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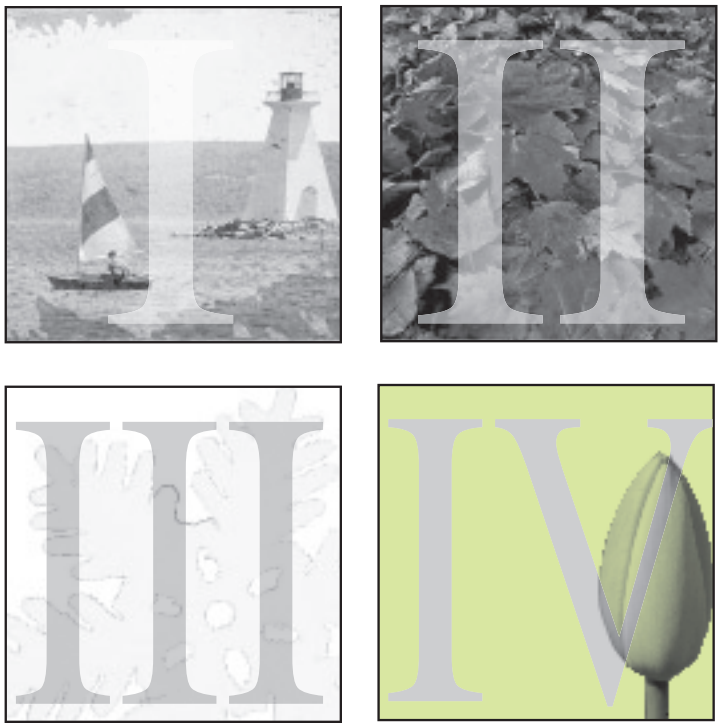

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P.O. Box 66 • Grand Ledge, Michigan 48837 • Phone: 517-627-3745 • Fax: 517-627-3950
www.mdtc.org • info@mdtc.org

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EDITOR'S NOTES

In this issue, we conclude our series on *Daubert* and its application with part three of the three part series by **Joe Hollingsworth** and **Eric Lasker.** This series has proven to be one of the more popular in the *Quarterly*.

Scott Holmes continues his contributions with part seven of the Young Lawyers Series, with the second part of an explanation on the nuts and bolts of handling a trial.

Sean Fosmire provides us with some valuable insights into "e-discovery," and the problems attendant to obtaining and being required to provide tape backups of emails. His article brings some order to the confusion that has followed on two recent and famous or infamous cases.

Edward Perdue and **Francis Ortiz** explore the rules that apply at the intersection of ERISA and the law of arbitration.

Samantha Jones has joined our staff as the legislative reporter, keeping us advised of developments in the first branch of government.

Finally, the editor weighs in as author with a brief analysis of implied contractual indemnity, a theory in search of a coherent meaning.

As always, we are grateful to the broad range of authors who devote their time and energy to writing and sending articles.

MDTC continues to maintain a focus on younger members and law students by announcing the **Third Annual Law Student Writing Competition.**

Be sure to check the **Schedule of Events** to keep up to date with what MDTC and DRI are up to in this new year.

Opinion: We invite other members to send us personal opinions on topics of interest to our readers. A length of about 1000 to 2000 words would be ideal.

Articles: We always welcome articles on any topic that will be of interest to our members in their practices. Although we are an association of lawyers who primarily practice on the defense side, the *Quarterly* always tries to emphasize analysis over advocacy, and favors the expression of a broad range of views, so articles from a plaintiff's perspective are always welcome. Author's Guidelines are available from the editor (hcarroll@VGpcLAW.com) or the assistant editor, Allison Reuter (acreuter@varnumlaw.com).

Hal O. Carroll, Editor • HCarroll@VGpcLAW.com

PRESIDENT'S CORNER

By: Terrence J. Miglio
Keller Thoma P.C.
440 E. Congress, 5th Floor • Detroit, MI 48226
Phone: 313-965-7610 • Fax: 313-965-1531 • Email: tjm@kellerthoma.com

John P. Jacobs served as President of the Michigan Defense Trial Counsel from 1995 to 1996. Over the years, he has been an officer and member of the MDTC Board. He currently serves as the Chair of the MDTC Past Presidents Committee. These titles, however, do not come close to accurately describing the amount of effort, energy, loyalty, and support John has given and continues to give this organization.

