

Chapter 2

The Epidemiologist as an Expert in Litigation

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Introduction

A tort is a private or civil wrong or injury for which the court may provide a remedy in the form of an action for damages (Torts, *Black's Law Dictionary*, 1990, p. 1489). Toxic tort litigation involves civil actions asserting demands for damages due to exposure to a chemical substance, emissions, or product that caused physical or psychological harm (Cetrulo, 2011; O'Reilly, 2012). Examples of toxic tort claims include litigation arising out of the malfunctioning of a medical device, the harmful effects of a drug, catastrophic events like the chemical plant explosion in Bhopal, India, and exposure to commercial products like asbestos, products like cigarettes, or toxic substances like pesticides (Cetrulo, 2011).

In litigation involving toxic torts and environmental law, a causal connection between the damages and the alleged exposure must be established or disproved. Typically, expert evidence is necessary to prevail (Bois, 2011f). An expert is often defined as a person who has acquired expertise through knowledge, skill, experience, training, or education.

Epidemiologists are uniquely suited to serve as experts in these types of cases, as they study ways to ascertain and control the causes of disease, trauma, or other health conditions (Buncher, 2012a). Epidemiological testimony can play a role in several legal contexts, but the utilization of epidemiology to prove, or disprove, a casual connection between an exposure and a disease or injury can result in litigation that is both complex and controversial (Black, Jacobson, Madeira, & See, 1997). Epidemiological evidence would be probative, for example, in cases where

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there is an alleged causal connection between a chemical exposure and lung cancer or a birth defect and a prescription medication such as Zoloft or Accutane.

This chapter provides an overview of different aspects of the litigation process, the roles of experts in the litigation, and the obligations and duties of such experts. It is beyond the scope of this chapter to address these issues in great depth, and the reader is referred to additional sources for a more detailed discussion. Additionally, as it is not possible address the laws of every country, this chapter focuses on the laws of the United States.

Types of Experts

Categorizations of Experts

In litigation, experts are hired for two basic functions: (1) a scientific function and (2) a forensic function (Sapir, 2007). When fulfilling the scientific function, the expert is needed to collect information/evidence, conduct testing, evaluate evidence, form opinions, offer advice, and help the attorney to understand the scientific elements of the case (Sapir, 2007). On the other hand, when the expert is fulfilling the forensic role, he or she is responsible for communicating his or her opinions, and the basis for them, to the finder of fact (the jury or judge, depending on the specific case) in a manner that is understandable (Sapir, 2007).

Whether a consulting expert or a testifying expert, the professional can be further categorized by whether he or she is a generalist or specialist. A generalist is someone who uses his or her knowledge to form opinions and testify in a wide range of cases (Harrell, 1993). An engineer, for example, who is a “forensic engineer” will appear as an expert in virtually any type of product case (Harrell, 1993). A specialist, conversely, is a professional that is much more qualified in his or her particular area of expertise and, often, serves as an expert in only specific types of cases (Harrell, 1993).

A generalist may be seen as a professional witness and face the danger of being viewed as a hired gun and, as a result, given less credibility (Jones, 2012). However, generalists can be less expensive, familiar with legal terminology, and savvy witnesses (Harrell, 1993). Specialists may have more credibility, in-depth knowledge on the subject at issue, and prove a compelling witness (Jones, 2012). As specialists do not regularly serve as experts, they may require more time in preparation, have a lack of understanding of the legal context of his or her opinions, and be more likely to offer conflicting inconsistent testimony (Harrell, 1993).

Finally, testifying experts will be recognized as either retained or non-retained witnesses. Most experts will be deemed retained and will have been hired by one of the parties for the purpose of litigation. At times, though, an expert may be non-retained. Such experts will often be an employee of one of the parties. If a pharmaceutical company were being sued, one of its scientists may serve as a

non-retained expert. The rules of civil procedure (rules that govern how trials and the processes leading up to them are to be conducted) in many jurisdictions will set forth different discovery requirements for retained and non-retained experts.

When Are Experts Retained and What Can They Do for an Attorney?

When an expert is retained may depend on various factors, including the type of expert and the purpose the expert will serve in the litigation. However, when possible, parties to litigation will often want to hire their primary experts as early in the cases as possible. This will allow the attorneys to benefit from the professionals' expertise to the fullest extent possible.

For the plaintiff's attorney, retaining an expert before the suit is even filed permits the attorney to discuss causation with the expert, formulate theories of liability, and/or the specific claims that could be exerted (Bois, [2011a](#), [2011c](#); Halebian & Scott, [2011](#)). An epidemiologist can assist the plaintiff's attorney in ascertaining whether there is a relationship between a medical condition and the exposure at issue (Buncher, [2012b](#)). The defendant's attorney, in turn, may utilize an expert early in the litigation to help understand and assess the plaintiff's allegations and theories of liability (Bois, [2011b](#), [2011c](#); Halebian & Scott, [2012](#)). An expert can also assist the defendant's attorney in determining viable defenses and/or affirmative defenses that can be asserted (Bois, [2011b](#), [2011c](#)).

Experts for both the plaintiff and the defendant often continue to assist the attorneys throughout the litigation. While the expert may be asked to review evidence/data, conduct tests, and offer opinions on specific issues in the case, they can also be of great assistance to the attorney throughout the discovery process. Experts with specialized knowledge in a particular field are in a unique position to help attorneys determine the types of information, documents, data, and items that should be requested from the opposing counsel (Halebian & Scott, [2012](#)).

Additionally, experts can be used to help the attorney determine when the development of the case would benefit from obtaining the services of other experts and/or information, data, or documents from third parties (Halebian & Scott, [2012](#)). The experts can be relied upon to offer recommendations with regard to what specific types of additional expertise, studies, data, or third party services/information would be beneficial. As an example, an epidemiologist who is assisting an attorney to better understand the results of clinical trials conducted by a pharmaceutical company to investigate the efficacy of a new drug might suggest to the attorney that he or she also consult with a pharmacologist to better understand the specific mechanism underlying the use of that drug.

It should be noted the role the expert will play in the litigation may be dependent upon whether they are a consulting or testifying expert. The consulting expert will play more of a role in helping the attorneys understand the evidence, develop factual and legal theories, and develop strategy (Halebian & Scott, [2011](#)). In environmental

or toxic tort litigation, consulting experts are often asked to evaluate sensitive data, perform experiments, participate in strategy sessions, assist in developing the scope of the work for testifying experts, and even manage other experts involved in the litigation (Bois, 2011d). The consulting expert's identity and participation does not usually have to be disclosed to opposing counsel and, therefore, he or she can be utilized behind the scenes in an advisory capacity (Haleblian & Scott, 2012).

The testifying expert, on the other hand, may perform some of the services for the attorney discussed above, but his or her primary purpose is to offer expert testimony at trial (Haleblian & Scott, 2011). As a result, it is important that the testifying expert ensure they have a firm understanding of the evidence, speak plainly to a jury, and appear authoritative and, at the same time, likeable. Further, testifying experts need to invest time into ensuring they present with an even temperament and good demeanor (Jones, 2012).

The Litigation of a Case

Litigation begins before a suit is actually filed. Investigation must be done and experts may be involved in this process. However, once a case has been filed, the parties generally begin the discovery phase. During this phase, each side to the litigation attempts to "discover" facts, documents, and other pieces of evidence held by the other side that may be relevant or helpful to the preparation of its own case. Attorneys will also have the opportunity to file motions, in which they seek a court's ruling on specifically identified issues prior to proceeding to trial. One such motion, known as a *Daubert* motion in limine (discussed in greater detail later in this chapter), permits a party to the litigation to question the legal reliability of scientific evidence that is to be presented. While some motions that are filed may be dispositive of the case, a case that survives them will ultimately be tried. In complex litigation, such as toxic torts, products liability, and environmental cases, the assistance of experts will be necessary in both the discovery and trial phases of the case.

Discovery

Interrogatories and Requests for Production. Interrogatories are a set or series of written questions that, as part of the discovery process, are exchanged between parties [the plaintiff(s) and the defendant(s)] to litigation or for a witness to the case (Interrogatories, *Black's Law Dictionary*, 1990, p. 819). The answers to the interrogatories are usually given under oath, as the person answering the questions signs a sworn statement that the answers are true.

