Aggregating Liability for Medical Malpractice

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Abstract:

Some injurers, such as large medical facilities, are involved in many accidents, even when they act reasonably. Under prevailing law, these injurers are liable only for the harm they cause by failing to take reasonable care. To reach a finding of liability, courts must review every incident to determine whether the injurer was negligent and, if so, whether the negligent conduct was the but-for cause of the injury. However, it is often easier and more accurate to determine whether an injurer negligently caused unreasonable harm to some (unknown) victims, based on outcomes, than to examine the injurer's conduct in each incident. For example, suppose a court determines that it is reasonable for 100 patients to contract an infection during hospitalization. In that case, it can surmise that when 150 patients have contracted an infection, the hospital or its employees negligently caused harm to 50 patients. In light of this informational advantage, this article examines an aggregated liability regime that, like a strict liability regime, depends solely on outcomes. However, this aggregated regime requires the injurer to pay only for harm that could reasonably have been avoided, like under a negligence regime. This article shows that when applied to medical facilities, the proposed regime increases the chances that negligent hospitals will compensate victims while significantly decreasing the direct and indirect costs of investigating suspected malpractice cases individually. Last, the article shows that aggregated liability can be applied to other tortfeasors, such as polluting factories and product manufacturers, and that it offers significant advantages when applied to manufacturers of smart devices and other AI products.

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INTRODUCTION

Negligence law holds injurers accountable only if they fail to conform to the applicable standard of care and if their victims can establish that the injurer's conduct caused the victim's harm. The structure of negligence law makes sense if we understand tort liability as significantly directed at providing appropriate incentives for risk reduction. Negligence liability deters injurers by requiring them to pay for the harm caused by their actions when they fail to take reasonable care.[1]

Tort law's emphasis on the injurer's conduct is attributed to the fact that potential injurers are rarely personally involved in accidents, even when they are negligent. For example, while reckless driving increases the risk of road accidents, most reckless drivers will arrive at their destination without incident.[2] In these paradigmatic cases, the outcome of the behavior——the occurrence of a road accident——provides little information about the injurer's conduct.

Some injurers are routinely involved in many adverse events, even when taking adequate care. For these injurers, the harm they cause over time offers valuable information about their conduct that is currently ignored. This information about long-term results could prove especially valuable in cases where determining the injurer's conduct in each incident requires a costly inquiry. Consider the following example.

> Example 1. *Hospital-acquired infection*. Alex was admitted to the hospital due to a spinal injury that required simple surgery and a short hospital stay. Other than the spinal injury, Alex was generally healthy. While hospitalized, Alex developed an infection that caused permanent harm. Should Alex be

1 *See* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW § 6.1 (9th ed. 2014) (explaining that reasonable care, under negligence liability law, is defined by a marginal cost–benefit analysis, inducing injurers to optimally invest in care).

2 2021 statistics imply that, on average, a vehicle is involved in an accident resulting in bodily injury once every 175 years. In 2021, the United States recorded a total of 302,722,000 registered vehicles covering a distance of 3,132 billion miles. On average, each vehicle traveled 10,346 miles throughout the year. *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FATALITY ANALYSIS REPORTING SYSTEM (2021), https://www-fars.nhtsa.dot.gov/Main/index.aspx (last visited February 5, 2023). The year also saw 1,727,608 car crashes resulting in injuries, indicating one injury-causing crash for every 1,812,911 miles traveled. With cars averaging 10,346 miles annually, a vehicle is involved in a crash once in 175 years. For data on car crashes, *see* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FATALITY AND INJURY REPORTING SYSTEM TOOL (FIRST) (2021), https://cdan.dot.gov/query (last visited February 5, 2023). Many car crashes involve reckless drivers. Out of the 42,939 car crash fatalities, 13,384 fatalities (31%) were from drunk-driving crashes. *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DRUNK DRIVING, https://www.nhtsa.gov/risky-driving/drunk-driving (last visited February 5, 2023)

compensated for the harm?[3]

The situation in Example 1 is prevalent and often preventable.[4] Medical personnel can take simple measures, such as washing their hands before approaching a patient's bed or removing their ties and bracelets, to reduce the risk of infection.[5]

Prevailing tort law is supposed to offer a remedy to any patient who contracts an infection because the medical staff fails to take one of these simple measures. Since the cost of these preventative measures is much lower than the risk they prevent, failing to take them is considered negligent.[6] Even so, most patients suffering from a hospital-acquired infection will not try to sue their physician or medical facility for medical malpractice, and if they do, they will likely lose.

Consider, for example, the case of *Gahm v. Thomas Jefferson Univ. Hosp.*, on which Example 1 is based.[7] Mr Gahm underwent back surgery. During recovery, he developed a severe infection, resulting in two months of hospitalization and long-lasting bodily harm. During the trial, Gahm presented expert reports from several physicians stating that since he developed a hospital-acquired infection, it stood to reason that the hospital had breached its duty to maintain safe and adequate facilities. Nevertheless, the court granted the hospital's motion to dismiss since Gahm did not present evidence that the hospital deviated from the standard of care.[8] The problems Gahm faced in proving his case are shared by most patients in a similar position.

First, proving that the hospital's personnel failed to take reasonable measures may be difficult. Infections in hospitals are common, so the occurrence of infection

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3 The example is based on the case of Gahm v. Thomas Jefferson Univ. Hosp., 2000 U.S. Dist. LEXIS 2072 (E.D. Pa. Feb. 29, 2000).