As I come down the home stretch of my presidency, I have reflected on how in the heck I ended up in this role in the first place. You see, as he has done with others in the organization, John persuaded me to get on the MDTC "train," then shoveled the coal to keep the locomotive moving so fast that I couldn't jump off. John got me to join this organization, which eventually led to my current (and second full-time) position as its President. So I have John to thank for all of the MDTC board meetings, seminars, cocktail receptions, and dinners that I have attended over the years. I also have John to thank for the countless telephone calls I have received from media, board members and various bar committees; all of the trips to Lansing to meet with legislators and State Bar representatives; and for the time spent authoring the President's Corner for the *Quarterly*. Although I did not know John personally before he solicited me to become the Chair of the Labor and Employment Section of MDTC, he assured me that I would come to make many friends in this organization and to value my involvement. He was absolutely correct. The friendships I have made and the colleagues which I have been honored to associate with in this organization have been spectacular — for which I have John Jacobs to thank.

John is my friend. But he has also been a tremendous inspiration to me and others as to his loyalty, dedication, support, and advocacy for this organization. A widely-known and highly visible defense lawyer with an impeccable reputation, John has, throughout his career, received numerous awards and accolades. He has found himself nominated to numerous committees by the courts and the State Bar. In 2004, he received the MDTC Excellence in Defense Award. Despite his success and his busy schedule as a practicing lawyer, he and members of his firm, with his urging and support, have been regular attendees at virtually every MDTC event. Even outside of those events, he has given graciously of his time. When the Michigan legislature was considering tort reform initiatives and "medical courts," John willingly assumed responsibility for the MDTC's Tort Reform Task Force.

The friendships I have made and the colleagues which I have been honored to associate with in this organization have been spectacular — for which I have John Jacobs to thank.

When last year's political season spewed forth outrageous accusations and negative depictions of lawyers, John participated in numerous meetings to strategize an MDTC response. While not holding a formal position on the MDTC board of directors, he has spent countless hours attending board meetings and on the phone providing assistance and advice to those of us in leadership positions. One of the fastest talking people I know, his presence at the MDTC hospitality suites where he regularly "holds court" is always entertaining. His pranks are legendary not only among the membership, but also among the proprietors of hotels where MDTC events have been held.

John's dedication to the "MDTC family" provided a number of us with the motivation to continue serving. Sometimes his opinions have provoked lively debate, but those who may not have agreed with him have never doubted his sincerity and commitment to our organization. And while I have many people to thank for the spectacular experience I continue to have in this organization, I proudly trace my roots in the MDTC to my friend, John Jacobs.

DAUBERT IN TOXIC TORT LITIGATION

[PART 3 OF 3][1]

By: Joe G. Hollingsworth & Eric G. Lasker
Spriggs & Hollingsworth
Washington, D.C

"There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact."
Mark Twain, *Life on the Mississippi (1874).*

Executive Summary
Part 3 of 3

Faced with the exacting standards of *Daubert*, plaintiffs' causation experts will often respond with a spaghetti-on-the-wall strategy in the hope that something will stick. In particular, plaintiffs' experts will often improperly rely on strands of anecdotal evidence or clinical impressions to opine that a substance is an established cause of an adverse event. The Michigan Supreme Court's adoption of the scientific method as the central guide to admissibility provides state courts with the solution they need to untangle the mess.

Case reports are merely anecdotal observations of adverse effects occurring in coincidence with exposure to a given substance. A sufficient number of similar case reports can spur controlled research, but as most courts have properly recognized, case reports themselves cannot support a causation opinion under *Daubert*.

Clinical reasoning also has limits. Doctors in their day-to-day practice make decisions for the treatment of individual patients based upon the clinical information before them, but these clinical judgments do not provide a reliable basis for a general causation opinion. Doctors do not conduct scientific testing in their daily practice to determine whether particular substances can cause particular injuries.

