

*Medical Expert Witness Testimony –
Imperatives, Principles, and Methodologies* ©2023

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- Workers' Compensation Systems in the US
- Imperatives for Medical Expert Testimony
- Legal Principles Governing Expert Testimony
- Legally Sustainable Methodologies for Determination of Causation



CLIENT Essentials

Legal Compensation Systems

- Physicians conducting physical or mental examinations and expert witness testimony must understand the fundamentals of various state and federal disability compensation systems, the nuances of legal procedures governing the conduct of examinations and admissibility of expert testimony the legal systems.

Slides 5-13: *See* Ranavaya, M. Physician's Guide to Medicolegal Practice, AMA Press, Chicago, IL (2019).



CLIENT Essentials

Workers' Compensation Systems

- Until the beginning of the 20th century, civil litigation under tort law was the only remedy available to the victim of an occupational injury.
- In the past century, workers' compensation systems have evolved into no-fault-based compulsory coverage for injuries and illnesses “arising out of and during the course of employment.”
- The workers' compensation system is administered in states by a “quasi-judicial” (*i.e.*, administrative) agency or governing board.

Ranavaya, M. *Physician's Guide to Medicolegal Practice*, AMA Press, Chicago, IL (2019).



State Workers' Compensation

- In nearly all states, workers' compensation insurance is available through private insurance companies.
- A few states have a state-administered monopoly insurance fund that employers pay into unless they qualify as a self-insured.
- Large employers with sufficient financial resources *may* self-insure and are responsible for administering and paying for claims.
 - Self-insured employers typically use a third-party administrator (TPA) to administer their workers' compensation program.
- Texas is the exception to mandatory workers' compensation: employers are not required to provide workers' compensation insurance coverage to employees.



- Pursuant to worker's compensation statutes, state legislatures may create presumptions concerning work-relatedness that establish rights and liabilities, *even in the absence of proof of medical causation*.
- Such presumptions almost universally favor a determination of work-relatedness **but** are rebuttable by competent contrary evidence.
- Rarely, agencies may enact a rebuttable presumption that a condition is **not** work-related.



CLIENT Essentials

The Personal Treating Physician

- Workers' compensation systems may also *weight* the opinions of providers differently:
 - A court or administrative law judge may disregard a consulting physician's testimony and instead rely on the treating physician's opinion, **irrespective of either the treating physician's qualifications or the rigor of her methodology** for determination of causation.
- **“The opinions of a claimant's treating physicians are generally entitled to greater weight than the opinions of other experts.”**

Fauque v. Montana Pub. Employees' Ret. Bd., 2014 MT 184, ¶ 26, 375 Mont. 443, 449, 329 P.3d 593, 597 (citation omitted).



MCA 39-71-119. Injury and accident defined

Effective: April 14, 2021

(1) **“Injury” ... means:**

- (a) internal or external physical harm ... established by *objective medical findings*;
- (d) death.

(2) An injury is caused by an accident. An accident is:

- (a) an unexpected traumatic incident or *unusual strain*;
- (b) identifiable by time and place of occurrence;
- (c) identifiable by member or part of the body affected; **and**
- (d) caused by a specific event on a single day or during a single work shift.

(4) “Injury” or “injured” does not include a disease that is not caused by an accident.

(5) **[Disease ...not caused by an accident.]**

(a) A cardiovascular, pulmonary, respiratory, or other disease, cerebrovascular accident, or myocardial infarction suffered by a worker is an injury *only if the accident is the primary cause of the physical condition in relation to other factors contributing to the physical condition.*

(b) **“Primary cause”**, as used in subsection (5)(a), *means* a cause that, with a *reasonable degree of medical certainty*, is responsible for *more than 50% of the physical condition.*



MCA 39-71-407. Liability of insurers – limitations

Effective: March 23, 2023

For workers' compensation injuries, each insurer is liable for ... compensation ... to an employee ... who receives an injury arising out of and in the course of employment or, in the case of death ..., to the employee's beneficiaries

(3) [Burden of Proof]

(a) Subject to subsection (3)(c), an insurer is liable for an injury ... only if the injury is established by ***objective medical findings*** and if the ***claimant establishes that it is more probable than not that:***

(i) a claimed injury has occurred; or

(ii) a claimed injury has occurred **and *aggravated a preexisting condition.***

(b) **Proof that it was *medically possible* that a claimed injury occurred or that the claimed injury aggravated a preexisting condition is not sufficient to establish liability.**

(c) **Objective medical findings are sufficient for a presumptive occupational disease ... but may be overcome by a preponderance of the evidence.**



- (12) An insurer is liable for an occupational disease **only if** the occupational disease:
 - (a) is established by *objective medical findings*; and
 - (b) arises out of or is contracted in the course and scope of employment ... if the events occurring on more than a single day or ... shift are the *major contributing cause* of the occupational disease *in relation to other factors contributing to the ... disease*. [A]n occupational disease is not the same as a *presumptive occupational disease*.