4 Patchen Dellinger et al., *Hospitals Collaborate to Decrease Surgical Site Infections*, 190 AM. J. SURGERY 9 (2005) (stating that many hospitals underutilize simple procedures that are known to reduce surgical-site infections. Hospitals participating in the study implemented several practices and reported a 27% decrease in infection rate).

5 *See*, *e.g.*, John M Boyce & Didier Pittet, *Guideline for Hand Hygiene in Healthcare Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/ APIC/IDSA Hand Hygiene Task Force*, 30 AM. J. INFECTION CONTROL 1 (2002) (recommending that medical staff be obliged to wash their hands thoroughly before each contact with a patient); Graham Jacob, *Uniforms and Workwear: An Evidence Base for Developing Local Policy*, NHS DEPARTMENT HEALTH POLICY (2007), available at https://data.parliament.uk/DepositedPapers/Files/DEP2009-0656/DEP2009-0656.pdf (neckties and hand jewelry should not be worn in any care activity which involves patient contact, since they might harbor pathogens and increase the risk of infections).

6 *See infra* note 40 and accompanying text.

7 *See supra* note 3.

8 *Id*. at *8 ("There is no basis for finding that the hospital deviated from an appropriate standard of care . . . or that the hospital's services, or lack of them, increased the chances of plaintiff's infection.").

is insufficient to shift the burden of proof.[9] Evidence regarding preventative measures in each case might be challenging to obtain. For example, hand-washing before approaching a patient may be considered the standard of care, [10] but most patients do not observe the healthcare staff's hand-washing practices or cannot obtain evidence of this behavior.[11] In addition, proving causation presents another significant barrier to compensation. The plaintiff must demonstrate that the harm suffered could have been prevented if the medical personnel had taken appropriate measures. Given the substantial risk of infection even under optimal conditions, the inherent risk of infection complicates the attribution of causation to specific instances of negligence.[12]

This article proposes a new liability regime that aggregates the information about accidents the injurer was involved in over time.[13] Injurers that tend to be involved in numerous accidents, such as hospitals, will be liable only for the harm they cause in excess of the harm they would have caused had they (consistently) conformed to the standard of reasonable care. This liability regime shifts the focus from the injurer's conduct in each incident to the outcome of their behavior over time. Much like a strict liability regime, a regime that assigns liability only for excessive harm does not require an inquiry into the injurer's conduct in each incident. Instead, liability is determined by comparing the actual harm from accidents to the expected harm given reasonable care. However, under this suggested regime, the injurer is liable only for the harm that could have been reasonably prevented, similar to a negligence regime. We, therefore, call it strict liability for unreasonable harm (SLUH*)*.

For example, assume that 150 patients contract a hospital-acquired infection.

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9 Courts have declined shifting the burden of proof in case of a hospital-acquired infection, stating that infections ordinarily occur in the absence of negligence. *See* Bars v. Palo Verde Hosp., 2005 Cal. App. Unpub. LEXIS 9326 (Oct. 12, 2005).

10 Hand hygiene is one of the main strategies for reducing the incidence of healthcare-associated infections, and thus is included in national guidelines. Despite the universal acceptance of this inexpensive infection-preventative measure, hospitals consistently battle low levels of compliance among healthcare workers. *See, e.g*., L. Kingstone, et al., *Hand Hygiene-Related Clinical Trials Reported Since 2010: A Systematic Review*, 92 J. HOSPITAL INFECTIONS 309 (2016).

11 *But see* Knight v. West Paces Ferry Hosp., Inc., 585 S.E.2d 104 (2003) (a directed verdict for the defendant was reversed on appeal, since the testimonies of the plaintiff and her husband regarding nurses' hand-washing practices were sufficient evidence for the jury to consider).

12 *See*, *e.g*., Jelinek v. Casas, 328 S.W.3d 526 (Tx. Sup. 2010) (hospital was negligent in not treating the patient with antibiotics following a surgery, but patient's family could not establish that the patient would have suffered less from the infection she contracted if antibiotics had been administered sooner).

13 Scholars have previously considered a variety of other aggregating solutions to informational challenges in tort and other law. *See, e.g.*, Lee Ann Fennel, *Accidents and Aggregates,* 59 WILLIAM & MARY L. REV. 2371 (2018); Saul Levmore, *Conjunction and Aggregation*, 99 MICH. L. REV. 723 (2001); Ariel Porat & Eric A. Posner, *Aggregation and Law*, 122 YALE L. J. 2 (2012); *see also id.* at 9 n.8 (citing other sources touching on aggregation issues).

Applying SLUH, a court would have to determine if and by how much these infections exceed the number of infections that would have occurred had the hospital taken reasonable infection-preventing measures. By using data on the risk of infections from studies and from other hospitals, the court can determine the reasonable level of harm is 100 infections (i.e., given the patients admitted to the hospital, only 100 patients should have contracted an infection, assuming the hospital implemented reasonable practices). Under SLUH, the court should hold the hospital liable for the harm of 50 patients, without examining the risk-reducing practices of the hospital's personnel in each incident.[14]

SLUH follows the same structure as scientific inquiry into conduct and causation. In a case of hospital-acquired infection, no scientist should be comfortable stating with any conviction that a particular patient would have fared better if they had received different care.[15] However, it is possible to ascertain, with some level of certainty, that more patients contracted infections than is generally the case when reasonable infection-preventing measures are taken.[16]

Using SLUH as an alternative to the current liability regime for medical facilities solves most of the shortcomings plaguing the current system. As hospitals' liability under SLUH is not dependent on the availability of evidence regarding conduct, hospitals and their employees will have no incentive to adopt defensive practices or hide information about errors to reduce liability risk. SLUH is also likely to save hospitals and patients money because the procedural costs of the liability system are much lower, per incident, than the current regime.