While not germane to the general causation prong of a causation opinion, a differential diagnosis may provide a scientifically reliable basis for a specific causation opinion — *e.g.*, that an established toxin caused a particular plaintiff's injury. But an expert's bare assertion that he or she applied a differential diagnosis is not sufficient to satisfy *Daubert*. A trial court must determine whether the differential diagnosis is based on a reliable methodology, and the expert must demonstrate that the differential diagnosis was based on a sufficient and valid clinical investigation.

Introduction

The first article in this three-part series (*Michigan Defense Quarterly*, October 2006) discussed the legal standards for admissibility of medical causation expert testimony following the Michigan's Supreme Court's adoption in *Gilbert v DaimlerChrysler Corp.*[2] of the federal *Daubert* requirements of reliance and relevance. The second article (*Quarterly*, January 2007) offered detailed guidance on how defense counsel can assist courts in properly interpreting the *Daubert* requirements in relation to specific categories of scientific evidence routinely cited by plaintiffs' experts in support of general causation opinions, *i.e.*, epidemiology, animal studies, chemical analogies, regulatory findings and other secondary sources. In this final installment, we will discuss causation opinions premised on clinical practice, and how defense counsel can effectively use *Daubert* to exclude causation testimony that rests upon anecdotal case reports and clinical reasoning.

I. Causation Opinions Based on Anecdotal Case Reports

Case reports are anecdotal observations of adverse effects occurring in coincidence with exposure to a given substance. They normally spring from a clinician's observations in an individual patient or series of patients. If a sufficient body of similar case reports appears in the literature, it can spur epidemiological or other controlled research to test the hypothesis that a causal link exists.[3] However, as most courts have properly recognized, case reports themselves do not test the causal hypothesis and accordingly cannot support a causation opinion under *Daubert*.[4] Case reports are merely anecdotal accounts of observations in particular individuals; they are not controlled tests, frequently lack analyses, and

often make little attempt to screen out alternative causes for a patient's condition.[5] As discussed in previous articles in this series, when the substance at issue is widely used, it is statistically certain given general background rates of disease that there will be case reports in which an exposure and an injury coincidentally coincide. Accordingly, the existence of such case reports is of little scientific value.[6]

In toxic tort litigation, causation experts may attempt to rely on so-called "causality assessments" of individual case reports. Causality assessments are algorithms used in some European pharmacovigilance regulatory schemes that seek to impose some structure on the evaluation of individual case reports by creating standardized questions to be used in the review of such reports, such as:

- Was the adverse event a known consequence of the drug?
- Did the event occur in temporal proximity to the use of the drug?
- Did the symptoms disappear upon withdrawal of the drug ("dechallenge")?
- Did the symptoms reappear following reintroduction of the drug (rechallenge)?
- Are there alternative causes for the adverse event?

Reviewers then grade individual case reports using such terms as "not possible," "unlikely," "possible," and "probable."[7] Causality assessments are used by some regulatory agencies as a signaling tool, but "they have no objective reliability which would render them useful in a wider environment."[8]

In toxic tort litigation, causation experts may attempt to rely on so-called "causality assessments" of individual case reports.

[a]s most courts have properly recognized, case reports themselves do not test the causal hypothesis and accordingly cannot support a causation opinion under Daubert.

"None of the available causality assessment systems has been validated ... In other words the uncertainty [inherent in case reports] is not reduced, but categorized (at best in a semiquantitative way)."[9] Studies of standardized causality assessments have repeatedly found significant disagreements between graders using the same assessment methodology.[10] Accordingly, causality assessments carry no greater scientific weight than other case reports and likewise cannot provide the type of evidence required under *Daubert*.[11]

Some case reports include information regarding purported dechallenges or rechallenges, *i.e.,* reports that a patient's condition improved when the substance was removed or worsened when the substance was reintroduced. Where the dechallenge/rechallenge report is merely an after-the-fact account of an anecdotal observation, it suffers from similar reliability problems as other case reports. Many medical conditions result in fluctuations in symptomology in the ordinary course, and apparent temporal associations with exposure to a drug or chemical may be due to pure chance.

