this happened.

The defendant asserted that the accident was due to a "sudden medical emergency." Supporting that defense was the unsubstantiated testimony of the defendant's cardiologist. He opined that the cause was syncope (or fainting). He further sated that he arrived at this conclusion based upon a "differential diagnosis." The Court did not accept the mere proclamation that he had conducted a proper differential diagnosis. The Court ruled that he had no basis for excluding other causes such as fatigue, impairment or, simply, lack of attention. They, thus, excluded this "differential diagnostic" explanation for the accident and excluded the defense expert's testimony.

Here the court properly ruled that the supposed "differential diagnosis" was improperly conducted. Thus, determination of the Actual Medical Condition (syncope in this case) was methodologically ill-founded. The physician had no medically reasonable way of ruling out other Conditions besides syncope.

In this case one never got to the cause of the condition, because it was not relevant. The poorly constructed differential diagnosis ended the testimony.
Assume, however, that this was a worker's compensation case in which a worker fell from a high platform sustaining a serious injury. Assume further that the facts properly supported a diagnosis of "syncope." Thus, the result of the differential diagnostic process—syncope—was correct. In such a matter the cause of the Condition—the syncope—could be relevant. If it were due to hot working conditions, it would compensable. If it were due to elicit drug use, it might not be (depending upon the State rules.)

To summarize:

Clinical Methodology is the Differential Diagnostic process. This leads to a determination of the Actual Medical Condition which is producing the patient's physical complaints. Causation Methodology is an entirely separate entity which asks: "What lead to this condition?" Attorneys, defense and plaintiff, and the Courts, need to understand this critical distinction. Defense attorneys particularly need to be aware of the fact that an assertion by a treating physician stating that he/she arrived at a causal conclusion via the standard medical approach of differential diagnosis is incorrect. Differential diagnosis is only the first step in a causation analysis. This must be followed by a separate analytical process as indicated on the accompanying flow diagram.

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