Analyzing SLUH as an alternative to current medical malpractice law is not merely a theoretical exercise. Several medical associations, such as the American Heart Association (AHA) and the American College of Surgeons (ACS), have used similar systems to detect avoidable risks and advise hospitals about managing

14 For a discussion about the distribution of compensation among victims, *see infra* Part II.A.

15 Determining causation, as a scientific endeavor, requires overcoming a missing data problem—for any person examined in the study we know only the outcome that materialized for the received treatment, but we cannot know what would have been the outcome for that same person given the control treatment. Thus, science can only infer average causal effects for many individuals. *See* GUIDO W. IMBENS & DONALD B. RUBIN, CAUSAL INFERENCE FOR STATISTICS, SOCIAL, AND BIOMEDICAL SCIENCES—AN INTRODUCTION 14 (2015) (explaining that "the problem of causal inference is . . . a *missing data problem*: given any treatment assigned to an individual unit, the potential outcome associated with any alternate treatment is missing").

16 For example, if given reasonable care, patients have a 5% average risk of suffering from an infection, then we can reasonably reject the hypothesis that all patients received reasonable care given a rate of patients who contract an infection exceeding 5% by a large enough margin. *See* L. David Hillis et al., *2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines*, 124 CIRCULATION 652, § 5 (2011) (presenting the data on adverse clinical outcomes of surgery patients and risk-assessment models that estimate the rates at which these various adverse events occur). A comprehensive liability regime should consider all the risks associated with the treatment together. *See infra* Part II.A.

them.[17] By collecting information from various hospitals and studies about patients' characteristics, ailments, treatments, and outcomes, these organizations assess how many patients should be expected to suffer complications if the hospital treats all patients adequately. Comparing this anticipated rate of complications with the hospital's outcomes shows which hospital is not taking adequate risk-reducing measures. The SLUH regime uses similar data to assign liability.

The SLUH system represents one of several proposed alternatives to the current liability system, including enterprise liability, proportional liability, and no-fault systems. The SLUH system has some commonalities with each of these alternatives, but it surpasses them when implemented in large medical facilities.

The first alternative, enterprise liability, posits that medical facilities should bear direct responsibility for any negligent treatment their patients endure, rather than assigning liability to individual physicians.[18] Similarly, SLUH assigns liability to the medical facility. In contrast, under SLUH, victims are not required to prove they received negligent treatment nor to establish factual causation.

A second alternative, proportional liability, allows victims of negligent treatment to receive partial compensation discounted by the probability that the negligent care caused the injury.[19] Similarly, SLUH provides partial compensation to patients who have experienced an adverse outcome during medical care, with the amount determined by the proportion of excessive harm in relation to the total harm to patients. Unlike proportional liability, SLUH does not require patients to prove negligence. Furthermore, as an aggregative system, SLUH utilizes data to evaluate liability across all cases objectively,[20] rather than relying on subjective probability assessments, as in proportional liability.

A third alternative, the no-fault compensation system, provides financial compensation to patients who have suffered medical harm, regardless of whether the medical care they received was adequate or not. The no-fault system may be structured around mandatory first-party insurance or social insurance.[21] A no-fault system compensates victims without assigning blame, eliminating the incentives for defensive medicine. However, it can also eliminate liability for hospitals, reducing investment in reasonable care.[22] Combining SLUH with first-party

17 *See infra* Part II.C.

18 *See infra* Part I.A.1.

19 *See infra* Part II.

20 Courts may utilize statistical evidence to establish a prima facie case of negligence under the doctrine of *res ipsa loquitur*. *See* RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL HARM § 17 (2010); ARIEL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 87–92 (2001) (discussing the use of statistical evidence as part of the *res ipsa loquitur* doctrine).

21 *See infra* notes 88–89 and accompanying text.

22 A social security system that covers injuries without assigning liability can lead to the underdeterrence of injurers. *See* Gary T. Schwartz, *Ethics and the Economics of Tort Liability Insurance*, 75 CORNELL L. REV. 312, 337–45 (1990).

insurance or social insurance that covers only reasonable harm can maintain incentives for reasonable care while also eliminating incentives for defensive medicine and ensuring compensation to patients who have suffered medical harm.[23]

The Article continues as follows. Part I describes several shortcomings of negligence law, focusing on medical malpractice. Tort liability might encourage physicians to adopt defensive practices, such as performing unnecessary tests and procedures to reduce liability risk, and might discourage hospitals from mitigating the risk of future errors following an incident. In addition, the administrative costs of the medical malpractice regime are extremely high relative to the damages paid out to victims. Lastly, because negligence is difficult and expensive to prove, only a small fraction of patients with valid claims are compensated, resulting in underdeterrence.

Part II considers the application of SLUH to medical facilities. It shows that when a medical facility treats enough patients, applying SLUH reduces the incentives to practice defensive medicine and increases enforcement without adding administrative costs. It also shows how courts can deal with the risk of error in assigning liability. Lastly, it shows that factfinders can utilize existing data regarding various risks of complications from medical care for implementing SLUH.

Part III discusses four objections and limitations of SLUH. The first objection is that victims of medical malpractice are unidentified and undercompensated. While the criticism is valid, currently most victims receive no compensation. Furthermore, SLUH can be supplemented with insurance to ensure full compensation. A second objection to SLUH is that it discourages long-term investments in care. However, liability under SLUH could be adjusted to avoid distorted incentives. A third objection is that other alternatives to the current medical malpractice law might be superior to SLUH. These alternatives are also considered. The last objection is that the new liability regime requires extensive legislation and may face strong opposition from healthcare providers and the plaintiffs' bar, making it politically unfeasible. The concerns of various stakeholders are examined and addressed.