Interrogatories can address any matter that is discoverable. This would exclude matters that are protected by a privilege, such as the attorney–client privilege or the work product doctrine, and issues that are not relevant to the claims and defenses of

any party. The attorney–client privilege refers to the confidential nature of communications between an attorney and his or her clients that were made for the purpose of furnishing or obtaining legal advice or assistance (Attorney–Client Privilege, *Black’s Law Dictionary*, 1990, p. 129). The work product doctrine refers to a legal rule, under which, any notes, working papers, memoranda, certain correspondence, and similar materials that are prepared in anticipation of litigation are protected from disclosure in discovery (Work Product Rule, *Black’s Law Dictionary*, 1990, p. 1606). Typically, the requests must be reasonably calculated to lead to the discovery of admissible evidence (Federal Rules of Civil Procedure, 2010a). The purpose of interrogatories is to both limit and refine the controversies and issues in the pending litigation. Many jurisdictions limit the number of interrogatories that can be compounded upon the opposing party. The Federal Rules of Civil Procedure, for example, state the following:

- (1) *Number*. Unless otherwise stipulated or ordered by the court, a party may serve on any other party no more than 25 written interrogatories, including all discrete subparts. Leave to serve additional interrogatories may be granted to the extent consistent with Rule 26(b)(2).
- (2) *Scope*. An interrogatory may relate to any matter that may be inquired into under Rule 26(b). An interrogatory is not objectionable merely because it asks for an opinion or contention that relates to fact or the application of law to fact, but the court may order that the interrogatory need not be answered until designated discovery is complete, or until a pretrial conference or some other time (Federal Rules of Civil Procedure, 2010b).

The limitation on the number of questions helps prevent parties from overwhelming the opposing party with an overly burdensome number of requests for information.

Interrogatories will explore the opposing party’s claims and defenses and attempt to obtain information that will help determine the strengths and/or weaknesses of the other party’s case. Interrogatories can help identify possible lay witnesses (non-expert), individuals with information, studies performed, and relevant documents like medical records. The answers to interrogatories can, at times, be utilized to strengthen the opposing counsel’s case.

Requests for Production of Documents are another discovery device that is utilized in conjunction with interrogatories. Where interrogatories request answers, a Request for Production of Documents seeks documents related to the case. As with interrogatories, the use of a Request for Production of Documents is governed by the rules of civil procedure. The Federal Rules of Civil Procedure indicate the following:

- (a) In General. A party may serve on any other party a request within the scope of Rule 26(b):
 - (1) To produce and permit the requesting party or its representative to inspect, copy, test, or sample the following items in the responding party’s possession, custody, or control:

- (A) Any designated documents or electronically stored information—including writings, drawings, graphs, charts, photographs, sound recordings, images, and other data or data compilations—stored in any medium from which information can be obtained either directly or, if necessary, after translation by the responding party into a reasonably usable form; or
 - (B) Any designated tangible things; or
- (2) To permit entry onto designated land or other property possessed or controlled by the responding party, so that the requesting party may inspect, measure, survey, photograph, test, or sample the property or any designated object or operation on it.
- (b) Procedure.

(1) *Contents of the Request.* The request:

- (A) Must describe with reasonable particularity each item or category of items to be inspected;
- (B) Must specify a reasonable time, place, and manner for the inspection and for performing the related acts; and
- (C) May specify the form or forms in which electronically stored information is to be produced (Federal Rules of Civil Procedure, 2010c).

When served with a Request for the Production of Documents, the receiving party must find all the requested documents and/or evidence for disclosure to the opposing party. The responding party, however, does not have to produce documents protected by privilege or that is not relevant to the litigation. Again, the Requests must be reasonably calculated to lead to the discovery of admissible evidence.

The Answers and Responses to interrogatories and Requests for Production can be utilized at trial subject to the rules of evidence applicable to the jurisdiction. The Answers and Responses can be used to impeach (discredit) witnesses. Thus, experts should be aware of this possibility and try to prevent the provision of any contradictory information that the opposing counsel can present for impeachment purposes at trial. If, during the discovery process, any changes in the expert's findings and/or opinions occur, supplemental reports should be prepared and disclosed.

Additionally, a party can obtain information concerning the opposing party's expert and his or her opinions through interrogatories. An example of an interrogatory addressing expert witnesses includes the following:

- Interrogatory: State the name and address of each person Defendant expects to call as an expert witness at trial and state the general nature of the subject matter on which the expert is expected to testify.
- Interrogatory: State the name and address of each person Defendant expects to call as a non-retained expert witness at trial and state the general nature of the subject matter on which the person is expected to testify.

Similarly, Requests for Production of Documents will seek documents related to the party's expert. By way of illustration, a Request for Production of Documents may include statements such as the following:

- Request: All documents, evidence, and/or photographs identified in Defendant's Answers to Interrogatories.
- Request: All documents and materials furnished, given, or provided to Plaintiff or on behalf of the Plaintiff to any expert that Plaintiff plans to call at trial.
- Request: Any and all written reports of each and every expert witness Plaintiff plans to call at trial.
- Request: Any and all documents reviewed and/or relied on by each and every expert witness Plaintiff plans to call at trial.
- Request: A current curriculum vitae for each and every expert witness Plaintiff plans to call at trial.

Both consulting and testifying experts are often utilized in the preparation of interrogatories and Request for Production of Documents. Experts, because of their specialized knowledge, can be of great assistance to attorneys while formulating the wording of discovery requests when highly technical information is being sought or the phrasing of the request could have an effect on what the opposing party has to disclose. An epidemiologist would be extremely helpful to an attorney in the drafting of questions that refer to particular control measures used or rejected by the opposing party (Danner & Varn, 1994). Likewise, the epidemiologist's knowledge of the process used to generate, use, store, and dispose of substances would assist the attorney in identifying information and documents to be requested (Danner & Varn, 1994).

An expert, similarly, can help the attorney that retained him/her understand the responses, documents, data, information, and other evidence disclosed by the opposing party. This would include the opposing party's expert's report, methodology, and conclusions. Epidemiologists, for example, could be asked to point out the limitations, defects, and alerting subtle characteristics of a study being relied upon by the opposing side and other experts (Buncher, 2012b).

Depositions. Depositions are another tool used during the discovery phase of litigation. Depositions are proceedings during which a witness or party to litigation is questioned orally by the attorneys involved in the case (Deposition, *Black's Law Dictionary*, 1990, p. 440). Depositions are taken outside of the courtroom, usually in the office of the attorney or expert, and are under oath. The deposition will be attended by a court reporter who will transcribe, word for word, the testimony of the deponent. Some depositions may be recorded so the video can be viewed at a later date or presented at trial. Additionally, depositions can include written questions that have been submitted for the deponent to answer.

As with other discovery tools, the rules for depositions vary by jurisdiction. Illinois, for example, provides for both discovery and evidence depositions. Illinois Rule of Civil Procedure 202 provides the following:

Any party may take the testimony of any party or person by deposition upon oral examination or written questions for the purpose of discovery or for use as evidence in the action. The notice, order, or stipulation to take a deposition shall specify whether the deposition is to be a discovery deposition or an evidence deposition. In the absence of specification a deposition is a discovery deposition only. If both discovery and evidence depositions are desired of the same witness they shall be taken separately, unless the parties stipulate otherwise or the court orders otherwise upon notice and motion. If the evidence deposition of

a witness is to be taken within 21 days of trial, a discovery deposition is not permitted unless the parties stipulate otherwise or the court orders otherwise upon notice and motion (Illinois Rules of Civil Procedure, 2006).

Thus, the designation of the type of deposition being taken determines how it can be used in an Illinois court. Other jurisdictions, including the federal court, do not make a distinction between discovery and evidence depositions.

Generally, only the parties, testifying experts and other key witnesses will be deposed. When an expert is deposed, he or she should expect to be questioned about his or her qualifications, education, training, practice, publications, studies, and prior service as an expert (Halebian & Scott, 2011). He or she will be questioned concerning the materials he or she reviewed or studies performed as part of the formation of his or her opinions. The expert's report will be reviewed and the results, findings, methodology used, and foundation for his or her opinions will be explained and challenged. The opposing counsel will take the deposition as an opportunity to ascertain as fully as possible the expert's opinion, the scope of the opinion, the reasons/basis of the opinion, and what concessions and admissions the expert is willing to endorse (Halebian & Scott, 2012).

In preparing for his or her deposition, the expert should review his or her file and relevant publications, literature, and studies (Halebian & Scott, 2011). This is especially true of adverse documents and information. The opposing party's expert's report and, if he or she has been deposed, the transcript of the proceeding should also be reviewed. The expert's preparation should include a review of subjects such as (1) the names and identities of who he or she talked to, other than the attorney, and what was said; (2) meetings, other than those with the attorney, the expert attended and what was reviewed; (3) the documents reviewed prior to the deposition; (4) prior testimony in other cases and the substance of it; and (5) the extent of the expert's involvement in the case (Danner & Varn, 1994).

The expert should be as honest as possible during the deposition. An expert's deposition may come back to haunt him or her if inconsistent testimony is offered at trial. When an expert testifies in a manner that contradicts or is inconsistent with his or her deposition testimony, opposing counsel will seek to attack the credibility of the expert and impeach him or her with the deposition testimony. This is, in essence, a question of "Are you lying now or were you lying then?"