- The US Department of Labor **Office of Workers' Compensation Programs (OWCP)**, administers 4 federal workers' compensation programs:
 - Division of Federal Employees' Compensation
 - Veterans Benefits Administration
 - Division of Longshore and Harbor Workers' Compensation
 - Social Security Administration Disability Benefits Program



- **The Division of Federal Employees' Compensation** is responsible for administering the **Federal Employees' Compensation Act (FECA)** – a federal workers' compensation law covering **civilian** federal employees that sustain work-related injury, disease, or death:
- Benefits provided under the FECA constitute the exclusive remedy against the US:
 - The FECA is no-fault system: a federal employee cannot sue the federal government or recover damages for work-related injuries, disease, or death.



- **The Veterans Benefits Administration (VBA)** was created under the US Department of Veterans Affairs (VA) to administer the GI Bill and Compensation and Pension (C&P) programs.
- Veterans who receive an honorable or general discharge from active military service are eligible for compensation for *service-connected disabilities*.



- FECA also extends to the **War Hazards Compensation Act**, which covers the occupational injuries, diseases, and deaths resulting from a *hostile act* when working for *private employers on military bases* or lands used for military purposes **outside the US**, including US territories.
- The **Defense Base Act (DBA)** also covers *private employees* of US defense contractors *overseas* for injury, disease, or death from a *nonhostile act*.
 - The DBA is managed by the Division of Longshore and Harbor Workers' Compensation.



- The **Division of Longshore and Harbor Workers' Compensation** manages federal compensation laws covering *land-based* maritime employment injury, disability, and death claims.
- The **Longshore and Harbor Workers' Compensation Act** provides coverage to *land-based maritime workers* employed on the docks and related areas of the *navigable waters of the US*.
 - These maritime workers are not covered by state workers' compensation nor by the Merchant Marine Act (commonly the “Jones Act”), which covers *seamen employed on vessels in navigable waters* (of the US and international waters).



CLIENT Essentials

Social Security Disability Benefits Program

- Social Security Disability Benefits are not technically a workers' compensation system:
 - The Social Security Act of 1935 was implemented during President Franklin D. Roosevelt's administration to create a federally mandated social welfare system.
 - The program was originally intended to provide benefits to the disabled and Americans 65 and older.
 - Social Security has evolved into the largest federally mandated disability insurance program in the US.



The Federal Employers Liability Act

- The Federal Employers Liability Act of 1908 (FELA) applies to to employees of *interstate common carriers by rail* for occupational injury, disease, or death incurred by railroad workers.
- **The FELA is a fault-based system:** an injured railroad work must sue the railroad in civil court to prove that an injury was caused, “**in whole or in part,**” by the negligence of the railroad or an agent, employee, or contractor.
- Courts have construed this statutory language to require mere proof that a railroad’s negligence caused a worker’s injury, “**even to the slightest degree.**”
- The FELA is the *exclusive remedy* for injured railroad workers employed by a common carrier by rail.
- The civil action can be brought in either a state or federal court, and the case is tried before a jury.



- **The Merchant Marine Act of 1920 (the “Jones Act”)** allows civilian sailors, while in the service of a vessel in *navigable waters of the US and between US ports*, to claim compensation for injury, disease, or death resulting from the negligence of a vessel’s owner, agents, and employees **or unseaworthiness** of the vessel.
- In a single sentence, the Jones Act operates extends the FELA to apply to sailors injured during their service.