Even if the dechallenge or rechallenge is conducted prospectively with the intent of testing a causal hypothesis, a perceived effect in a single individual has limited scientific value at best.[12] Because the data are limited to a single observation, a trial court must be particularly diligent in determining whether the dechallenge/rechallenge was conducted under strict controls to account for potential confounding influences. Prospective dechallenge/rechallenge experiments — sometimes referred to as "single subject" or "n of 1" experiments — have numerous limitations that preclude reliable causation conclusions.[13] "[W]ithout strong assumptions regarding how an intervention on one individual relates to its effects on others, the results from a single-subject design provide little useful information ... [and e]xamination of a single subject cannot verify those assumptions."[14] As courts have explained, a prospective dechallenge/rechallenge report "constitutes but one single, uncontrolled experiment."[15]

II. Causation Opinions Based On Clinical Reasoning

The question whether clinical reasoning can reliably support a causation opinion must be considered separately with respect to general causation and specific causation. Doctors do not in their ordinary clinical practice reach scientifically reliable determinations regarding general causation; they make individualized treatment decisions based on the exigencies of the moment. Accordingly, clinical reasoning cannot reliably support a general causation opinion that a substance is **capable** of causing an adverse event, where the opinion of necessity rests on inference, rather than on direct evidence, such as a

Many medical conditions result in fluctuations in symptomology in the ordinary course, and apparent temporal associations with exposure to a drug or chemical may be due to pure chance.

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hematoma of the brain caused by a bullet wound. On the other hand, clinical reasoning through a differential diagnosis may provide reliable support for a specific causation opinion that a **known** causal agent is responsible for a particular patient's condition, so long as the diagnosis is reached in a manner that is faithful to the scientific method. Differential diagnoses conducted for tort litigation purposes raise unique issues of reliability, however, because they generally are conducted *post hoc* and not in the context of medical treatment.

A. Clinical Reasoning and General Causation

Doctors in their day-to-day practice are required to make treatment decisions for individual patients based upon the clinical information before them. These clinical judgments do not provide a reliable basis for a general causation opinion.[16] Doctors do not conduct scientific testing in their daily practice to determine whether particular substances can cause particular injuries. Indeed, few doctors have more than rudimentary training in the scientific methods used to determine causation.[17] Instead, they reach working diagnoses and make conservative medical judgments based on their Hippocratic oath to "first, do no harm."[18] Thus, for example, if a patient reports a recent exposure to a chemical substance, the doctor may order the patient to avoid further exposures based not on a scientific determination of causality but simply as a no-risk prophylactic measure.[19]

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While doctors may reach tentative opinions regarding causation in the course of providing treatment, their opinions are not reached pursuant to the scientific method, but are instead based on inferential leaps that allow them to provide immediate therapeutic care. Clinical causation opinions based on differential diagnosis are "a mixture of science and art, far too complicated for its accuracy to be assessed quantitatively or for a meaningful error rate to be calculated."[20] Moreover, differential diagnosis only "follow[s] the causal stream up to a point where intervention is possible" because, typically, physicians "do not care about a disease's etiology ... unless understanding causation would assist in diagnosis and treatment."[21] As one court recently explained,

> Doctors in their day-to-day practices stumble upon coincidental occurrences and random events and often follow human nature, which is to confuse association and causation. They are programmed by human nature and the rigors and necessities of clinical practices to conclude that temporal association equals causation, or at least that it provides an adequate proxy in the chaotic and sometimes inconclusive world of medicine. This shortcut aids doctors in their clinical practices because the most important objective day-to-day is to help their patients and "first do no harm," as their Hippocratic oath requires. Consequently, they make leaps of faith. ... [This type of] clinical impression is not the sort of scientific methodology that *Daubert* demands.[22]

Plaintiffs' counsel seeking to rely on clinical reasoning to support a general causation opinion will often cite to the language in *Kumho Tire* that an expert must "employ[] in the courtroom the same level of intellectual rigor that characterizes the practice of the expert in the relevant field."[23] This argument is misplaced, because, as explained above, "the relevant field[s]" for a general causation opinion are epidemiology and toxicology, not clinical medicine.[24] Plaintiffs' counsel will also argue that differential diagnosis is a well-recognized, scientifically reliable technique. But differential diagnosis is a reliable methodology only for "ruling out" alternative causes of injury from a list of possible causes; it does not "rule in" a substance as a potential cause in the first instance.[25]

[d]ifferential diagnosis is a reliable methodology only for "ruling out" alternative causes of injury from a list of possible causes; it does not "rule in" a substance as a potential cause in the first instance.