Due to the importance of the expert's deposition's testimony, experts should consider insisting on the ability to review the deposition transcript. In most jurisdictions, a deponent at the end of the deposition is given the option of waiving signature or reviewing the deposition and then signing with any corrections noted on a corrections sheet (i.e., errata sheet) (Harrell, 1993). Waiving signature is a common practice. However, reviewing the transcript permits experts to correct typographical mistakes. While such errors do not make a lot of difference in most cases, the correction of the use of the word Toradol, for instance, when the expert said Tramadol could ultimately make a difference in a case.

Another consideration is how the expert will appear at the deposition. One of the purposes of deposing an expert is to assess how the expert would present as a

witness at trial. Thus, it is important that the expert present his or her testimony much as if he or she were sitting before the jury. The expert should be aware of his or her own temperament, appearance, demeanor, likeability, and ability to relate to his or her audience. The expert should appear professional, but remember ego has no real place in the litigation (Kolezynski, 1997). If the expert does not present well during the deposition, the attorney may be forced to consider settlement or refrain from calling the expert at trial. Conversely, a strong performance by an expert may cause the opposing counsel to more seriously consider what they would be willing to pay/accept to settle the case (Haleblian & Scott, 2011).

Experts should also be aware of how they present during the deposition, as the deposition may be used at trial in lieu of live testimony. This occurs especially when the expert will be unavailable for trial. Thus, the testimony of an epidemiologist who serves as an expert in a case in Missouri may be offered through his deposition due to the fact he resides in Hawaii. Under such circumstances the deposition testimony, or a portion of it, may be read into the record before the jury at trial. It is also not uncommon for the expert's deposition to be recorded and the video shown at trial when the expert is not going to testify live. Whenever possible, however, experts should be prepared to testify live at trial. A live appearance helps the expert to better develop that essential connection to the jury. Further, attorneys who simply have the deposition read into the record risk boring the jury and/or the jury not fully comprehending the expert's opinions. By testifying live, the expert is in a better position to keep the jury engaged and ensure that his or her opinions and findings are effectively communicated.

The involvement of experts in depositions is not limited to the role of deponent. Consulting and testifying experts can also play a role in preparing for deposition. Experts are in a superior position to assess the qualification of the opposing parties' expert, determine his or her reputation in the professional's field, and acquire studies and publications in which he or she was involved (Danner & Varn, 1994). This information and material can be used to prepare for the opposing expert's deposition (Danner & Varn, 1994).

Attorneys also rely on experts to aid in compose deposition questions (Bois, 2011a; Haleblian & Scott, 2012). An expert's familiarity with specific aspects of their field places them in a superior position to advise an attorney about the types of information each witness may possess. The retaining attorney may even request an expert attend the depositions of other witnesses and experts (Haleblian & Scott, 2012). By doing so, the expert would be on hand to explain, when necessary, the deponent's responses, identify obscure implications of the testimony, the validity of the methodology or process being described, and advise on follow-up questions.

Trial

At a trial, each party has the opportunity to present its witnesses and evidence. The opposing party is also given the opportunity to challenge the witnesses and evidence.

Expert evidence and its presentation to the trier of fact can make or break a case and, therefore, it is important the expert be prepared for both direct examination and cross-examination.

Serving as an Expert at Trial. Expert testimony at trial is extremely vital to any lawsuit involving injuries/diseases and the value of such testimony to establish, or disprove, causation cannot be overstated. Experts must remain mindful that jurors often anticipate expert testimony to be complicated and confusing. At trial, any expert's ultimate job is to simplify complicated evidence and captivate the jury. In jury trials, the jury is often described as the "factfinder." Judges are required to decide which matters of law are to be presented to a jury. The jury, in turn, determines which facts are credible, applies these facts to the law, and then issues a verdict. Obviously, experts have a huge impact on persuading the "factfinder" and influencing the verdict. For this reason, it is crucial that the experts, their findings, and their opinions appear credible.

Consideration of the reaction of juries to expert testimony has led to the identification of five areas of concern (Mauet, 2010). These areas of concern include the following:

1. Juror assumption that expert testimony is complicated and confusing
2. Juror expectation that expert testimony will be boring
3. Doubts as to whether the expert is really an expert
4. Questions as to whether the expert is biased
5. Juror belief that the expert will be condescending

Mauet (2010) advises that experts must keep these concerns in mind while preparing for direct and cross-examination at trial. The ability to balance these concerns with the scientific and medical aspects of their testimony is a hallmark of efficient expert testimony. Epidemiological expert testimony should focus on establishing, or refuting, an association between an agent and injury/disease, addressing sources of error in the epidemiological study, and addressing the relationship between the agent and the disease (Green, Freedman, & Gordis, 2011).

Direct Examination. Direct examination is the expert's opportunity to serve his or her primary function in the trial. The attorney who has retained the expert will have an opportunity to ask the expert a series of questions to explain the expert's findings to the jury. The expert's role as a witness is akin to any witness at a trial: to assist the jury by showcasing the "who, what, where, why, and when" through testimony. The use of technical language is a common pitfall in expert testimony. An effective expert avoids this language, as it will not impress the jury (Bain & Myer, 2010). Despite television's over-sensationalism of jury trials, jurors are often bored during all aspects of the trial. Be aware that jurors typically remain seated for long periods of time throughout a trial with occasional short breaks. Furthermore, jurors are not permitted to discuss the trial until after closing arguments and all evidence has been submitted. All of these conditions contribute to a jury's possible short attention span.

Experts should intend to captivate the jury with credible and verifiable testimony. Techniques such as voice inflection and eye contact are crucial to captivating

testimony. For instance, after the attorney asks a question on direct examination, the expert witness should always make eye contact with the jurors during the answer. Effective testimony should appear conversational, although it will also resemble a soliloquy (Bain & Myer, 2010). The expert is essentially playing a featured role in a scene and the jury serves as the audience (Bain & Myer, 2010). The jury should not be distracted by the attorney asking questions, objections by the opposing attorney, or the judge.

First, experts must be aware of any pretrial rulings that may limit the scope of their testimony. Prior to the start of the trial and, in some instances, during the trial, attorneys have an opportunity to argue for motions in limine. The term “limine” is Latin for “at the threshold” (Limine, *Black’s Law Dictionary*, 1990, p. 787). For instance, a granted motion in limine may limit an epidemiological expert’s testimony to only general causation and bar testimony on specific causation. General causation covers whether the specified exposure is capable of causing the alleged disease outcome. The attorney who has retained the expert should prepare the expert prior to his or her testimony to avoid violating a motion in limine ruling.

Generally, the attorney “directing” the witness will ask open ended questions, such as “What were the results of your findings?” Obviously, there are endless answers to this question, but a well-prepared expert will narrow this answer to a short response outlining the expert’s conclusions (Hennet, 2010). A skilled attorney will then ask narrower questions to discuss the expert’s process in obtaining these findings. In discussing the process, the expert will need to explain whether the process is generally accepted in his or her field of study. For example, an epidemiologist would explain that the process used is generally accepted in the field of epidemiological studies.

Most attorneys, regardless of their experience level, will prepare an outline for an expert’s direct examination. The outline’s format and contents will vary among attorneys, but it will serve as a roadmap for the expert’s testimony. A typical outline will begin with establishing the expert’s credibility with the jury. This includes the expert’s educational background, employment history, titles of relevant publications, relevant lecture topics, and any other generally relevant contributions the expert has made to the particular field (Bain & Myer, 2010). The outline will then narrow the testimony to briefly define the expert’s field, such as epidemiology, and apply that definition to the expert’s involvement in the case (Bain & Myer, 2010).

The expert can keep the jury engaged during this portion by continuing to use simple language, being personable, and remembering that this is the expert’s introduction to the jury. The expert’s first impression with the jury is extremely important and the expert must be personalized and not likened to words in a textbook. For instance, the expert may briefly explain how and why he or she became interested in epidemiology. An expert’s credentials may intimidate the jury, so the expert must come across as a human being who is approachable and relatable rather than just an expensive mouthpiece who rattles off mundane scientific jargon. Finally, the expert’s introduction should also include a highlight of what the expert will discuss with the jury that day. This will explain the parameters of the testimony and inform the jury of what the expert did or did not do. This, for example, would permit the jury to

know early on that an epidemiologist did not treat the Plaintiff, but that his or her practices are accepted as a credible method to evaluate the effects of disease.

The introductory portion of the expert's testimony may also address any potential bias that is assumed because the expert receives compensation. The opposing counsel may attempt to portray the expert as biased, but a skilled attorney will address compensation during the direct examination to overcome this hurdle. Other methods the opposing attorney will generally use to show bias are to establish whether the expert consistently provides consultation for Plaintiffs or Defendants. No matter what the expert's consulting history shows, the expert's testimony should appear as objective and supported by verifiable facts and practices in their field (Hennet, 2010). In fact, an expert with vast consulting experience will want to showcase to the jury that courts have accepted his or her expertise and he or she is a reliable source of information.