- A witness who is **qualified** as an expert by knowledge, skill, experience, training, or education **may testify in the form of an opinion or otherwise** if the proponent has demonstrated by a **preponderance of the evidence** that:
 - (a) **the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence** or to determine a fact in issue;
 - (b) **the testimony is based on sufficient facts or data;**
 - (c) **the testimony is the product of reliable principles and methods**
 - (d) **the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.**



Lax Enforcement of the Exclusionary Rule

- Federal courts have applied Rule 702 with leniency and inconsistency; consequently, juries are often exposed to inadmissible expert testimony.
- The Advisory Committee on Civil Rules of the Federal Judicial Conference unanimously approved amendments to **clarify** Rule 702 in the wake of *laissez-faire* enforcement.
- “[M]any courts have held that the critical questions of the sufficiency of an expert’s basis, and the application of the expert’s methodology, are generally questions of weight ... not admissibility.
- These rulings are an incorrect “It is not appropriate for [Rule 702] determinations to be punted to the jury, but judges often do so.”
- “[T]he Committee’s clarification prevents experts from advancing “extravagant claims that are unsupported by the expert’s basis and methodology.



The Rule 702 Amendment

- ***Daubert* and its progeny did not replace Rule 702**, but the practical application of the decision by courts has often contradicted Rule 702's admissibility standards.
- If the Supreme Court approves amendments by May 1, 2023, the amended rule will be effective on December 1, 2023, (after a required 7-month statutory period during which Congress can enact legislation to reject, modify, or defer the amendments. 28 U.S.C. §§ 2074-2075.
- The amendment clarifies that: (1) the standard for admissible expert testimony is a *preponderance of the evidence* standard for all four elements of the rule; and (2) the expert's opinion must demonstrate a reliable application of principles and methodology to the facts.
- The amendment affirms that the court is the *gatekeeper* between the jury and unreliable expert testimony, compelling the court to take an active role in analyzing the methods and principles upon which an expert witness relied – not a passive and overly liberal role admitting unreliable expert testimony.

Joint Business Litigation Committee / Cannabis Law & Policy Committee Newsletter.
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- As a threshold inquiry, the trial court must determine whether an expert is *qualified*.
- Expert testimony may be admitted into evidence only if “the expert is qualified to testify competently regarding the matters he intends to address”



Heightened Scrutiny for *Hired Guns*

- Courts must evaluate whether the expert is a “hired gun” ... or a person whose opinion in the courtroom will withstand the same scrutiny that it would among his professional peers, and that ...
- If expert is the ‘quintessential expert for hire,’ courts may apply the Daubert factors with greater rigor.
- “One who seeks to clothe his opinions in the garb of ‘scientific certainty’ must adhere to the strict standards of objectivity that that formal wear entails.”

Poulis-Minott v. Smith, 388 F.3d 354, 359 (1st Cir. 2004); see e.g., *Bowers v. Norfolk Southern Corp.*, 537 F.Supp.2d 1343, 1350 (M.D. Ga. 2007); *City of Tuscaloosa v. Harcros Chems., Inc.*, 158 F.3d 548, 562 (11th Cir. 1998); *Johnson v. Manitowoc Boom Trucks, Inc.*, 484 F.3d 426, 435 (6th Cir. 2007); *Pretter v. Metro North Commuter R.R. Co.*, 206 F.Supp.2d 601 (S.D.N.Y. 2002).



Imperatives for Medical Expert Testimony

- An intelligent evaluation of facts is often difficult or impossible without the application of some scientific, technical, or other specialized knowledge.
- The most common source of this knowledge is the expert witness
- **[T]he literature assumes that experts testify only in the form of opinions. The assumption is ... unfounded. The rule ... recognizes that an expert ... may give a[n] ... exposition of scientific ... principles relevant to the case, leaving the trier of fact to apply them to the facts.**

Fed. R. Evid. 703, *Advisory Committee on Rules Note* (1987 amend.) (emphasis added).



- Since much of the criticism of expert testimony has centered upon the hypothetical question [which requests an opinion predicated upon a set of assumptions posed by counsel] **it seems wise to recognize that opinions are not indispensable and to encourage the use of expert testimony in non-opinion form and to encourage the use of expert testimony in non-opinion form when ... the trier can ... draw the requisite inference [themselves].**
- The use of opinions is not abolished ... [i]t will continue to be permissible for ... experts to take the further step of suggesting the inference which [sic] should be drawn from applying ... specialized knowledge to the facts.

Fed. R. Evid. 703, *Advisory Committee on Rules Note* (1987 amend.) (emphasis added).



- “There is no more certain test for determining when experts may be used than the common sense [sic] inquiry whether the untrained layman would be qualified to determine ... the ... issue without enlightenment from those having a specialized understanding of the subject involved”

Fed. R. Evid. 703, *Advisory Committee on Rules Note* (1987 amend.) (emphasis added).