B. Clinical Reasoning and Specific Causation

Although insufficient for purposes of general causation, a differential diagnosis may provide a scientifically

reliable basis for a specific causation opinion — *i.e.*, that an established toxin in fact caused a plaintiff's injury. However, an expert's bare assertion that he applied a differential diagnosis is not sufficient to satisfy *Daubert*. A trial court must determine whether the differential diagnosis is based on a reliable methodology. Accordingly, the expert must demonstrate that the differential diagnosis was based on a sufficient and valid clinical investigation.[26] The expert also must have a scientifically reliable basis for excluding alternative causes of the plaintiff's injury, including the possibility that the injury was idiopathic.[27]

In analyzing the reliability of a specific causation opinion based on differential diagnosis, trial courts must ensure that the expert employs "the same level of intellectual rigor" in the courtroom as a treating physician would employ in the ordinary care of patients.[28] An expert cannot simply look for all possible causes of a person's illness from the universe of potential causes and declare that each of them — including the exposure at issue — should be considered actual but-for causes for purposes of tort liability.[29] Even if an expert can show reliable scientific evidence supporting some level of increased risk from a given type of exposure, the expert cannot reliably point to the exposure as the cause of an individual plaintiff's injury if that plaintiff has other independent risk factors that are more strongly associated with the injury in question. For example, assume that there is scientifically reliable epidemiological evidence showing a 3 times statistically significant increased risk of stroke in patients who are exposed to a given substance X. That evidence may be sufficient to support an expert's specific causation opinion with regard to a plaintiff who has no other risk factor for stroke. However, it would not be sufficient to support a specific causation

Even if an expert can show reliable scientific evidence supporting some level of increased risk from a given type of exposure, the expert cannot reliably point to the exposure as the cause of an individual plaintiff's injury if that plaintiff has other independent risk factors.

opinion with regard to a patient who also suffers from uncontrolled hypertension and has smoked a pack of cigarettes a day for the past 20 years given the greater risks posed by those co-morbid conditions. Where a plaintiff has other established risk factors that could have caused the plaintiff's injury, the expert must explain how he ruled out these other potential causes to reliably support an opinion that the injury was due instead to a drug exposure.[30]

A trial court also needs to evaluate an expert's differential diagnosis in light of the artificial circumstances in which it is reached. Unlike differential diagnoses conducted by doctors in their day-to-day practice, a differential diagnosis in a litigation context is often conducted in support of an already asserted legal claim of causation. This raises myriad possibilities of bias, both intentional and unintentional.

Provided that the drug has been used by a relatively large number of patients, there will be a ready population of patients that had adverse events while taking the drug based solely on statistical chance due to the background rates of such events regardless of drug use.

Consider a hypothetical example of typical large-scale drug product liability litigation. Based on anecdotal reports of adverse events and possibly pressure from special interest organizations like Public Citizen, the FDA recommends labeling changes or withdraws approval of a drug.[31] The same day, if not before, plaintiffs' firms will begin advertising for potential plaintiffs through various forms of media, including the internet, television, radio, and print media. Provided that the drug has been used by a relatively large number of patients, there will be a ready population of patients that had adverse events while taking the drug based solely on statistical chance due to the background rates of such events regardless of drug use. Accordingly, plaintiffs' counsel can quickly gather a large pool of potential plaintiffs.

Plaintiffs' counsel will then start weeding through that pool to exclude individuals with obvious alternative causes for their injuries and patients whose injury did not emerge in temporal proximity to their ingestion of the drug. At first blush, this might appear to be a reliable method for determining those individuals whose injuries were more likely due to the drug. That interpretation, however, is based on the false premise that medicine can always find a cause for an injury. In fact, there are many conditions for which medicine frequently cannot find a cause.[32] In other words, there is often a measurable background rate of *idiopathic* injuries, *i.e.*, injuries with unknown causes. Plaintiffs' counsel's weeding out process, accordingly, often merely identifies the statistically-expected population of patients who coincidentally had adverse events of unknown cause while taking the drug.