Part IV suggests other typical cases where SLUH can be used. It shows that SLUH is warranted whenever three conditions are met: (i) the total harm across cases is verifiable; (ii) it is possible to determine the reasonable harm for the injurer across time; and (iii) the injurer causes enough harm to justify a statistical inference. Typical injurers that meet these conditions include, for example, product manufacturers, car fleets, and polluters. Applied to these types of injurers, SLUH can create better incentives to take reasonable actions and decide on whether to

23 *See infra,* Part II.D.1.

participate in a risky activity than negligence or strict liability regimes. Part IV further shows that SLUH might be especially beneficial when applied to artificial intelligence (AI) devices and products which, despite reducing accident rates, are involved in accidents that reasonable humans would avoid.

The conclusion ends the discussion.

I. THE CHALLENGES OF A NEGLIGENCE REGIME

The example that opened this article illustrates a case of hospital-acquired infection. Unfortunately, infections in hospitals are common and very often preventable.[24] Every year, one in every twenty hospitalized patients contracts an infection, resulting in some 100,000 deaths annually.[25] Medical errors generally, including adverse drug events,[26] diagnostic errors,[27] wrong-site surgery,[28] and foreign objects left inside a patient during surgery,[29] contribute to approximately 100,000 more preventable deaths annually.

Theoretically, negligence law should encourage hospitals to reduce the risk of accidents to the optimal level and compensate the victims when they fail to do so.[30]

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24 The Centers for Disease Control and Prevention (CDC) considers healthcare-associated infections as one of the "winnable battles," defined as a public health risk with large-scale impact on health and proven strategies that can substantially ameliorate it. *See* Centers for Disease Control and Prevention, *Healthcare-Associated Infections (HAIs)*, CDC WINNABLE BATTLES FINAL REPORT (November 2016), https://stacks.cdc.gov/view/cdc/43072 (hereinafter WINNABLE BATTLES REPORT). According to the CDC it is possible to prevent up to 70% of healthcare-associated infections. For an analysis of prevention efforts in hospitals, *see* E. Patchen Dellinger et al., *Hospitals Collaborate to Decrease Surgical Site Infections*, 190 AM. J. SURGERY 9 (2005) (states that many hospitals underutilize simple procedures that are known to reduce surgical-site infections. Hospitals that participated in the study implemented several practices and reported 27% decrease in infection rate).

25 *See* Sarah L. Krein et al., *Preventing Hospital-Acquired Infections: A National Survey of Practices Reported by U.S. Hospitals in 2005 and 2009*, 27 J. GENERAL INTERNAL MED. 773, 773 (2012) (citing several studies reporting that the rate of hospitals-acquired infections is 5–10%, resulting in approximately 99,000 deaths in 2002); *see also*, WINNABLE BATTLES REPORT, *supra* note 24, at 9 (same).

26 *See, e.g.*, Brian J. Kopp et al., *Medication Errors and Adverse Drug Events in an Intensive Care Unit: Direct Observation Approach for Detection*, 34 CRITICAL CARE MED. 415 (2006) (revealing that adverse drug events commonly occur in hospitalized patients and are frequently associated with human error).

27 *See, e.g.*, David E. Newman-Toker & Peter J. Pronovost, *Diagnostic Errors—The Next Frontier for Patient Safety*, 301 JAMA 1060 (2009) (overviewing current studies about the scope of medical adverse events due to diagnostic errors).

28 *See, e.g.*, Richard S. Yoon et al., *Using 'Near Misses' Analysis to Prevent Wrong-Site Surgery*, 37 J. HEALTHCARE Q. 126 (2015) (noting that wrong-site procedures in the United States, including surgeries, occur at least forty times a week.).

29 *See, e.g.*, Verna C. Gibbs et al., *Preventable Errors in the Operating Room: Retained Foreign Bodies After Surgery—Part I*, 44 CURRENT PROBS. SURGERY 281 (2007) (discussing the large scope of adverse medical outcomes due to retained surgical items in the United States).

30 The analysis assumes that hospitals can be directly or indirectly liable for patients, and indeed

However, the current medical malpractice system does not promote efficiency or safety. While the United States leads in health expenditures per capita,[31] it has a high annual rate of treatable mortality cases relative to other countries.[32] Preventable medical error is estimated to be the third leading cause of death in the United States.[33] The current system also fails to adequately compensate victims, with the vast majority of victims receiving either partial or no compensation for their injuries.[34]

The relationship between medical malpractice liability and the cost and safety of medical care is complex. There are several ways in which the current legal regime affects the incentives of physicians and hospitals to invest in risk-reducing practices, for example by prioritizing attention to health risks that are more likely to trigger litigation over others that are seldom followed by a lawsuit. Furthermore, the current system requires extensive evidence of conduct and causation, making

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that is the case. When a hospital fails to adopt reasonable practices, it can be directly liable via corporate negligence doctrine, which does not require the plaintiff to establish the negligence of a third party. *See* Thompson v. Nason Hosp., 527 Pa. 330, 339 (1991). Furthermore, hospitals are vicariously liable for the negligent practices of members of the medical staff. *See* Johns v. Jarrard, 927 F.2d 551, 556 (11th Cir. 1991) (hospitals are vicariously liable for the malpractice of its emergency room physicians); Atwood v. UC Health, 2018 U.S. Dist. LEXIS 146817 (S.D. Ohio Aug. 29, 2018) (same). Last, hospitals may even be liable for the negligence of an independent, private attending physician, if it creates the impression that the physician acts on behalf of the hospital. *See* I.M. v. United States, 362 F. Supp. 3d 161, 199 (2019) ("vicarious liability for the malpractice of a private attending may also be imposed upon on a hospital under a theory of apparent or ostensible agency").