When describing his or her actual experience, the expert should have accurate numbers on how long he or she has researched the particular injury/disease at issue. If he or she is a treating physician, an estimate of the number of patients he or she has treated and whether he or she has researched other similar injuries/diseases will aid the jury. Likewise, the number of publications he or she has written, lectures he or she has given, and the amount of times he or she has been qualified as an expert in court for the injury/disease at issue, or other related diseases, should be discussed. The expert should be aware that one of the attorney's main goals in this preliminary phase of the direct examination is to establish the expert's credibility with the jury. After personalizing the expert and identifying the expert's training and experience, the expert will discuss his or her opinions regarding the case. Some jurisdictions will require the expert's opinion to be expressed to a "reasonable degree of medical or scientific certainty" (Mauet, 2010). In these jurisdictions, the expert's testimony can be objected to as speculative. In general, a speculation objection seeks to bar unsupported factual or conclusive statements. The expert, like any witness, can always avoid the speculation objection by providing facts and opinions as support for his or her statements. As a general practice, the expert's testimony should *always* be supported by a "reasonable degree of medical or scientific certainty" when possible (Bain & Myer, 2010). The following is an example of how this testimony may be elicited on direct examination.

Question: Dr. Taylor, do you have an opinion regarding the affects of XYZ tobacco products on a smoker with a 20-year smoking history?

Answer : Yes.

Question: Is your opinion regarding these affects to a reasonable degree of medical certainty?

Answer : Yes.

Question: Please tell the jury your opinion.

Answer : My opinion is that there is a causal connection between John Doe's lung cancer and his history of using XYZ tobacco products.

Note in the above example, the attorney asked the witness to address the jury. This method of direct examination encourages the witnesses to include the jury in the testimony since they are the primary audience and should remain as the focus.

Even if the attorney's questions do not include the magic language, "to a reasonable degree of medical or scientific certainty," the expert should volunteer this information when it is true to maintain credibility with the jury. Questions concerning the basis of the opinion can then follow.

While supporting his or her findings through opinion or otherwise, as allowed by Rule 702, the expert should use firm and certain terminology, such as "I concluded" or "the findings confirmed/revealed" instead of "I thought." Here is another example:

Question: Dr. Taylor, what did you conclude about the effects of exposure to XYZ tobacco products when comparing individuals in the exposed group and unexposed group?

Answer : I concluded that the exposed group was more likely to develop lung cancer and adverse respiratory symptoms than was the unexposed group. The results and findings from my various studies confirm this conclusion.

There are a few things to note in this example. The expert has now introduced the jury to his or her opinion, without using the word "opinion" and also introduced the jury to some of his or her methods that support his or her opinion. The attorney will now have the expert explain to the jury the purpose of comparing an exposed group and an unexposed group and the benefits of various study designs. Remember, the expert's duty is to fascinate the jury with process and introduce the jury to a simplistic explanation of this process (Mauet, 2010).

Demonstrative exhibits are wonderful tools that revive a bored jury and connect the expert's findings with a visual stimulant (Kolezynski, 1997). Since epidemiological experts deal with statistical data, graphs and charts are highly appropriate and effective. When possible, the expert's visual aids should be enlarged and important distinctions should be in color. For instance, a chart showing results from an exposed group and a nonexposed group should be color-coded between all differences between each group, especially in the case of stark differences and disparities between the groups. The demonstrative visual aid should be placed either on an easel in front of the jury or on a screen in more modern courtrooms. During preparation, the expert should practice with the visual aid in the same format that it will be shown to the jury. An effective expert will not distract the jury with technological errors in operating the courtroom's machines or easel. Remember, the expert must maintain credibility with the jury. If a technical difficulty occurs, the attorney directing the expert should either request a brief recess or be prepared to use an easel with enlarged exhibits.

When it is applicable and the court permits the witness to move around the courtroom, the expert should leave the witness stand and interactively reveal his or her findings while using the exhibit. The witness' movement will engage the jury, but the expert must not become so distracting or animated that his or her credibility suffers.

After briefly highlighting the conclusions, the expert will discuss different sources that have contributed to the conclusion. At this point, the expert is showing the jury why her conclusions are reliable. This testimony can include an explanation of what epidemiological studies were performed and whether other colleagues in

that epidemiological field of study use those methods. The expert's credibility is enhanced because the testimony is verified by accepted scientific and medical sources of information and methods that led to this information.

For instance:

Question: Dr. Taylor, what sources of information assisted you in developing your conclusions on the effects of XYZ tobacco products?

Answer : I used several sources of information. I relied on cohort studies that monitored exposure to XYZ tobacco products for 20 years and compared individuals who were exposed to tobacco products for varying lengths of time and individuals who were never exposed to tobacco products. I also measured the association between XYZ tobacco products and lung cancer by calculating the relative risk.

Question: Dr. Taylor, explain to the jury what you mean by relative risk.

Answer : Sure. Relative risk is a ratio we use in my field of study. We determine the number of new lung cancer cases that arise in an exposed population in a given period of time and then divide that by the number of new lung cancer cases that arise in an unexposed population in the same given period of time. This ratio is used by epidemiologists to assess the relationship between XYZ tobacco and lung cancer.

Question: Is this method generally used by epidemiologists when evaluating the cause of lung cancer in our population?

Answer : Yes.

Question: Was this information adequate to evaluate the causal relationship between XYZ tobacco products and lung cancer to a reasonable degree of medical or scientific certainty?

Answer : Yes.

Question: Was there any additional information you needed to assist you in evaluating the relationship between XYZ tobacco and lung cancer?

Answer : The computation of this relative risk ratio is used to determine the strength of a causal relationship. I also look at the number of individuals that participate in each study, which allows me to assess whether the relationship between tobacco products and lung cancer is statistically significant; whether the findings are consistent across studies; whether individuals' tobacco exposure preceded their development of lung cancer, and whether there is a plausible biological explanation for a causal relationship between lung cancer and prior exposure to tobacco products.

When discussing mathematical formulas and calculations like relative risk or other methods, a visual aid will be extremely effective in teaching the jury about the expert's process.

Generally, experts are also allowed to obtain second opinions from their colleagues and also rely on learned treatises to verify their findings. In some instances, a young and inexperienced expert can avoid the opposing counsel's attack by relying on an older, well-respected and heavily relied upon learned treatise.

Direct examination of any type of expert, whether epidemiological or otherwise, is a vast topic that can be exhaustively covered. The expert should keep these goals in mind when preparing to give expert testimony. First, remain as an effective communicator. Do not ponder or narrate when answering questions. Keep your answers to roughly 12–15 seconds when explaining a concept. Avoid technical terms, but use simple and vivid language with common analogies, metaphors, and examples that will appeal to any juror regardless of their background (Kolezynski, 1997). Overall, remember that epidemiological experts are qualified witnesses and are essential to

establishing, or disproving, a causal relationship between the injury/disease and the exposure.

Cross-Examination. While direct examination is the opportunity for the expert witness to showcase to the jury the expert's opinions and findings, cross-examination is an opportunity for the opponent to attack the expert's direct examination testimony. While attorneys are typically uninitiated to the field of epidemiology, many attorneys prepare for expert witness cross-examination through consulting their expert, reading appropriate epidemiological literature, copies of the opposing directing expert's publications, the expert's prior testimony, and the expert's curriculum vitae or resume (Bain & Myer, 2010). Experts should be aware that attorneys will attempt to research all publications to find adverse information and the expert should be prepared to discredit, distinguish, or counter the adverse information (Bain & Myer, 2010).

The crossing attorney's primary goals are to elicit favorable testimony and somehow impeach the expert by showing that the expert is not qualified or is biased (Bain & Myer, 2010). The expert's goals are the same as those set for direct examination. The witness must appear credible, honest, forthcoming, and qualified. This is achieved by remaining calm when the expert's findings and direct examination testimony is challenged. An angry, rattled, and emotional expert will not maintain credibility and will appear as if he or she is hiding something from the jury (Bain & Myer, 2010). As a general note, the expert should remain pleasant and polite throughout the trial and, especially during cross-examination, remember the questioning is a continuation of the direct examination and the jury is intently listening (Bain & Myer, 2010).

Attorneys are trained to maintain control over the witness on cross-examination and attempt to only elicit points that are favorable to their client (Bain & Myer, 2010). The expert witness on cross-examination must know that the directing attorney will have a second opportunity to repair any damage from the cross examination.

An expert's preparation for cross-examination must include reviewing the opposition's deposition, expert reports, the findings of other experts, and adverse publications. The attorney retaining the expert should provide the expert with the deposition testimony, or a summary of the deposition, expert reports, and other sources of information that support his or her testimony. Likewise, the expert should be aware that the cross-examining attorney's expert will have likely reviewed the expert's deposition testimony from the same case, other cases where he or she testified as an expert, and other relevant materials.