- **The Rule does not ... mean that a jury should ... be informed that a qualified witness is testifying as an “expert.”**
- [T]here is much to be said for a practice that prohibits the use of the term “expert” by ... the parties and the court
- Such a practice “ensures that trial courts do not inadvertently put their stamp of authority” on a witness's opinion ... and protects against the jury's being “overwhelmed by the so-called ‘experts’.”



Rule 401 – Test for Relevance

- Even if expert opinion testimony passes muster under Rules 702 and 703 of the Federal Rules of Evidence, expert opinion testimony remains subject to the relevance requirements of the rules.
- Evidence is relevant if:
 - (a) it has any tendency to make a fact more or less probable than it would be without the evidence;
and
 - (b) the fact is of consequence in determining the action.



- The Advisory Committee on Rules has articulated a “common sense” approach to determine if evidence is relevant:
 - Does the item of evidence tend to prove the matter sought to be proved?
 - The rule summarizes this relationship as a **“tendency to make the existence” of the fact to be proved “more probable or less probable.”**



- Relevant evidence is admissible
- Irrelevant evidence is not admissible.
 - Testimony lacking “sufficient bearing on the issue at hand to warrant a determination that it [is helpful to the jury]” is irrelevant and inadmissible.



Rule 403 – Exclusion of Relevant Evidence

- Although relevant, **evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury**, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.
- “[C]ertain circumstances [require] exclusion of evidence [that] is of unquestioned relevance.
- “These circumstances entail risks which [sic] range ... from inducing decision on a purely emotional basis, at one extreme, to nothing more harmful than merely wasting time, at the other extreme.
- “[These] [s]ituations ... call for balancing the probative value of ... for the evidence against the harm likely to result from its admission.”



CLIENT Essentials

Daubert and its Progeny – the Triumvirate

- *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).
- *General Electric v. Joiner*, 522 U.S. 136 (1997).
- *Kumho Tire Company, Ltd. v. Carmichael*, 526 U.S. 137 (1999).



The Wolf in Sheep's Clothing

- Jurors are inclined to assign special significance to “scientific testimony,” and therein lies the peril: “Under the regime of *Daubert*, ... a ... judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculations [even if] offered by a genuine scientist.”
- “[T]he inquiry is not whether the witness is a true scientist, but rather, whether the testimony is truly scientific.”

Thomas v. Newton Int’l Enterp., 42 F.3d 1266, 1269 (C.A. 9 (Cat.) 1994); *see also Wood v. Stihl, Inc.*, 705 F.2d 1101, 1104-1105 (C.A. 9 (Wash.) 1983); *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (C.A. 7 (111) 1996).



- **The Supreme Court of the US held that Rule 702 governs the admissibility of scientific evidence.**
- The Court held that trial courts must act as “**gatekeepers**” to ensure that scientific evidence is *reliable and relevant*.
- *Daubert* established a two-prong test to determine the admissibility:
 1. The reasoning and methodology underlying the testimony must be scientifically **reliable**; and
 2. The methodology must be applicable to the facts of the case [*i.e.*, **relevant**].



- *Daubert* articulated 5 factors to assess reliability:
 1. Whether the expert's theory or technique can be or has been tested.
 2. Whether the expert's theory or technique has been subject to peer review and publication.
 3. Whether the actual or potential rate of error is known.
 4. Whether there are standards controlling the technique's operation.
 5. Whether expert's methodology is "generally accepted" in the relevant scientific community.



- In *Daubert II*, the 9th Cir. Court of Appeals concluded that these factors were “illustrative” not “exhaustive,” and additional factors ought to be considered:
 1. “[W]hether the expert is proposing to testify about matters growing naturally and directly out of research ... conducted independent of the litigation,” **or**
 2. Whether the expert’s opinions were developed “expressly for purposes of testifying ... ”
 3. Testimony “based ... on ... pre-existing research unrelated to ... litigation provides the most persuasive basis for concluding the opinions were ‘derived by the scientific method.’”



4. Where ... expert testimony is not based on independent research ... the party proffering it must come forward with **other objective, verifiable evidence that the testimony is based on ‘scientifically valid principals’** through proof that the research and analysis supporting the proffered conclusions ‘have been subjected to normal scientific scrutiny through peer review and publication.



CLIENT Essentials

The Advisory Committee on Rules Notes

1. Whether the expert is proposing to testify about matters growing naturally and directly out of research he has conducted independent of the litigation, or **whether he has developed his opinion expressly for purposes of testifying;**
2. **Whether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion;**
3. **Whether the expert has adequately accounted for obvious alternative explanations;**
4. Whether the expert is being as careful as he would be in his regular professional work outside his paid litigation consulting; and
5. Whether the field of expertise claimed by the expert is known to reach reliable results

Fed. R. Evid. 702, *Advisory Committee on Proposed Rules Note* (2011 amend.).