31 According to the OECD, in 2022 the U.S. spent 16.6% of its GDP on healthcare, significantly higher than the second-highest spender, Germany, which spent only 12.7% of its GDP. When measured in dollars per capita, the difference is even more pronounced. In the U.S., the average per capita spending on healthcare reached $12,555, which is around 57% higher than the average spending in Germany and Switzerland, the next highest spenders, where per capita spending was only around $8,000. *See* OECD, *Health at a Glance 2023: OECD Indicators*, available at https://doi.org/10.1787/7a7afb35-en.

32 Treatable mortality cases are deaths that can be avoided through timely and effective healthcare interventions. According to the OECD, all western European countries, as well as Chile, Israel, Slovenia, Canada, Australia, New Zealand, and Korea have a lower rate of treatable mortality than the United States. Data on treatable mortality are drawn from the WHO Mortality Database, available at https://platform.who.int/mortality.

33 See John T. James, *A New, Evidence-Based Estimate of Patient Harms Associated with Hospital Care*, 9 J. PATIENT SAFETY, 122 (2013) (estimating that more than 200,000 people die annually in the United States due to medical error); John T. James, *Deaths from Preventable Adverse Events Originating in Hospitals*, 26 BMJ QUALITY & SAFETY 692, 692–93 (2017) (same); Martin A. Makary & Michael Daniel, *Medical Error—The Third Leading Cause of Death in the US*, 353 BMJ (2016) (same); Kaveh G. Shojania & Mary Dixon-Woods, *Estimating Deaths Due to Medical Error: The Ongoing Controversy and Why It Matters*, 26 BMJ 423 (2017) (claiming that a quarter-million deaths per year is likely an underestimation).

34 Paul C. Weiler, *Reforming Medical Malpractice in a Radically Moderate—and Ethical—Fashion*, 54 DEPAUL L. REV. 205, 215 (2005) ("[T]here is just one paid malpractice claim for every twenty-one negligent medical injuries").

it extremely expensive. Since filing a medical malpractice claim is expensive, very few victims sue.[35]

There is an extensive empirical debate over the severity of these problems, and this Article is not the place to resolve them.[36] Instead, this Part analyzes the main shortcomings of the current liability system, namely how it distorts incentives, creates substantial costs, and undercompensates victims. The following Part will show how SLUH can encourage better safety practices and adequately compensate victims.

A. Distorted Incentives

Negligence law encourages injurers to take reasonable care, provided the courts can clearly define the standard of care, and observe what safety measures the injurer has taken. When the standard of care is unclear or there is a lack of evidence regarding the healthcare's risk-reducing measures, healthcare providers may prefer measures that reduce liability over measures that reduce actual risk to the patient. There are three typical ways in which a negligence regime can distort incentives: by encouraging hospitals to (i) reduce risks that might trigger a lawsuit while ignoring other risks that are less often the focus of litigation; (ii) perform tests and procedures that produce evidence of due care, even when they are not medically justified; and (iii) discourage physicians from engaging in conduct that is beneficial for patients but may be used as evidence of negligence.

1. Prioritizing Measures That Are Part of the Negligence Inquiry

For negligence law to successfully serve as a deterrent, courts must define a clear standard of care, accounting for all risk-reducing measures and their costs and benefits. However, introducing more risk-reducing measures into the inquiry is costly. Courts must therefore choose the level of abstraction at which fault will be determined.

Consider the following example.

> Example 2. *Foreign object*. Masha underwent stomach surgery. During the procedure, the surgeon used several sponges. Two nurses in the operating room independently counted every sponge

35 The tendency of medical malpractice victims not to sue also makes medical malpractice law a poor deterrent. *See* TOM BECKER, THE MEDICAL MALPRACTICE MYTH, 22–44 (2005) (claiming that "the real problem is too little litigation and too many incidents of medical malpractice").

36 For an evidence-based examination of the challenges of the medical malpractice system, as well as critical analysis of the effects of tort reforms on outcomes and medical costs, *see* BERNARD BLACK ET AL., MEDICAL MALPRACTICE LITIGATION: HOW IT WORKS, WHY TORT REFORM HASN'T HELPED (2021).

> used and counted the sponges again at the end of the surgery. Both nurses miscounted, and one sponge was left inside Masha's stomach and caused her harm.[37]

When courts examine such a case, they might focus on the surgeon's actions and deem any surgeon who forgets a sponge inside a patient during surgery negligent, considering that it is obviously standard practice to remove them. However, these accidents are usually caused by lapses in attention, and there will always be at least some unavoidable lapses.[38] As errors are inevitable, we might broaden the scope of the negligence inquiry, moving away from the particular conduct (leaving the sponge) and basing the standard of care on the surgeon's measures to reduce the risk of errors, such as counting the sponges during the surgery.[39] Basing liability on practices designed to reduce errors means that surgeons will be considered negligent if they fail to take precautions that can reduce the risk of patient harm and are economically justifiable, given the probability and magnitude of the harm.[40] In Example 2, the surgical team included two nurses tasked with reducing the risk of leaving a foreign object behind during surgery. Tasking a third nurse with triple-checking the number of sponges used at the start and end of every surgery might reduce the risk even further, but the cost of hiring a third nurse might outweigh the benefit of doing so. Even if having a third nurse is justified, we can further ask about a fourth, fifth, and so forth. At some point, which we label the standard of care,[41] further precautions are unjustified, even though some medical errors will still occur.

