

# Impact of Medical Malpractice Environment on Surgical Quality and Outcomes

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The annual cost of the medical malpractice system has been estimated to be \$55 billion.<sup>1</sup> The medical malpractice crisis that began unfolding in the late part of the 20<sup>th</sup> century continues to be a major concern.<sup>2-5</sup> The intent of the malpractice system, based on classic tort deterrence theory, assumes that the looming threat of a malpractice suit will deter poor care because providers will be more vigilant and responsible.<sup>6</sup> Proponents of the liability system believe that the threat of malpractice suits will encourage providers to adhere to standards of care, which, in turn, should lead to better patient outcomes. However, critics argue that the system is ineffective in encouraging quality and better outcomes and that it generates only unintended consequences, such as defensive medicine, which may lead to worse patient outcomes because of overuse of services or avoidance tactics that may result in overtesting, overtreatment, iatrogenic injury, and soaring health care costs.<sup>7,8</sup> In addition to the problems of malpractice insurance availability and affordability, personal strain from experiencing a malpractice claim can affect clinicians. A recent study found that one-quarter of American surgeons had been the subject of a malpractice suit over the preceding 2 years, resulting in notable stress personally and professionally.<sup>9</sup> Perceived malpractice risk, real or not,<sup>10</sup> may force providers to leave high malpractice risk environments, particularly those in high risk fields of medicine, which, in turn, affects access to care and could potentially adversely affect patient outcomes.<sup>3,11,12</sup> Surgical specialties are among the fields of medicine with a large proportion of malpractice claims<sup>13-18</sup> and have been a primary focus of the malpractice crisis. The objective of this study was to perform

a systematic review of the literature to examine the association between malpractice environment and outcomes in surgical specialties.

## METHODS

### Search strategy

The literature search included Medline, PubMed, and the Cochrane Database of Reviews of Effectiveness to capture articles published between 1980 and 2012. A comprehensive search using terms that included *medical malpractice*, *tort reform*, *quality of care*, *outcomes*, and *litigation* in relation to these surgical and procedural subspecialties was performed. Studies on surgical subspecialties and procedure-based fields, including interventional cardiology/cardiac surgery, urology, neurosurgery, obstetrics and gynecology (OB/GYN), general surgery, and orthopaedic surgery were included. A manual secondary search of reference papers cited in these initial studies was used to expand the database and capture studies published in journals outside the range of Medline and PubMed (eg, law and economic journals).

### Study selection (exclusion and inclusion criteria)

The literature search included review articles, observational studies, case reports, survey studies, and retrospective data analyses. To be included, a study had to be an original research article, written in English, published between 1980 and 2012 in peer-reviewed journals, and performed in the United States.

Only those that demonstrated some link or lack thereof between malpractice environment and physician practice or patient outcomes were included. Those that focused solely on claims prevalence, judgments, or amounts and their association with various adverse events were excluded. Studies captured in the initial search and reported on invasive procedures (eg, cardiac catheterization or endoscopy) in addition to surgical operations were retained.

### Data extraction

Data from each study regarding data sources, study population, and endpoints were abstracted. Because of the heterogeneity in methods, patients, fields, interventions,

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**Table 1.** Conceptual Framework for Examining the Effect of Malpractice Environment on Physician Practice and Patient Outcomes

	Intended consequences	Unintended consequences
Physician practice	Hypothesis/argument: Liability threat creates incentives for physicians to adhere to prevailing standards, resulting in high quality of care.	Hypothesis/argument: Liability threat creates incentives for providers to (a) substitute low-risk procedures for high-risk procedures; (b) avoid high-risk patients; and (c) provide clinically unnecessary tests and procedures due to fear of missed diagnoses.
Patient outcomes	Hypothesis/argument: Liability threat encourages physician adherence to standards of care and conscientiousness, resulting in better patient outcomes.	Hypothesis/argument: Liability threat is associated with poorer patient outcomes because (a) patients who may benefit or need procedures perceived to be "high risk" won't get the care that they need. They will either do without care or travel further for it. This may lead to poorer outcomes; (b) risky patients may experience worse outcomes if they can't get the care they need because physicians fear poor outcomes and liability; and (c) overprovision of care (testing and treatment) may increase risk of iatrogenic injury, resulting in poorer outcomes.

and measured endpoints, data pooling was not possible and a narrative data summary was instead completed. Due to the nature of this research, no randomized controlled studies were found; data were from only retrospective cohort and survey studies.

### Analysis

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist was used to structure the review. Data pooling was not possible due to the heterogeneity of study populations and endpoints, and a formal meta-analysis was not performed. This article represents a systematic review.

A 2 × 2 classification was used to categorize studies based on whether the study focused on the effects of physician practice or patient outcomes, and whether the effects were intended or unintended consequences of the malpractice liability system. This framework is built on the opposing arguments regarding the intent of the liability system and the resulting effects. The malpractice system is intended to deter negligence and improve patient outcomes. This approach resulted in 4 categories of studies (Table 1):

1. Studies of the *intended* consequences of malpractice liability on *physician practice* were those that identified an association between some measure of malpractice risk (eg, laws, claims frequency, claims severity) and an improvement in a measure of adherence to an explicit standard of care or a performance on a standard quality indicator.
2. Studies of the *intended* consequences of malpractice liability on *patient outcomes* were those that directly

tested the hypothesis that malpractice risk improves patient outcomes as measured by mortality, other outcomes, or patient satisfaction.

3. Studies of the *unintended* consequences of malpractice liability on *physician practice* were those that directly tested whether some measure(s) of malpractice risk were associated with greater use of defensive medical practices (eg, imaging, ordering of laboratory tests, substitution of less risky procedures for more risky procedures, patient selection [ie, avoidance of high-risk complicated patients], referrals). Studies using self-reported survey data on defensive practices were included in this group.
4. Studies of the *unintended* consequences of malpractice liability on *patient outcomes* were those that directly tested whether some measure of malpractice environment was associated with poorer patient outcomes (possibly as a result of defensive medicine).

### RESULTS

The initial literature search identified 349 studies, of which 94 were excluded immediately by their title, given their irrelevance to malpractice and/or surgical and nonsurgical procedures (Fig. 1). Further review excluded 92 studies, based on their international nature and primary focus on nonsurgical topics. A total of 163 studies were further scrutinized and, after final application of inclusion and exclusion criteria, 29 final studies were included in the systematic review. These 29 studies examined the intended and unintended effects of malpractice environs on changes in physician practice and patient outcomes.

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