- In *Gen'l Elec. v. Joiner*, the Supreme Court of the US expanded the scope of a court's inquiry on admissibility:
 - “[C]onclusions and methodology are not entirely distinct from one another”
 - “Trained experts commonly extrapolate from existing data, but ... ”
- “[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence ... connected to existing data only by the *ipse dixit* of the expert.
- “A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.”



- In *Kumho Tire Company, Ltd. v. Carmichael*, 526 U.S. 137 (1999), the Supreme Court of the US held that the *Daubert* applies to all expert testimony.
- “Rule 702 does not distinguish between ‘scientific’ knowledge and ‘technical’ or ‘other specialized’ knowledge but makes clear that any such knowledge might become the subject of expert testimony.
- “[I]t would prove difficult, if not impossible, for judges to administer evidentiary rules under which a ‘gatekeeping’ obligation depended upon a distinction between ‘scientific’ knowledge and ‘technical’ or ‘other specialized’ knowledge, since there is no clear line dividing the one from the others and no convincing need to make such distinctions.”



- Montana does not apply *Daubert* and its progeny to all expert testimony:
 - “[A]ll scientific expert testimony is not subject to the *Daubert* standard[,] and the *Daubert* test should only be used to determine the admissibility of novel scientific evidence.”
- If a court is presented with an issue concerning the admissibility of scientific evidence in general, the court must employ a conventional analysis under Montana Rule 702. The Montana Rule of Evidence analysis for non-novel evidence:
 - Determine “whether the expert field is reliable” **and**
 - “[W]hether the expert is qualified,” **and**
 - [L]eave the question of reliable application of the expert’s field to the facts to the finder of fact.”

Hulse v. State, Dep’t of Justice, Motor Vehicle Div., 1998 MT 108, 289 Mont. 1, 28; 961 P.2d 75 (Emphasis added). *McClure v. Safeco Ins. Co. of Illinois*, 354 P.3d 604,608 (2015).



- Montana uses a *quasi-Daubert* analyses for “novel scientific evidence:”
 - “We have adopted non-exclusive factors to consider when determining whether novel scientific evidence is reliable, including testing, peer review, technique rate of error, standards of operation[,] and general acceptance.”
- *Novelty* is assessed from a very narrow perspective.
- District courts should "construe liberally the rules of evidence so as to admit all relevant expert testimony."
- **“Our standard recognizes that admissible expert evidence should come in, even if that evidence may be characterized as ‘shaky.’”**
- The expert's testimony then is open for attack through "the traditional and appropriate" methods: "vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof."

Wheaton v. Bradford, 2013 MT 121, 370 Mont. 93, 300 P.3d 1162, 1166, fn 3; *Harris v. Hanson*, 2009 MT 13, 349 Mont. 29, 201 P.3d 151; *McClure v. Safeco Ins. Co. of Ill.*, 2015 MT 222, 380 Mont., 354 P.3d 604 (2015); see also Ford, C. *Daubert, or Not Daubert? That is the Question on Expert Testimony in Montana State Courts*. 2018. Faculty Journal Articles & Other Writings. 150.



Reliance on Other Experts' Data

- Under Rule 703, the facts or data upon which expert opinions are founded are derived from 3 sources:
 - **Personal observation** of the witness (*e.g.*, a physical examination);
 - **Hypothetical questions:** the expert is requested to assume certain facts or data (or having the expert witness attend the trial to hear the testimony of others establishing the facts and data); and
 - **Presentation of data to the expert outside of court**, (*e.g.*, technical reports, data, and analysis of expert witnesses in other disciplines).



Reliance on Other Experts' Data

- **Extra-judicial sources need not necessarily be independently admissible because ...**
- Physicians routinely and necessarily rely upon “technical or other specialized knowledge” of other experts and extra-judicial information and data to assess an individual’s health status or exposure to physical, chemical, or biological agents
- **But “[i]f it be feared that enlargement of permissible data may tend to break down the rules of exclusion ... notice should be taken that the rule requires that the facts or data ‘be of a type *reasonably relied upon* by experts in the particular field.’”**

Fed. R. Evid. 703, *Advisory Committee on Rules Note* (1987 amend.).