At the same time plaintiffs' counsel are reviewing their potential plaintiff

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population, they will also be looking for an expert witness to provide a specific causation opinion. Generally, plaintiffs' counsel will select an expert who is already prepared to offer a favorable general causation opinion. Plaintiffs' counsel will also select an expert witness who is predisposed towards providing a favorable specific causation opinion. This does not mean that the expert is intentionally biased or insincere in his opinion, but it does mean that the expert will enter the process with a preconceived assumption of causality.

By the time the expert and plaintiff are brought together for purposes of a differential diagnosis, the result is effectively preordained. The expert will start his examination from the premise that the substance at issue is dangerous and a likely cause of injury regardless of potential alternative causes. The plaintiff will not present with obvious alternative causes of injury sufficient to shake the expert from his initial presumption. Moreover, in cases where the expert is not the patient's treating physician, the expert will not test his initial diagnosis through ongoing observation and medical treatment.

This "differential diagnosis" bears little resemblance to a differential diagnosis conducted by treating physicians in their regular practice, and cannot provide the type of objective validation that *Daubert* requires for admissibility of an expert specific causation opinion. Trial courts must recognize that there is an inherent "selection bias" at work in toxic tort liability litigation and carefully evaluate the expert's specific causation opinion with this artificial background in mind.

By the time the expert and plaintiff are brought together for purposes of a differential diagnosis, the result is effectively preordained.

Faced with the "exacting standards" of Daubert, plaintiffs' causation experts will often respond with a spaghetti-on-the-wall strategy in the hope that something will stick.

Conclusion

Faced with the "exacting standards" of *Daubert*,[33] plaintiffs' causation experts will often respond with a spaghetti-on-the-wall strategy in the hope that something will stick. The Michigan Supreme Court's adoption of the scientific method as the central guide to admissibility provides state courts with the solution they need to untangle the mess. As we've explained in this three part series, for each strand in plaintiffs' expert's analysis, the questions are the same: Is the expert relying on evidence that has been tested and validated, and does the evidence fit the question at issue? Unless an expert can answer both of these questions in the affirmative, he should not be allowed to serve up his opinions to a jury.

As Supreme Court Justice Breyer explained in his concurring opinion in *Joiner*, the evidentiary safeguards imposed by the courts against unreliable science provides an important bulwark against unfounded litigation that can threaten access to needed healthcare and products:

> [M]odern life, including good health as well as economic well-being, depends upon the use of artificial or manufactured substances ... [I]t may, therefore, prove particularly important to see that judges fulfill their *Daubert* gatekeeping function, so that they help assure that the powerful engine of tort liability, which can generate strong financial incentives to reduce, or to eliminate, production, points toward the right substances and does not destroy the wrong ones.[34]

By adopting the *Daubert* standard, the Michigan Supreme Court has insured that this bulwark is available to defendants in Michigan toxic tort litigation. As defense counsel, it is our obligation to provide courts with the guidance they need to properly guard the gates to their courtrooms.

Messrs. Hollingsworth and Lasker are partners in the Washington, D.C. law firm Spriggs & Hollingsworth, where they specialize in pharmaceutical and toxic tort litigation. Their email addresses are elasker@spriggs.com and jhollingsworth@spriggs.com

Endnotes

1. Editor's Note: Earlier versions of this series have appeared as an article in the *Journal of Health Law*, published by the American Health Lawyers Association, and in the *Drug Abuse Handbook*, 2nd Edition, published by Taylor and Frances/CRC Press and edited by Steven Karch and Michael Peat (December 2006, available at www.crcpress.com and through other distributors.) Both AHLA and Frances/CRC Press have granted permission for the publication of this series.
2. 470 Mich. 749, 685 N.W.2d 391 (2004).
3. *See* Howard Hu & Frank E. Speizer, *Influence of Environmental and Occupational Hazards on Disease*, in Harrison's Principles of Internal Medicine 19 (Braunwald, *et al*. eds. 15th ed. 2001) ("Case reports either sent to local authorities or published in the literature often prompt follow-up studies that can lead to the identification of new hazards"); David A. Grimes & Kenneth F. Schulz, *Descriptive Studies: what they can and cannot do*, 359 The Lancet 145 (Jan. 12, 2002) ("epidemiologists and clinicians generally use descriptive reports to search for

clues of cause of disease – i.e., generation of hypotheses."); J.A. Arnaiz, et al., *The use of evidence in pharmacovigilance: Case reports as the reference source for drug withdrawals*, 57 Eur. J. Clin. Pharmacol 89-91 (2001).