The expert should not be surprised if the crossing attorney directly interrogates him or her on changes between the trial testimony and his or her deposition testimony. For this reason, cross-examination preparation and all general trial preparation must include review of the expert's deposition testimony from the same case. Depositions are sworn testimony and, if an expert's trial testimony deviates from the deposition, then the expert will appear as lacking credibility. At the expert's deposition, the opposition will likely ask the expert to disclose all sources that aided in the formation of his or her conclusions (Bain & Myer, 2010). If the expert discloses new

sources that should have been disclosed at the deposition, this will also affect the expert's credibility. All potential for conflicting testimony must be discussed with the directing attorney prior to the trial and addressed on direct examination. When the crossing attorney points out new information during his or her examination, the jury may feel insulted and misled because the expert did not disclose the new information during the direct examination. As an expert in the particular epidemiological field, the expert should be well aware of weak points in her arguments. These weak points should also be addressed during the direct examination in conjunction with all of the evidence that supports the expert's conclusions. The danger of introducing this evidence on cross examination gives the opposition an opportunity to combine all of the harmful testimony in one package for the jury's consideration. If the jury has previously heard the weak points, the blow of the opposition's questions on the weak points is greatly diminished.

Just as the directing attorney may use an outline, it is not uncommon for the crossing attorney to also develop an outline. First, the opposition may attempt to attack the expert's qualifications, including his or her experience, training, and consulting background. For instance, if the epidemiological expert has more experience as a treating physician than researching public health and the cause of diseases in populations, then the crossing attorney will attempt to point this out to the jury. In some instances, a treating expert is more beneficial than an academic expert. If the expert is attacked on this issue, the expert merely needs to rely on the experience and training that was utilized to qualify him or her as an expert to testify before the court. For example:

Question: Dr. Taylor, you're a physician at Green Hospital, correct?

Answer : Yes.

Question: And you have not published any articles on the causal connection between tobacco products and stimulants in the past 10 years since you obtained your degree, correct?

Answer : Yes.

While it is obvious the cross-examiner is attempting to attack the expert's credentials and qualification to testify on this topic, the expert must truthfully answer the question and expect the direct examiner to reestablish any credibility that has been lost with the jury.

Another common attack during cross examination is to expose any potential expert bias (Bain & Myer, 2010). This concept was briefly discussed in the section on direct examination. The expert should recall that during the discovery process prior to trial, the expert may, depending on the jurisdiction, be required to provide a written report detailing every time the expert testified in a trial or deposition in the past. In federal court, for instance, the expert will need to disclose every time he or she has testified in a trial or deposition during the prior 4 years (Federal Rules of Civil Procedure, 2010a). This information should include whether the expert has testified for Defendants or Plaintiffs. If the expert has consistently testified for one side, then the cross-examining attorney will address this to show bias from the expert. Nevertheless, the expert will be rehabilitated by the directing attorney and

should not overreact to this tactic. If the expert consistently provides consulting services for one side, then the expert can appear as having specialized knowledge in establishing his or her conclusions.

Bias may also appear if the expert's prior writings in publications were written solely for defense counsel or plaintiff's attorneys. The expert should continue to rely on the empirical and statistical data and other medical and scientific methods that have led him or her to establish an opinion "to a reasonable degree of medical certainty." Naturally, the opposition's experts will have potential biases as well and skilled attorneys will attempt to attack any expert's credibility on these grounds.

The expert must also be aware that the opposing attorney will attempt to uncover any assumptions that were involved in any of the studies utilized. A well-prepared expert should be able to inform the jury that assumptions are a part of studies and are a necessary facet of any scientific method. If the expert must agree that other factors can contribute to the causal relationship between an agent and a disease, then the expert must remain credible and honest. The directing attorney will have an additional opportunity through redirect examination to reestablish the causal connection and the general accepted practices in the studies that contribute to the expert's testimony.

The common theme in providing expert testimony during direct or cross-examination is that the expert witness must be well-prepared (Bain & Myer, 2010). Preparation includes maintaining a working file on the case that tracks the case's development. This file should include the following: all expert depositions that relate to the expert's testimony, expert disclosures under the Federal Rules of Civil Procedure, depositions from the plaintiff and defendant, court rulings limiting testimony and/or epidemiological issues, and any other legal documents the retaining attorney believes is pertinent. This is in conjunction with all documents that support the expert's testimony and documents that an opposing expert may use to refute expert findings and conclusions. The expert should meet with the retaining attorney weeks prior to trial if possible depending on the length of the testimony and rehearse direct examination and cross examination. While the expert does not want to sound too well rehearsed, the expert must develop a good conversational interaction with the retaining attorney to maintain jury captivation. The expert witness must remember that the jury is the target audience and he or she may be the most important witness the jury will encounter.

Qualifying the Expert

Before an individual can testify as an expert in a legal case, he or she must be qualified as an expert. The requirements an individual must meet to be qualified as an expert will vary depending on whether the case is being litigated in state or federal court. The requirements also vary from state to state. The following is a brief discussion of different requirements in both federal and state proceedings.

Codification of Requirements to Qualify an Expert

Federal Requirements. The qualification of experts in federal proceedings is governed by Rule 702 of the Federal Rules of Evidence. Rule 702 states the following:

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:

- (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; and
- (d) The expert has reliably applied the principles and methods to the facts of the case (Federal Rules of Evidence, 2011).

Thus, under the federal rules, an individual must be shown to have gained expertise through knowledge, skill, experience, training, or education. Rule 702 has, however, been interpreted liberally by some federal courts and a broad range of knowledge, skill, and training has been held enough to satisfy the requirements for qualifying as an expert (*Pineda v. Ford Motor Co.*, 2008; Faigman et al., 2011). Rule 702 liberalizes the traditional common law practice of limiting expert testimony to "some science, profession, business or occupation...beyond the ken of the average layman," (McCormick, 1992). Nevertheless, an expert must have such knowledge or experience in his or her field of calling as to make it appear his or her opinions or inferences will probably aid the trier of fact in the search for truth (*U.S. v. Hicks*, 2004).

State Requirements. Each state has its own rules that address the requirements that must be made to qualify as an expert in a legal proceeding. Generally, most states' rules mirror or are similar to the federal rule. The table below shows how various states have formulated their expert requirements (Table 2.1).

Although the above statutes are similar to Federal Rule 702, the statutes can differ slightly in wording or application. For example, Pennsylvania Rule of Evidence 702 limits their rule by adding the language "beyond that possessed by a lay person." (*Commonwealth v. Dunkle*, 1992). In Texas, the courts focus more on the expert's particular skills, experience, and training concerning the specific issue being litigated than under the federal system (Precella & Bailey New, 2009).

An International View. As would be expected, the standard for qualifying an expert varies from jurisdiction to jurisdiction. However, like we see with the numerous different jurisdictions in the United States, the standards utilized in other countries often have similar requirements.

By way of illustration, in Canada, a properly qualified expert is a witness who has particular knowledge thorough study or experience in the matter at issue (*Cleveland v. Hamilton Health Science Corp.*, 2009; *Regina v. Mohan*, 1994). Likewise, in Australia, experts are qualified if they have training or practical experience in an area of knowledge beyond that possessed by the trier of fact, and of apparent assistance to it (Australian Law Reform Commission, n.d.).

Table 2.1 State requirements for reliance on expert witnesses

Alaska Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Arkansas Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
California Rule of Evidence 720	A person is qualified to testify as an expert if he has special knowledge, skill, experience, training, or education sufficient to qualify him as an expert on the subject to which his testimony relates. Against the objection of a party, such special knowledge, skill, experience, training, or education must be shown before the witness may testify as an expert
Connecticut Code of Evidence 7-2	A witness qualified as an expert by knowledge, skill, experience, training, education or otherwise may testify in the form of an opinion or otherwise concerning scientific, technical or other specialized knowledge, if the testimony will assist the trier of fact in understanding the evidence or in determining a fact in issue
Delaware Uniform Rule of Evidence 702	If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case
Florida Statutes 90.702	If scientific, technical, or other specialized knowledge will assist the trier of fact in understanding the evidence or in determining a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify about it in the form of an opinion; however, the opinion is admissible only if it can be applied to evidence at trial
Hawaii Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise
Idaho Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Illinois Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Kentucky Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise

(continued)

Table 2.1 (continued)

Louisiana Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Michigan Rule of Evidence 702	If the court determines that scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise
Minnesota Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Mississippi Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Missouri Revised Statutes 490.065.1	In any civil action, if scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise
Montana Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise
Nebraska Code §27-702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Nevada Revised Statutes 50.275	If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by special knowledge, skill, experience, training or education may testify to matters within the scope of such knowledge
New Hampshire Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
North Carolina General Statute 8C-702	If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion, or otherwise

(continued)

Table 2.1 (continued)

North Dakota Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Ohio Rules of Evidence 702	A witness may testify as an expert if all of the following apply: (A) The witness' testimony either relates to matters beyond the knowledge or experience possessed by lay persons or dispels a misconception common among lay persons; (B) The witness is qualified as an expert by specialized knowledge, skill, experience, training, or education regarding the subject matter of the testimony
Oregon Revised Statutes 40.410	If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify thereto in the form of an opinion or otherwise
Pennsylvania Rule of Evidence	If scientific, technical or other specialized knowledge beyond that possessed by a layperson will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify thereto in the form of an opinion or otherwise
South Carolina Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
South Dakota Codified Laws 19-15-2	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Texas Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Utah Rule of Evidence 702	Subject to the limitations in paragraph (b), 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 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
Washington Rule of Evidence 702	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise
Wisconsin Statutes 907.02(1)	If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise

Getting an Expert Qualified

Who decides whether an expert is qualified? When an expert is presented to the court, the presenting party has the burden of showing that the statutory criteria has been satisfied by a proponent of the evidence (*Corpus Juris Secundum*, 2012a). The decision concerning whether an expert meets the qualification criteria rests in the providence of the court (Dore, 2012a).