- Despite popular notions about “evidence-based medicine,” ...
- Critical analysis of causation remains lacking in American courtrooms.
- “It is incumbent upon the clinician to make certain that any opinion ... reflects careful analysis of ... all available clinical findings and high-grade scientific evidence.”

A Guide to the Work-Relatedness of Disease. 1979. Rev'd Ed., Kusnetz, S. and Hutchison, M., Eds., NIOSH Pub. No. 79-116.



- A multi-disciplinary methodology for the determination of causation is not a novel concept.
- In 1979, NIOSH proposed a logical methodology for determination of work-relatedness.
- The NIOSH *Guide* “presents one method for assembling and evaluating *evidence* that may be *relevant* in determining the work-relatedness of disease in an *individual*.”



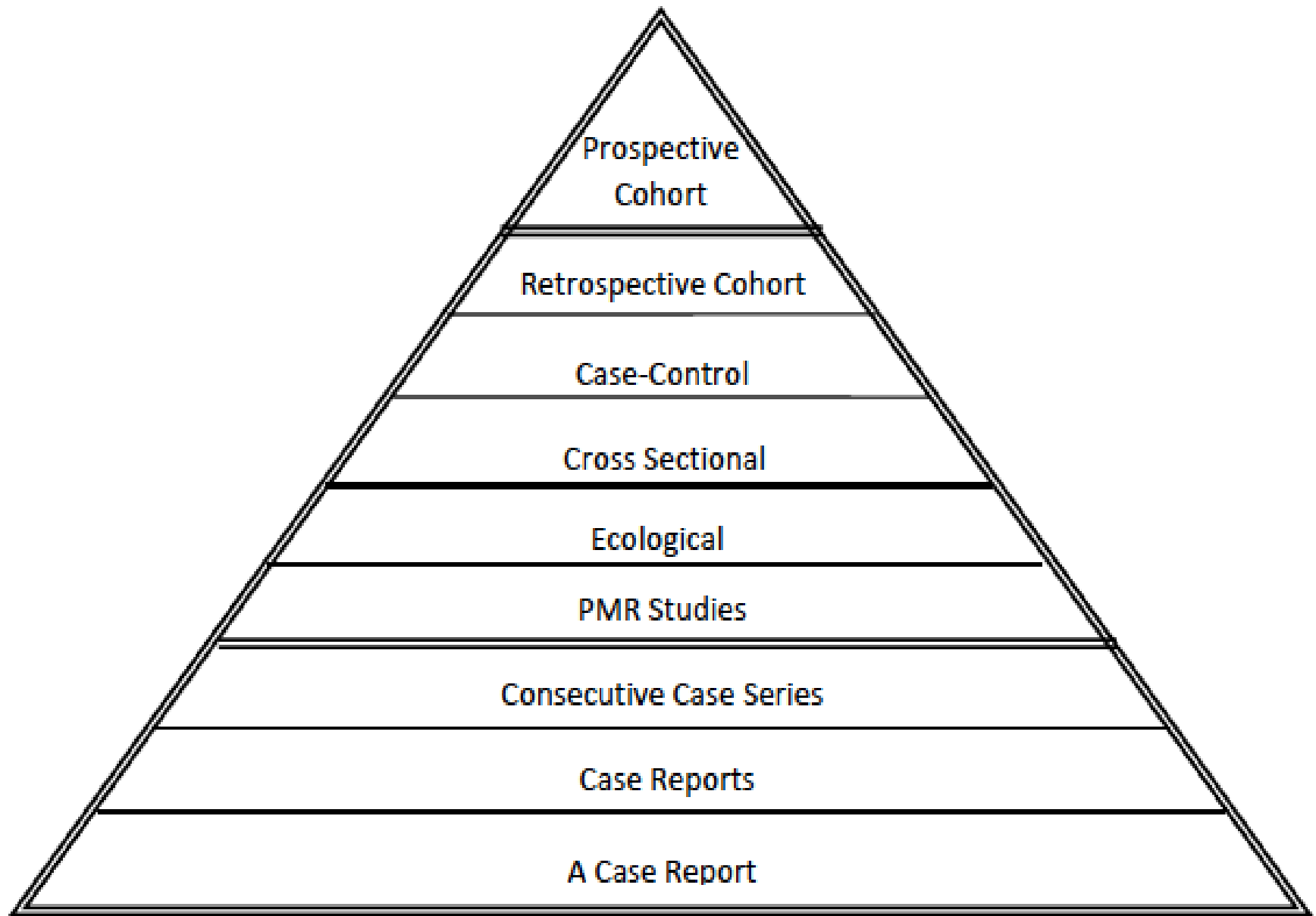
- **ACOEM 2018:** Greaves, WW, Das, R, Green-McKenzie, J, Sinclair, DC. 2018. *Work-Relatedness*. J. Occ. Envir. Med. 60(12): e640-646; MDGuidelines®.Web, Hegmann, KT, Ed., www.mdguidelines.com. Reed Group, Ltd., acc'd Apr. 12, 2023.
- **AMA 2014:** *Guides to the Evaluation of Disease and Injury Causation*, AMA (2008) (2d Ed. 2014).
- **ACOEM 2011:** *Occupational Medicine Practice Guidelines – Evaluation and Management of Common Health Problems and Functional Recovery of Workers*, ACOEM (2004) (rev'd 2008, 2011).