Focusing solely on error-reducing precautions may not be sufficient in

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37 The example is loosely based on the facts in Cefaratti v. Aranow, 138 A.3d 837 (Conn. 2016).

38 ALAN MERRY & ALEXANDER MCCALL SMITH, ERRORS, MEDICINE AND THE LAW, 72–97, 127–51 (2006) (discussing common reasons for medical negligence, suggesting that most medical errors are a result of a momentary lapse in attention).

39 Indeed, not every medical error is considered a result of negligence. *See*, *e.g.*, Schueler v. Strelinger, 43 N.J. 330, 334 (1964) ("if the doctor has brought the requisite degree of care and skill to his patient, he is not liable simply because of failure to cure or for bad results that may follow. Nor in such case is he liable for an honest mistake in diagnosis or in judgment"). For a model of negligence that accommodates lapses in attention to the negligence inquiry, *see* Robert D. Cooter & Ariel Porat, *Lapses of Attention in Medical Malpractice and Road Accidents*, 15 THEORETICAL INQ. L. 329, 348–50 (2014) (distinguishing between first-order precautions that affect the probability of an accident and second-order precautions that change the probability distribution of the former acts).

40 This is the standard conception of the Learned Hand rule. *See* U.S. v. Carroll Towing Co., 159 F. 2d 169 (1947); Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 29–34 (1972). For a comparison of negligence and strict liability, *see* Steven Shavell, *Strict Liability versus Negligence*, 9 J. LEGAL STUD. 1 (1980).

41 For an economic analysis of the standard of care, *see* STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 180–89 (2004); ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 205–08, 211–17 (6th ed. 2016).

mitigating medical errors. Various factors contributing to the risk of medical error are beyond the physician's control but can be mitigated by the hospital. One way to expand the negligence inquiry is to look beyond a physician's decision-making and consider the circumstances they face in the workplace. For example, a high patient load increases the risk of error.[42] If a physician must treat several patients, any time added to the treatment of one patient reduces the risk of error for that patient but increases the risk for others. Sleep deprivation is another factor that aggravates the risk of error and might be beyond the physician's control. Medical residents often work 80 hours per week, which limits their free time and ability to rest properly.[43] Hospitals can alleviate the risk of medical errors from excessive workload and insufficient rest by hiring additional staff. Thus, we can reach a further level of abstraction of the negligence inquiry, from the treating physician to the hospital's investment in personnel and other error-reducing investments.[44]

Such a shift in focus from medical personnel to the institutional level has been promoted, to some extent, by proposals to adopt "hospital enterprise liability", which places sole responsibility on the hospital for failure to provide reasonable care for its patients. However, patients still must prove either negligence by the physician or nurse, or that the hospital failed to ensure a proper standard of medical care.[45] Thus, even suggestions to adopt enterprise liability focus on the treatment, and not on the hospital's investment in personnel. Focusing on the treatment simplifies the determination of negligence. However, such simplification is not a

42 *See* C. A. Bond et al., *Medication Errors in United States Hospitals*, 21 PHARMACOTHERAPY: J. HUM. PHARMACOLOGY & DRUG THERAPY 1023, 1031–32 (2001) (showing that the risk of medication errors increases substantially with workload); Jack Needleman et al., *Nurse-Staffing Levels and the Quality of Care in Hospitals*, 346 NEW ENG. J. MED. 1715, 1719–20 (2002) (more time spent on patient care reduces lengths of stay and lowers rates of complications); Pascale Carayon & Ayşe P. Gürses, *A Human Factors Engineering Conceptual Framework of Nursing Workload and Patient Safety in Intensive Care Units*, 21 INTENSIVE & CRITICAL CARE NURSING 284 (2005) (increase in nursing workload is associated with adverse patient outcomes).

43 *See, e.g.*, Sigrid Veasey et al., *Sleep Loss and Fatigue in Residency Training: A Reappraisal*, 288 JAMA 1116, 1122–23 (2002) (sleep deprivation negatively affects residents' performance over time); Teodor P. Grantcharov et al., *Laparoscopic Performance After One Night on Call in a Surgical Department: Prospective Study*, 323 BMJ 1222, 1223 (2001) (surgical residents after a night on call have higher complication rates, longer operative times, and higher error rate); Steven W. Lockley, *Effect of Reducing Interns' Weekly Work Hours on Sleep and Attentional Failures*, 351 NEW ENG. J. MED. 1829, 1835 (2004) (demonstrating that "[t]he acute and chronic sleep deprivation inherent in the traditional schedule caused a significant increase in attentional failures in interns working at night").

44 A hospital's negligence inquiry should also take into account investment in equipment. For instance, in the case of Candler General Hospital, Inc. v. MnNorrill, 354 S.E.2d 872 (Ga. Ct. App. 1987), the plaintiff alleged that the hospital is directly liable for his injury due to the inadequacy of the equipment provided in the emergency room. *See also* Washington v. Wash. Hosp. Ctr., 579 A.2d 177, 180 (D.C. 1990) (hospital was directly liable for failing to provide a device which allows early detection of insufficient oxygen in time to prevent brain injury).