Voir Dire. The challenge to the qualifications of an expert usually occurs during what the legal profession calls *voir dire*. “Voir dire” is French for “to speak the truth” (Voire-dire, *Black’s Law Dictionary*, 1990, p. 1575). The purpose of voir dire is to allow an expert’s background and abilities to testify on particular matters to be examined (Dore, 2012a). Some jurisdictions allow this voir dire process where the court is able to preview the expert’s qualifications prior to testimony in front of the jury. During voir dire, the competency, knowledge, and credentials of the expert will be presented and examined (Dore, 2012a; Sapir, 2007). The counsel for the opposing party is also provided the opportunity to challenge the qualifications (Sapir, 2007). As the opposing counsel does have the opportunity to challenge the expert’s qualifications, experts are cautioned not to exaggerate or mislead with respect to their background, experience, or in their curriculum vitae. Especially in high dollar cases, opposing counsel will investigate the expert and any exaggeration and/or dishonesty could result in the individual’s disqualification as an expert.

Additionally, when the litigation involves toxic torts, products liability, or environmental law, the qualification process can be more complex. In such cases, the expert qualifications will differ for each area of scientific expertise presented in the case (Dore, 2012a). The qualifications for an epidemiologist will be established with different proof than a toxicologist or biologist (Dore, 2012a). The expert must be qualified to express opinions on the issues to which his or her testimony would pertain. Thus, while an epidemiologist would be qualified to perform studies and explain the implications of the studies, he or she may not be qualified to serve as an expert on the issue of causation (Dore, 2012a).

The qualification process solely determines whether the expert meets the statutory criteria to testify as an expert. The expert does not even have to be the most highly qualified person to testify on a given issue. As recognized the District Court for the Fifth Circuit, differences in expertise “bear chiefly on the weight to be assigned to the testimony by the trier of fact, not its admissibility” (*Huss v. Gayden*, 452, 2009).

In some cases, the voir dire process is unnecessary. If there is little to no doubt an expert is qualified to testify on an issue, the opposing party may waive any objections and stipulate to the expert’s qualifications. If the opposing party offers no objection to the introduction of the expert’s testimony or stipulates to his or her qualifications, the court should find the expert qualified (*Corpus Juris Secundum*, 2012b).

What is considered when determining whether an individual is an expert? When examining a proposed expert, the court will look at several factors. Some of the

areas examined include the individual's education, licensure, certification, background, and training. The individual's work, research, studies, publications, presentations, and practical experience are considered. The court may also consider the individual's membership and/or participation in professional societies and associations. An individual does not have to possess a license in a particular field to qualify as an expert (American Law of Products Liability, 2012; *Corpus Juris Secundum*, 2012c).

Typically, the standard by which to measure the qualifications of individuals with special skills or knowledge is not well defined beyond the general requirement their capacity must be commensurate with the reasonable requirements needed for the nature of the subject matter (*Corpus Juris Secundum*, 2012c). When the case involves subject matter that is complex, the courts will be more prone to require advanced degrees, training, and experience (Brown & Campbell, 2009a). In areas like toxic torts or product liability, epidemiologists with an advanced degree in epidemiology will be qualified, especially if they also have experience in the field, to testify on issues such as the comparative risk of prescription drugs or another expert's methodology (Brown & Campbell, 2009b).

An epidemiologist's education and training becomes more important when offering a causation opinion. In the past, many courts required the expert who addressed issues of causation in toxic tort cases to have a medical degree (Jones & Pogue, 2012). While not every court now requires a medical degree to focus on causation, there will be less of a challenge to the expert if the expert has both a medical degree and training as an epidemiologist (Danner & Varn, 2012; Jones & Pogue, 2012). However, an epidemiologist with a Ph.D. in a field relevant to the litigation can be found to be qualified to address the causation of diseases often associated with exposure to toxic substances (Danner & Varn, 2012).

Further, experts that actually practice in the field at issue can be seen as being better witnesses (Jones 2012). Practitioners have been recognized as being more compelling witnesses, as the trier of fact may find them more convincing because they can testify from firsthand knowledge about their own observations, experiments, and analysis (Jones, 2012).

In litigation involving epidemiologists as experts, courts would have a specific interest in information concerning the epidemiologist's participation in any research that pertained to the toxic substance or injury/disease at issue in the litigation (Dore, 2012a). The titles of any published articles by the epidemiologist examining the specific toxic substance at issue, its effects on humans, and/or the injury/disease at issue should be disclosed to the court (Dore, 2012a). The qualification of an epidemiologist as an expert in the litigation would also be aided by showing his or her familiarity with the scientific literature and studies addressing the particular disease/injury involved in the litigation (Dore, 2012a).

The rules in both federal and state courts usually require an individual to have knowledge, skill, experience, training, *or* education to qualify as an expert. It is important to note the use of the word "or" indicates the individual being offered as an effort does not have to satisfy all five areas. However, an individual who does

meet most, or all, of the five areas is more likely to defeat a challenge of his or her qualification to testify as an expert in the litigation.

Qualifying the Expert's Testimony

As discussed above, a qualified expert is someone who has been found to have the requisite expertise through education, training or experience, necessary to give an opinion on a particular subject. However, the qualification of an expert does not automatically mean that expert's opinions and testimony will be deemed admissible. Therefore, once an expert has been qualified, his or her opinions and testimony must also be evaluated to determine their admissibility. An expert may testify in a case when "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" (Federal Rule of Evidence, 2011).

Determining the Admissibility of an Expert's Testimony

The Federal Requirements: The Frye Standard. In 1923, the US Supreme Court handed down the decision of *Frye v. United States*. In that case, the Court established a method for determining whether expert testimony was reliable and thereby admissible (*Frye v. United States*, 1923). Under that test, expert testimony is admissible when the methods and procedures employed by the expert have gained "general acceptance in the particular field in which is belongs" (*Frye v. United States*, 1923, p. 1014).

Over the next 70 years, the *Frye* "General Acceptance" standard reined in the federal courts as the method for determining the admissibility of expert testimony. The codification of the Federal Rules of Evidence in 1972, including a rule dealing specifically with expert testimony, did not initially effect any change in the federal standard for admitting expert testimony. The change did not come about until 1993 in the seminal case of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*

The Federal Requirements: The Daubert Standard. In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, two infants and their guardians *ad litem* sued a pharmaceutical company for birth defects alleged sustained by their mothers' use of an antinausea drug, Bendectin, during pregnancy (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). At the trial level, the plaintiffs attempted to submit the testimony of eight experts who based their conclusion that Bendectin caused birth defects on animal studies, chemical structure analysis, and the unpublished reanalysis of previously published human statistical studies (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 1993). The trial court held this expert testimony inadmissible under the *Frye* Standard (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 1993). The trial court reasoned that, because of the large amount of epidemiological studies regarding

Bendectin, non-epidemiological studies, such as the animal cell studies, live animal studies and chemical structure analyses relied upon by the plaintiffs were not a “generally accepted” methodology for evaluating Bendectin and, thus, failed under the *Frye* test (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). The court further concluded that the plaintiff’s epidemiological reanalyses were not generally accepted because they had not been published or subject to peer review (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). The trial court, therefore, refused to admit plaintiffs’ expert testimony, and the appellate court affirmed (*Daubert v. Merrell Dow Pharmaceuticals*, 1993).

The case eventually reached the United States Supreme Court where a majority of the justices held the Federal Rules of Evidence superseded the *Frye* standard for admission of expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). The Court noted that the text and drafting history of Federal Rule of Evidence 702 governing expert testimony made no mention of a “general acceptance” standard for determining the admissibility of expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). Rather, Rule 702 required the trial judge to ensure an expert’s testimony was both reliable and relevant (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). The Supreme Court found this reliability standard in the Rule’s use of the term “scientific...knowledge” (*Daubert v. Merrell Dow Pharmaceuticals*, 1993, p. 580). “Scientific,” the Court held, “implies a grounding in the methods and procedures of science,” while “‘knowledge’ connotes more than subjective belief or unsupported speculation” (*Daubert v. Merrell Dow Pharmaceuticals*, 1993, p. 590).