- 1. Evidence of Disease.** What is the diagnosis? Is the diagnosis supported using a generally accepted case criteria definition?
- 2. Epidemiology.** What is the epidemiological evidence for that condition?
- 3. Evidence of Individual Exposure.** What objective evidence is there that the level of the patient's exposure is of the frequency, intensity, duration, and temporal pattern of exposure associated with work-relatedness?
- 4. Consideration of Other Relevant Factors.** What other potentially causal factors are present?
- 5. Validity of Testimony.** Are the opinions and sources reliable and credible? If an expert opinion has been rendered, is the person professionally qualified to render that opinion?
- 6. Conclusions.** This is a synthesis of the above five steps.



- The *AMA Guides to the Evaluation of Disease and Injury Causation* describe the hierarchy of *evidentiary weight* to be accorded to epidemiological study designs.
 - Absent randomized controlled trials, **the highest quality study is the prospective cohort study.**
 - **Higher quality studies are accorded greater evidentiary weight; provided, that they have no major flaws.**



Adapted from Hegmann KT, Oostema SJ. Causal associations and determination of work-relatedness. In: Melhorn JM, Ackermann WE III, eds. *Guides to the Evaluation of Disease and Injury Causation*. Chicago, Ill: AMA Press; 2008:chap 3.



Evaluating the Epidemiology

1. Collect all the epidemiological literature on the disease.
2. Identify the design of each study.
3. Assess each study's method.
 - a. Exposure assessment methods and potential biases
 - b. Disease ascertainment methods and potential biases
 - c. Absence of significant uncontrolled confounders
 - d. Addressing other potential biases
 - e. Adequacy of biostatistical methods and analytical techniques
 - f. Ascertainment of statistical significance – degree to which chance may have produced results.
4. Assess the studies using the Updated Hill's Criteria, both ... individual studies and in aggregate.
 - a. Temporality
 - b. Strength of Association
 - c. Dose-Response
 - d. Consistency
 - e. Coherence
 - f. Specificity
 - g. Plausibility
 - h. Reversibility
 - i. Prevention/Elimination
 - j. Experiment
 - k. Predictive Performance
5. Conclusions regarding the degree to which such a causal association is/is not met.



- “**In a toxic-tort case ... the plaintiff must establish both *general and specific causation* through proof that the toxic substance is capable of causing, and did cause, the plaintiff’s alleged injury.**
- “The plaintiff must show that [s]he was exposed to the toxic substance **and** that the level of exposure was sufficient to induce the complained-of medical condition (commonly called a ‘dose-response relationship’).”
- “Both causation inquiries involve scientific assessments that must be established through the testimony of a medical expert.
- “Without [expert] testimony, a plaintiff’s toxic tort claim will fail.”

Pluck v. BP Oil Pipeline Co., 640 F.3d 671, 677-678 (6th Cir. 2011) (Internal citations omitted).



- “The commonly seen statement ‘in the absence of other obvious causes, the problem is work related’ should not be used.”
- “Such language is not reflective of the scientific basis upon which such opinions should rest and does not provide adequate support for conclusions that must be made regarding ... legal responsibility.”

A Guide to the Work-Relatedness of Disease, Rev'd Ed., Kusnetz, S. and Hutchison, M., Eds., NIOSH Pub. No. 79-116 (1979).

- “I have symptoms; therefore, I must have been exposed.”

OR



- “I was exposed; therefore, it must have caused my symptoms.”



- Plaintiff's physician purported to adhere to *differential diagnosis* methodology.
 - Excluded all plausible pre-accident causes ...
 - Excluded all plausible intervening, superseding, and post-accident causes, *ergo* ...
 - Accident remained the only plausible cause that could not be excluded.