45 *See*, *e.g.*, Thompson v. Nason Hosp., 527 Pa. 330, 339 (1991).

feature of the negligence regime, which considers the costs and benefits of any risk-reducing measure. Still, it reduces litigation costs in an overly complex system.[46]

Courts simplify the problem of defining the standard of care in two ways. First, they reduce the level of abstraction, focusing on the medical staff's decisions but not reviewing the decision-making process.[47] Second, courts can reduce complexity by including only a subset of the precautionary measures and risks in their negligence inquiry and ignoring other measures.[48]

Focusing on some risks while ignoring others distorts healthcare facilities' incentives. In Example 2, think, for example, about the risks of leaving sponges behind as opposed to the risks of prolonging the surgery. Assume that while counting the sponges during the procedure reduces the risk of leaving any behind, it prolongs the procedure, increasing the risks posed by extended surgery.[49] If complications from prolonged surgery are not factored into the negligence inquiry, hospitals might overinvest in care measures intended to reduce the risk of leaving a foreign object in a patient while underinvesting in care measures that reduce complications from prolonged surgeries. The tradeoff between setting the optimal standard of care and simplifying the negligence inquiry means that negligence law cannot create optimal incentives. Focusing the inquiry on particular risks and preventative measures incentivizes injurers to invest in measures that reduce liability, not necessarily those that are socially desirable.

The gap between risk-reducing and liability-reducing measures might explain why studies find that hospitals underinvest in preventing hospital-acquired infections.[50] If the risk of infection mostly falls outside the scope of the negligence

46 *See* Giuseppe Dari-Mattiaci, *On the Optimal Scope of Negligence*, 1 REV. L. & ECON. 331 (2005) (arguing that an increase in administrative costs reduces the number of precautionary measures that courts will review for establishing negligence); Joshua C. Teitelbaum, *Computational Complexity and Tort Deterrence*, 51 J. LEGAL STUD. 249 (2022) (showing that when a choice set of precautionary measures is large enough, it might be mathematically impossible to detect the standard of care).

47 In corporate law the business judgment rule requires courts to examine the decision-making process instead of the concrete decision. *See, e.g.*, Kenneth B. Davis Jr., *Once More, the Business Judgment Rule*, 2000 WIS. L. REV. 573, 575–76 (2000) ("[T]he focus is not on what the hypothetical reasonable director would have done . . . [I]t serves as an objective confirmation of the critical, but entirely subjective, requirement that the directors have a good faith belief that their decision is in the corporation's best interest").

48 *See* Dari-Mattiacci, *supra* note 46, at 350–51 (the optimal scope of negligence balances the advantages of a broader scope, in terms of better incentives, with its administrative costs).

49 There are risks associated with longer procedure time, such as the risk of surgical-site infection or other complications. *See, e.g.*, Eiko Imai et al., *Surgical Site Infection Risk Factors Identified by Multivariate Analysis for Patient Undergoing Laparoscopic, Open Colon, and Gastric Surgery*, 36 J. INFECTION CONTROL 727 (identifying extended duration of surgery as an independent risk factor for surgical-site infections).

50 *See supra* notes 4-5.

inquiry, hospitals may choose to save costs or invest in measures that reduce other risks.

2. Encouraging Defensive Medicine

A second problem of basing medical malpractice liability on the medical staff's conduct is that it encourages practicing defensive medicine—medically unwarranted treatments and diagnostic tests, performed solely to reduce liability.[51]

For example, suppose that doctors are concerned about the possibility of being held liable for not administering a costly prenatal test that can detect a congenital disorder while administering an unnecessary test carries no liability risk. In this case, they may overprescribe the test to avoid liability. Many physicians believe "defensive medicine is widespread and practiced the world over, with serious consequences for patients, doctors, and healthcare costs."[52] Some empirical evidence supports this claim, showing that tort reform, intended to reduce liability risk, has reduced medical expenditure and treatment intensity while not affecting patient outcomes, suggesting that physicians perform some procedures and tests to mitigate liability and not to treat patients.[53]

Defensive practices do not have to be expensive. Physicians might opt for a

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51 *See* Steve Boccara, *Medical Malpractice*, *in* TORT LAW AND ECONOMICS 341, § 12.4.4 (Michael Faure ed., 2009) (reviewing the law and economic literature on defensive medicine both from a theoretical and an empirical perspective); Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 879–80 (1998) (considering the case of excessive spending on precautions and defensive behaviors in cases where damages exceed harm); Ariel Porat, *Offsetting Risks*, 106 MICH. L. REV. 243, 264 (2007) ("One of the most undesirable outcomes of medical malpractice liability is defensive medicine . . . When a doctor must choose between two courses of action and cannot be sure which one is more reasonable or which one a court will find reasonable in the event that the patient sues, he will choose the action that is the least risky for him").

52 *See* Sandro Vento et al., *Defensive Medicine: It Is Time to Finally Slow Down an Epidemic*, 6 WORLD J. CLIN. CASES 406, 406 (2008). Most claims about the spread and costs of defensive medicine are based on questionnaires. *See* Nicholas Summerton, *Positive and Negative Factors in Defensive Medicine: A Questionnaire Study of General Practitioners,* 310 BMJ 27 (1995) (98% of 300 practitioners that answered the survey reported some defensive practices). Since doctors have a financial incentive to warn about defensive practices, there is always a fear that reports of defensive medicine are exaggerated. *See* BECKER, *supra* note 35 (claiming that there is no convincing evidence of defensive medicine).