To aid the trial judge in determining whether proffered expert opinion constituted “scientific knowledge” the Supreme Court provided a list of factors that should be considered. While not exhaustive, these factors are meant to assist the trial judge in determining whether the methodology employed by the expert is reliable (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). In considering these factors the trial judge is to focus on the methodology employed by the expert and not upon his conclusions (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). The factors propounded by the Supreme Court include the following:

- (1) Whether the theory or technique can be (and has been) tested;
- (2) Whether the theory or technique has been subjected to peer review and publication;
- (3) The theory or technique’s known potential error rate and the existence and maintenance of standards controlling its operation; and
- (4) Whether the theory or technique has attracted widespread acceptance within a relevant scientific community (*Daubert v. Merrell Dow Pharmaceuticals*, 1993)

The Supreme Court remanded the case so that the lower courts could apply the newly articulated standard to the proffered expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1993). Applying the new Supreme Court standard, the Ninth Circuit Court of Appeals determined that plaintiffs’ expert testimony had to satisfy two prongs: (1) it had to be reliable, “scientific knowledge” and (2) it had to be

relevant in that it aided the trier of fact in reaching a conclusion (*Daubert v. Merrell Dow Pharmaceuticals*, 1995).

Under the first prong, the court found the factors set down by the Supreme Court were not exclusive (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). In particular, the court considered the fact that the research prepared by the experts was only done in anticipation of litigation to weigh against reliability (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). Further, it noted that the methodology utilized by the plaintiffs' experts had not been subjected to peer review or publication (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). Finally, the court noted that the plaintiffs' experts failed to explain their methodology or reference an external source to validate their opinions and provide an assessment of the reliability of their methods (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). The Ninth Circuit, thus, determined plaintiffs had failed to satisfy the first prong for the admission of expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). After further discussion, the court found plaintiffs' proffer of expert testimony failed the second prong Rule 702's requirement for the admission of expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1995). Therefore, even after applying the new *Daubert* standard, the Ninth Circuit affirmed the district court's exclusion of plaintiffs' expert testimony (*Daubert v. Merrell Dow Pharmaceuticals*, 1995).

Federal Standard: Post-Daubert Developments; One question left open by the *Daubert* decision was the standard of review appellate courts were to apply when considering a district judge's decision to admit or deny expert testimony. The Supreme Court answered this question 4 years later in *General Electric v. Joiner*, settling on an abuse of discretion standard, the same standard used for all evidentiary decisions (*General Electric v. Joiner*, 1997). The "abuse of discretion standard" means the reviewing court looks to see if the lower court's decision: (1) was clearly unreasonable, arbitrary, or fanciful; (2) was based on an erroneous conclusion of law; (3) was clearly erroneous; or (4) the record contains no evidence upon which the court rationally could have based its decision (Casey, Camara, & Wright, 2001–2002). In that opinion, the Court emphasized that while *Daubert* permitted the admission of a greater range of expert opinion, it still left in place the gatekeeper role of the judge in determining the reliability and relevance of such testimony (*General Electric v. Joiner*, 1997). The Court thus affirmed the district court's exclusion of the expert testimony in this case, determining that the animal study in this case was too factually remote from the actual facts of the case and the epidemiological studies either did not have significant results or contained exposures to other carcinogens not at issue in the case (*General Electric v. Joiner*, 1997).

Finally, in *Kumho Tire Co. v. Carmichael*, the Supreme Court addressed the question of whether *Daubert* applied to all expert testimony or only expert testimony based on "hard" science, such as biology and chemistry. The Court noted Rule 702 of the Federal Rules of Evidence encompassed all forms of expert testimony, including "scientific, technical or other specialized knowledge" (*Kumho Tire Co. v. Carmichael*, 1999). Thus, the Court concluded the trial judge's gatekeeping role applied to all forms of expert testimony, not just testimony based on "hard"

science (*Kumho Tire Co. v. Carmichael*, 1999). Therefore, the *Daubert* standard of admissibility would apply to all forms of expert testimony (*Kumho Tire Co. v. Carmichael*, 1999).

States' Requirements. The previous section considered the federal standard for the admission of expert testimony, as now governed by *Daubert*. However, because *Daubert* is based on the Federal Rules of Evidence rather than a constitutional provision, the states are free to apply their own standards in assessing the reliability and, thus, admissibility of expert testimony.

As one would expect, the applicable standard varies by the state. However, the states' approaches can generally be divided in four different categories: (1) those applying the *Daubert* standard, (2) those applying the *Frye* standard, (3) those applying a *Daubert-Frye* hybrid, and (4) those applying their own standard. Experts are cautioned to ensure they become familiar with the standard for the state in which they are testifying and the manner said standard has been applied by the courts.

As of 2011, the states that follow the *Daubert* standard include the following: Alaska, Arizona, Arkansas, Colorado, Connecticut, Delaware, Georgia, Hawaii, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Mississippi, Montana, Nebraska, New Hampshire, New Mexico, Ohio, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, and Wyoming (Blinka, 2011; Budd, Cottle, & Hutchinson, 2012). It should be noted that some of states following the *Daubert* standard have adopted distinctions that differ from the federal standard (Budd, Cottle, & Hutchinson, 2012).

A handful of states have chosen to continue to follow the *Frye* Standard. These states include Alabama, California, the District of Columbia, Florida, Illinois, Kansas, Maryland, Minnesota, New York, Pennsylvania, and Washington (Budd, Cottle, & Hutchinson, 2012).

While some states have adopted either the *Frye* or *Daubert* standard, others have developed a hybrid of the two or their own unique approach. These states, as of 2011, included Missouri, Nevada, New Jersey, North Carolina, North Dakota, South Carolina, and Virginia (Budd, Cottle, & Hutchinson, 2012).

An International View. Clearly, the courts of the United States are not the only tribunals faced with the difficulty of determining whether or not to admit expert testimony and what standards to apply in making this determination. The differences in the standards used across varying locations may have serious implications for the outcome of a trial in the context of international litigation. As an example, Loue discusses in Chap. 5 of this volume, a case involving a lawsuit against an American corporation doing business in Ecuador and a challenge by the defendant corporation of the methods utilized by the expert witness in the litigation in Ecuador.

The following will consider the approach to this question employed by some other countries for a comparative look at the admission of expert testimony on an international scale.

England: Pro-Admissibility. In general, opinion testimony is inadmissible in English courts (Browne, Williamson, & Barkacs, 2002). However, expert testimony is

admissible under an exception to this general rule which allows expert testimony to prove “matters of specialized knowledge, on which the court would be unable [to] properly reach a conclusion unaided” (Murphey, 1992, p. 302). Under the English system, expert testimony is admissible where it is sufficiently well-established that it would pass the ordinary tests of relevance and reliability (*R v. Dallahger*, 2002). While this standard seems relatively similar to that propounded in *Daubert*, in practice, the English courts have been more liberal in admitting expert testimony (Dempsey, 2004). For additional discussion of the standard in England, see the chapter by Claire McIvor in this volume.

South Korea: Court-Controlled Experts. In South Korea, the court, not the parties, chooses an expert witness (Browne, Williamson, & Barkacs, 2002). In choosing an expert, the court may instruct the parties to nominate an expert witness, may provide a list from which the parties can choose, or may choose an expert on its own (Browne, Williamson, & Barkacs, 2002). Unlike the United States, a Korean expert will have obtained a specialized degree or certification; accumulated knowledge and experience are insufficient (Lee, 1997). Thus, Korean experts will generally hold such professions as physicians and engineers, and the courts will not permit testimony from, for example, mechanics and construction workers (Lee, 1997). Once the expert is chosen, the court will give the expert his or her assignment (Browne, Williamson, & Barkacs, 2002). The expert then prepares a report which the court is free to accept or reject (Browne, Williamson, & Barkacs, 2002). The expert is exempt from pretrial discovery and can only be examined in court by leave of the judge (Lee, 1997).

The parties may also obtain their own, non-court-appointed experts, but because such experts are generally considered biased, parties rarely obtain such experts (Lee, 1997). Occasionally, the court will adopt the opinion of a party-retained expert over that of the court-appointed expert (Lee, 1997). Because of the unique position occupied by experts in Korean courts, the question of admissibility of testimony does not really arise. It is the judge who hears the expert report and the judge alone who decides whether to accept or to reject the testimony of the expert.