4. *See McClain v. Metabolife Int'l Inc.*, 401 F.3d 1233, 1253-54 (11th Cir. 2005); *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 885 (10th Cir. 2005); *Rider v. Sandoz Pharms. Corp.*, 295 F.3d 1194, 1199 (11th Cir. 2002); *Glastetter v Novartis Pharms. Corp.*, 252 F. 3d 986, 989-90 (8th Cir. 2001); Soldo v Sandoz Pharms. Corp., 244 F. Supp. 2d 434, 541 (W.D. Pa. 2003); *Caraker v SandozPharms. Corp.*, 188 F. Supp. 2d 1026, 1034-35 (S.D. Ill 2001); *Brumbaugh v. Sandoz Pharm. Corp.*, 77 F. Supp. 2d 1153, 1156 (D. Mont. 1999) *see also Siharath v Sandoz Pharms. Corp.*, 131 F. Supp. 2d 1347, 1361-62 (N.D. Ga. 2001). (citing cases).
5. *See Rider*, 295 F.3d at 1199; *Glastetter*, 252 F.3d at 989-90; *Soldo*, 244 F. Supp. 2d at 539-40; *see also* Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning 1 (Ellenhorn ed. 2d ed. 1997) ("Case reports demonstrate a temporal but not necessarily causative relationship between exposure and health effects. This information is often confounded by the inability to exclude other causes of illness.").
6. *See* Grimes & Schulz, *supra* note 3, at 148 (case reports, case series, and other descriptive studies "do not allow conclusions about cause of disease").
7. *See* M.N.G. Dukes, *et al., Responsibility for Drug-Induced Injury: A Reference Book for Lawyers, the Health Professionals and manufacturers* 45-46 (2d ed. 1998); Ronald H.B. Meyboom, *et. al., Causal or Casual? The Role of Causality Assessments in Pharmacovigilance*, 17(6) Drug Safety 374, 375-81 (1997).
8. Dukes, *supra* note 7 at 46.
9. Mayboom, *supra* note 7, at 382.
10. *See Mayboom, supra* note 7 at 381; G. Miremont, *et al., Adverse drug reactions: physicians' opinions versus a causality assessment method*, 46 Eur. J. Clin. Pharmacol. 285, 288 (1994).
11. *See Glastetter v. Novartis Pharms. Corp.*, 107 F. Supp. 2d 1015, 1037 n. 21 (E.D. Mo. 2000) ("like case reports ... a causality assessment involves only one individual, and, in any event, is not sufficient to establish causation") *aff'd*, 252 F.3d 986 (8th Cir. 2001); *Soldo*, 244 F. Supp. 2d at 545 (plaintiff has failed to show that the causality assessment "methodology — adopted for foreign regulatory purposes — meets any of the *Daubert* criteria, nor has plaintiff shown any other indicia of reliability").
12. *See Dunn v. Sandoz Pharms. Corp.*, 275 F. Supp 2d 672, 683 M.D.N.C. 2003); *Soldo*, 244 F. Supp. 2d at 541-42; *Caraker*, 188 F. Supp. 2d at 1035-36; *see also Revels v. Novartis Pharms. Corp.*, No. 03-98-00231-CV, 1999 WL 644732, *5 (Tex. App. Aug. 26, 1999).
13. *See* David M. Reboussin & Timothy M. Morgan, *Statistical considerations in the use and analysis of single-subject designs*, Medicine and Science in Sports and Exercise 639, 640-642 (1996) (discussing limitations).
14. Reboussin & Morgan, *supra* note 13, abstract.
15. *Soldo*, 244 F. Supp. 2d at 541 (quoting *Revels*, 1999 WL 644732, at *5); *see also McClain*, 401 F.3d at 1254-55 ("de-challenge/re-challenge tests are still case reports and do not purport to offer definitive conclusions as to causation") (quoting *Rider*, 295 F.3d at 1200).