Black v. Food Lion, Inc., 171 F.3d 308 (5th Cir. 1999).



- This analysis is tantamount to concluding that because alternative causes had been eliminated ...
- The accident was the cause-in-fact, even though the etiology is unknown.
- **“This is not an exercise in scientific logic, but in the fallacy of *post-hoc propter-hoc* reasoning, which is as unacceptable in science as in law.”**

Id.



Apportioning Causation

- First, one must first consider all *potential* causes when apportioning [causation] for an injury or disease.
- Second, one must determine whether each of the potential causes identified is *probable* or *possible*.
- **Probable causes are included in the apportionment ... possible causes are not.**

AMA Guides to the Evaluation of Disease and Injury Causation, 2d Ed., Melhorn, JM, Talmage, JB, Ackerman, WE, Hyman, MH, Eds., AMA, Chicago, IL (2014).



Reasonable Degree of Medical Certainty

- Physicians experienced at testifying in medicolegal proceedings are doubtless familiar with questions ceremoniously posed, “to a reasonable degree of medical probability; yet, the legal meaning of this phrase is obscure.
- *Black’s Law Dictionary* defines *reasonable medical probability*:
 - ***Reasonable medical probability.*** In proving the cause of an injury, a standard requiring a showing that the injury was more likely than not caused by a particular stimulus, based on the general consensus of recognized medical thought – **also termed *reasonable medical certainty.***

Black’s Law Dictionary (11th Ed. 2019), Bryan A. Garner, Editor in Chief, Thomson-Reuters, St. Paul, MN (emphasis added).



Reasonable Degree of Medical Certainty

- The prefatory phrases “reasonable degree of scientific certainty,” “reasonable degree of medical certainty,” and myriad variants related to other disciplines (e.g., “reasonable degree of engineering certainty”) have been adopted in state and federal courts for decades, implying that the expert’s testimony is based on sound scientific analysis.
- “According to ... the National Commission on Forensic Science, “reasonable degree of certainty” was first used – **not legally mandated** – in *Herbst v. Levy* in 1935.
- “[I]t was not until 1969 that the terminology was linked to the admissibility determination in *Twin City Plaza, Inc. v. Central Sur. Ins.*”

Weiss, D and Laporte, G. 2018. *Uncertainty Ahead: A Shift in How Federal Scientific Experts Can Testify*, NIJ J., 279: 2-8.



- **But there is no requirement in ... the Federal Rules of Evidence that an expert’s opinion be expressed in terms of “probabilities” or “certainties;”** rather,
- The evidence rules, as construed by *Daubert* and its progeny, focus on an assessment of the *reliability* and *relevance* of scientific evidence to determine admissibility.

Robinson v. Group Health Assoc. Inc., 691 A.2d 1147 (D.C. 1997); *Sharpe v. U.S.*, 230 F.R.D. 452, 460 (E.D. Va. 2005).



Reasonable Degree of Medical Certainty

- Because of the subjective nature of the [terminology] reasonable scientific certainty and reasonable scientific probability, these terms may be problematic for another reason – confusing the issues or misleading the jury.
- In the absence of comprehensive research, it is impossible to assess the impact of usage of the terminology “reasonable degree of scientific certainty” and its variants; however, it is incumbent upon scientists to communicate their conclusions and opinions accurately, especially legal proceedings when they are testifying to non-scientists.
- There is a valid concern that imprecise terminology may be misunderstood or misconstrued by a jury, which is antithetical to Rules 702 and 403 of the Federal Rules of Evidence.

Weiss, D and Laporte, G. 2018. *Uncertainty Ahead: A Shift in How Federal Scientific Experts Can Testify*, NIJ J., 279: 2-8 (citing McQuiston-Surrett, D and Saks M. (2007-2008). *Communicating Opinion Evidence in the Forensic Identification Sciences: Accuracy and Impact*,” *Hastings Law Journal* 1159: 59.



- In 2016, the **Department of Justice’s Office of the Attorney General issued a memorandum directing forensic laboratories to ... ensure that forensic examiners do not use “reasonable degree of scientific certainty.”**
- **DOJ prosecutors were directed to abstain from using such terminology when presenting forensic expert testimony.**
 - Whether state courts, attorneys, and forensic scientists will alter their testimony practices remains in flux; hence, in some jurisdictions, one must continue to use these prefatory phrases to opinion facts and one’s opinions.



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