France: The Expert-Judge Team. Like South Korea, French courts appoint their own experts (Browne, Williamson, & Barkacs, 2002). An expert is appointed in one of three ways: (1) one of the parties requests an expert; (2) the judge appoints the expert on his or her own motion; or (3) the judge is required by statute to appoint an expert (Browne, Williamson, & Barkacs, 2002). The idea is for the expert witness and the judge to work together, and the judge ensures that the parties to the litigation cooperate with the expert (Taylor, 1996). Once the expert has completed the assignment, he or she files a written report with the court which the judge is free to accept or reject (Browne, Williamson, & Barkacs, 2002). Once again, the question of admissibility does not really arise in French courts. The judge, not the parties, controls the expert and the scope of his or her testimony (Taylor, 1996). Thus, an expert in French court does not face the threshold barrier of whether his testimony is admissible.

Serving as an Expert

As discussed above, experts can serve as consultants and/or testifying witnesses. When serving in either role, the expert is best served by gaining, up front, a clear understanding of his or her obligations and the litigation process in general.

Objectivity

Unlike an attorney, whose job is to persuade, the role of an expert is to explain (Kolezynski, 1997). Consequently, experts should strive for objectivity (Kolezynski, 1997). In some countries, such as England, Wales, Canada, and New Zealand, experts even have an obligation to the court to provide objective, unbiased opinions (Civil Rules & Practice Directions, 1999; Federal Court Rules, 2010; Judicature Act 1908, 2009).

Ethical Rules and Guidelines

In the United States and other countries, some professional fields have published position statements with ethical guidelines or rules of professional conduct. For example, the American Medical Association and American College of Occupational and Environmental Medicine both have ethical guidelines that pertain to its professionals who serve as expert witnesses. Such rules help professionals understand what constitutes ethical conduct in the litigation context (Kolezynski, 1997). Such guidelines often address the association or society's stance with regard to the goal of expert testimony, qualifications, objectivity, compensation, and the conduct of expert witnesses (Dore, 2012b).

Further, professionals serving as experts should be aware of the American Bar Association's Model Rules of Professional Conduct and the state's rules governing an attorney's professional conduct. Experts retained by attorneys become the agents of those attorneys (*Restatement (Second) of Agency*, 1958). Therefore, the attorney may be held responsible for a breach, by the expert, of the ethical obligations applicable to attorneys (Kolezynski, 1997). Moreover, experts that cause an attorney professional embarrassment during the litigation will find other attorneys are reluctant to retain their services in the future (Kolezynski, 1997).

Experts also have an ethical obligation to comply with the oath they take before testifying. Though the oaths vary by jurisdiction, they all require the witness to swear or affirm he or she will offer only truthful testimony under the penalty of perjury. However, as experts offer opinions, the "truth" of the opinion is open to debate (Kolezynski, 1997). Thus, the most probable consequence of offering "false" testimony is that the trier of fact will disregard the expert's opinion (Kolezynski, 1997).

Experts in litigation have an obligation to exercise reasonable care and skill. While experts have enjoyed immunity from litigation arising from the written and spoken word they have offered, this is beginning to change (Dore, 2012b; Masterson, 1998). Courts have begun to reexamine the breadth of an expert's immunity and permit claims, such as malpractice, to be brought against experts (Dore, 2012b; Hanson, 1996; *Murphy v. A.A. Matthews*, 1992).

Deadlines and Confidentiality

Experts who are retained in litigation have an obligation to meet the deadlines given to them. Once a case is underway, various deadlines can be enforced upon the attorneys. Depending on the jurisdiction, litigation will often involve a case management or discovery schedule. As it applies to experts, most jurisdictions have rules that dictate the parties' deadline for disclosing experts and their reports. Federal Rule of Procedure 26(a)(2)(D), for example, states the following:

(D) *Time to Disclose Expert Testimony.* A party must make these disclosures at the times and in the sequence that the court orders. Absent a stipulation or a court order, the disclosures must be made:

1. At least 90 days before the date set for trial or for the case to be ready for trial; or
2. If the evidence is intended solely to contradict or rebut evidence on the same subject matter identified by another party under Rule 26(a)(2)(B) or (C), within 30 days after the other party's disclosure (Federal Rule of Civil Procedure, 2010a).

The parties are required to meet the deadlines of the schedule. An expert's inability to conduct research, analyze records, and compile a report in a timely manner can complicate an attorney's job and, if after the deadline, prohibit the attorney from utilizing the expert's findings (Bois, 2011c; Jones, 2012). Therefore, it is important for the expert and attorney to discuss these deadlines and determine whether the expert can reasonably meet them.

A retained expert should also be aware of the duty of confidentiality. Attorneys are required to maintain and preserve a client's confidences. As discussed above, retained experts are agents of the attorney and, as such, should adhere to the same rules of confidentiality. The contract that the expert and attorney enter into will also often address the issues of confidentiality, creating a contractual obligation to maintain confidentiality. Thus, once an expert is retained, he or she has an obligation to treat information and documents from the attorney or on the client's behalf as confidential (Kolezynski, 1997). If during the course of the expert's evaluation of a case, he or she discovers unfavorable evidence, the duty of confidentiality requires the expert to only discuss this evidence with the retaining party (Kolezynski, 1997). Further, the duty of confidentiality would extend to any of the expert's staff,

subcontractors, or coworkers that are engaged to assist in the matter. Experts should further be aware the duty of confidentiality extends beyond the conclusion of the case (Kolezynski, 1997).

Recordkeeping

When serving as an expert, especially a testifying expert, one should be conscious of record keeping and preserving evidence. It is likely that, sometime during the litigation of the case, a testifying expert's entire file will have to be produced for scrutiny by opposing counsel (Bois, 2011e). Experts would be wise when conducting their evaluations to remember this eventuality and strive to maintain minimal and objective record keeping (Bois, 2011g). The experts should also refrain from destroying any evidence and/or records they do manufacture, utilize, and/or consider (Bois, 2011e).

The Expert's Report

It is important to note the expert's role will vary from case to case. Therefore, it is important for the expert to ascertain exactly what is being expected of him or her. Likewise, the content of the expert's report will vary, as the rules regarding the contents of a report vary from jurisdiction to jurisdiction and country from country.

In the United States, an expert's report in a federal proceeding must comply with Federal Rule of Civil Procedure 26(a)(2). This Rule states the following:

- (B) *Witnesses Who Must Provide a Written Report.* Unless otherwise stipulated or ordered by the court, this disclosure must be accompanied by a written report—prepared and signed by the witness—if the witness is one retained or specially employed to provide expert testimony in the case or one whose duties as the party's employee regularly involve giving expert testimony. The report must contain:
1. A complete statement of all opinions the witness will express and the basis and reasons for them;
 2. The facts or data considered by the witness in forming them;
 3. Any exhibits that will be used to summarize or support them;
 4. The witness's qualifications, including a list of all publications authored in the previous 10 years;
 5. A list of all other cases in which, during the previous 4 years, the witness testified as an expert at trial or by deposition; and
 6. A statement of the compensation to be paid for the study and testimony in the case (Federal Rules of Civil Procedure, 2010a).

In England, Part 35.10 of the Rules & Practice Directions requires reports to contain the following:

- (1) An expert's report must comply with the requirements set out in Practice Direction 35.
- (2) At the end of an expert's report there must be a statement that the expert understands and has complied with their duty to the court.
- (3) The expert's report must state the substance of all material instructions, whether written or oral, on the basis of which the report was written.
- (4) The instructions referred to in paragraph (3) shall not be privileged against disclosure but the court will not, in relation to those instructions –
 - (a) Order disclosure of any specific document; or
 - (b) Permit any questioning in court, other than by the party who instructed the expert, unless it is satisfied that there are reasonable grounds to consider the statement of instructions given under paragraph (3) to be inaccurate or incomplete (Civil Rules & Practice Directions, 1999).

Given that the report requirements may vary depending on the locale of litigation, experts would be well served to become familiar with the requirements of the court in which the litigation is pending. Experts should also be aware that many courts have local rules that also apply.

In general, an expert should consider a report that includes elements such as (1) the expert's background and qualifications; (2) a summary of his or her opinions; (3) the objectives of the evaluation; (4) the tests performed to verify the opinions; (5) a review of the principles, methodologies, and analyses utilized; (6) the evidence considered; (7) the publications and studies considered; (8) the peer review of the methods employed; (9) indicia of reliability relied upon by the expert; and (10) the expert's conclusions (Bois, 2011g; Brown & Campbell, 2009c).

Conclusion

To prevail in complex litigation, especially litigation involving toxic torts, products liability, or environmental issues, the attorneys for both parties must effectively utilize experts. Thus, the expert witness becomes an essential and important factor in the litigation. The litigation of such complex cases is most successful when the attorneys and experts function as a team.

An expert must have a firm grasp on both his or her field of practice and the law. Expert must understand what is expected of them and the legal rules that must be followed. When an expert proves competent, honest, and knowledgeable, it is more likely he or she will be successful, increase his or her professional acclaim, and be repeatedly retained.

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