16. *See Soldo*, 244 F. Supp. 2d at 508; *Siharath*, 131 F. Supp. 2d at 1362; *In re Breast Implant Litig.*, 11 F. Supp. 2d at 1230; *Hall*, 947 F. Supp. at 1413.
17. *See* Hu & Speizer, *supra* note 3.
18. *See Siharath*, 131 F. Supp. 2d at 1371; *see also* Miremont, *supra* note 10 at 288 (explaining finding that physicians are more likely to attribute causation to a drug as being due to their "necessarily more pragmatic approach to patients and diseases").
19. *See* J. Kassirer & J. Cecil, *Inconsistency in Evidentiary Standards for Medical Testimony: Disorder in the Courts*, 288(11) JAMA 1382, 1384 (Sept. 2002).
20. John M. Conley & John B. Garver, III, *William C. Keady and the Law of Scientific Evidence*, 68 Miss. L.J. 39, 51 (1998).
21. Herbert A. Simon, *Artificial-Intelligence Approaches to Problem Solving and Clinical Diagnosis*, in Logic of Discovery and Diagnosis in Medicine 72, 87 (Kenneth F. Schaffner ed. 1985).
22. *Siharath*, 131 F. Supp. 2d at 1372.
23. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 152 (1999).
24. *See Siharath*, 131 F. Supp. 2d at 1362; Michael B. Kent, Jr., *Daubert, Doctors and Differential Diagnosis: Treating Medical Causation Testimony as Evidence*, 66 Def. Couns. J. 525, 532-33 (1999).
25. *See Norris*, 397 F.3d at 885; *Soldo*, 244 F. Supp. 2d at 524; *Siharath*, 131 F. Supp. 2d at 1362-63; *Glastetter*, 107 F. Supp. 2d at 1027.
26. *See Soldo,* 244 F. Supp. 2d at 551; *Pick v. Am. Med. Sys. Inc.*, 958 F. Supp. 1151, 1168-69 (E.D. La. 1997).
27. *See Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1319 (9th Cir. 1995) ("*Daubert II*"); *Soldo*, 244 F. Supp. 2d at 551-52; *Magistrini*, 180 F. Supp. 2d at 608-10 (D.N.J. 2002); *Nelson v. Am. Home Prods. Corp.*, 92 F. Supp. 2d 954, 971 (W.D. Mo. 2000).
28. *Kumho Tire*, 536 U.S. at 152.
29. *See Cano v. Everest Minerals Corp.*, 362 F. Supp. 2d 814, 846 (W.D. Tex. 2005).
30. *See Wills v. Amerada Hess Corp.*, 379 F.3d 32, 50 (2d Cir. 2004) (excluding expert's specific causation opinion that plaintiff's squamous cell carcinoma had been caused by polycyclic aromatic hydrocarbons where plaintiff was a smoker and heavy consumer of alcohol); *Easter v. Aventis Pasteur, Inc.*, 358 F. Supp. 2d 574, 577 (E.D. Tex. 2005) (expert could not reliably point to thimerosal in vaccine as a cause of plaintiff's neurological injuries where plaintiff had autism that could not be linked to vaccine and was independently associated with such injuries).
31. As discussed in earlier articles in this series, such regulatory action is not the equivalent of a finding of causation. *See, e.g., McLain*, 401 F.3d at 1248-50; *Rider*, 295 F.3d at 1201; *Glastetter*, 252 F.3d at 991.
32. *See, e.g.*, Steven A. Kittner, *et al, Cerebral Infarction in Young Adults*, 50 Neurology 890-94 (1998) (despite neurologists' careful review, in 50.5% of cases, no probable cause of stroke in young adults could be identified).
33. *Weisgram v. Marley Co.*, 528 U.S. 440, 455 (2000)
34. *General Electric v. Joiner*, 522 U.S. 136, 148-49 (Breyer, J., concurring).