53 *See* Daniel Kessler & Mark McClellan, *Do Doctors Practice Defensive Medicine?*, 111 QUART. J. ECON. 353 (1996) (malpractice reforms lead to reductions of 5% to 9% in medical expenditure without substantial effects on mortality or medical complications among elderly Medicare beneficiaries); Ronen Avraham & Max Schanzenbach, *The Impact of Tort Reform on Intensity of Treatment: Evidence from Heart Patients*, 39 J. HEALTH ECON 278 (2015) (caps on damages reduced the use of bypass surgery without affecting patients' outcomes). *But see* Frank A. Sloan & John H. Shadle, *Is There Empirical Evidence for 'Defensive Medicine'? A Reassessment*, 28 J. HEALTH ECON. 481 (2009) (finding that tort reform did not affect medical expenses or patients' outcomes).

treatment that burdens the patient if it reduces liability risk. For example, a physician might recommend surgical delivery (C-section), which reduces risks for the newborn but causes more harm to the mother because surgical delivery reduces liability risk. Physicians are sued for not recommending surgery when it would have prevented harm to the baby, while they are rarely sued for recommending surgery as a safer alternative.[54]

Defensive medicine effectively reduces liability because current medical malpractice law focuses on conduct. If courts do not examine their conduct, physicians and hospitals will not be encouraged to invest in producing evidence attesting to their reasonableness.

3. Discouraging Risk-Reducing Practices

A third, seldom-discussed concern is that physicians can reduce liability by avoiding actions that produce evidence of fault after an accident has occurred.[55] This may increase the risk of harm to other patients or may further harm patients who have already suffered an accident. Consider the following example.

> Example 3. *Falling patient*. Edmond underwent surgery. During the procedure, Edmond's body was not secured to the surgical table, and he fell, resulting in harm to his shoulder. Nassima, Edmond's surgeon, considers how to communicate the incident to Edmond and others in general.[56]

Example 3 illustrates how liability risk might affect the decision to engage in conduct that, while beneficial, can increase liability risk. Open communication between doctor and patient is essential for continued care when a medical error

54 Evidence suggests that obstetrics over-recommend surgical delivery to reduce liability risk. *See* Joshua D. Dahlke et al., *Evidence-Based Surgery for Cesarean Delivery: An Updated Systematic Review*, 209 AM. J. OBSTETRICS & GYNECOLOGY 308 (2013) (suggesting that the increase on the rate of cesarean delivery causes an increase in maternal morbidity and mortality); Tony Y. Yang et al., *Relationship Between Malpractice Litigation Pressure and Rates of Cesarean Section and Vaginal Birth After Cesarean Section*, 47(2) MED. CARE 234 (2009) (suggesting that liability environment influences the delivery method recommended or chosen by obstetrics).

55 For a general discussion on the effects of evidentiary concerns on primary behavior, *see* Gideon Parchomovsky & Alex Stein, *The Distortionary Effect of Evidence on Primary Behavior*, 124 HARV. L. REV. 518, 524–28 (2010) (maintaining that "[e]ach actor has a strong incentive to behave in a way that generates evidence favorable to her case in court. This evidentiary motivation will often undermine substantive law's efforts to minimize harm at the lowest possible cost."); Michael S. Pardo, *Some Remarks on the Importance of Evidence outside of Trials*, 36 REV. LITIG. 443, 466–47 (2016) (same).

56 For a case where plaintiff alleges the physician failed to take adequate care measures, resulting in the patient's body falling from the table during surgery, *see* Locklear v. Cummings, 262 N.C. App. 588 (2018).

occurs.[57] For instance, Nassima may wish to apologize to Edmond for what happened during the procedure. Nevertheless, the hospital's legal counsel might instruct Nassima to limit communication and especially refrain from apologizing, fearing that an apology would later be viewed as an admission of fault.

Nassima might also be discouraged from informing others about what happened in the operating room. While it is necessary to report accidents to increase patient safety, accident reports can be used as evidence of fault.[58] In addition, the purchase of new equipment in the wake of an accident may be viewed as an admission that the old equipment was sub-par, so the hospital might forgo such a purchase in order to reduce its liability risk, even though it needs the new equipment to reduce a known risk for future patients.[59]

Patient safety is also promoted by sharing information with others. For example, electronic health records (EHRs) promote documentation and easy access to patient information, thus improving communication between doctors. Transfer of information between physicians is a known source of errors, so simplifying communication should promote patient safety.[60] Using EHRs also allows doctors to use clinical decision support systems, which may further reduce medical errors.[61] However, EHRs also create discoverable evidence, especially metadata, which can later be used to prove liability.[62] While efficiency would

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57 *See* Aaron Lazare, *The Healing Forces or Apology in Medical Practice and Beyond*, 57 DEPAUL L. REV. 251(2007).

58 *See* Makary & Daniel, *supra* note 33 (noting that "[c]currently, deaths caused by errors are unmeasured and discussions about prevention occur in limited and confidential forums" and that "[t]hese forums review only a fraction of detected adverse events and the lessons learnt are not disseminated beyond the institution or department"); Michelle M. Mello & Troyen A. Brennan, *Deterrence of Medical Errors: Theory and Evidence for Malpractice Reform*, 80 TEXAS L. REV. 1595, 1602 (2002) (hospitals and practitioners object to implementing reporting systems that gather information about errors for fear that such reports are not insulated from legal discovery during medical malpractice proceedings).

59 Federal rules of evidence prohibit plaintiffs from presenting evidence of actions the defendant took after the accident to prevent similar accidents as proving fault. *See* FED. R. EVID. 407 ("When measures are taken that would have made an earlier injury or harm less likely to occur, evidence of the subsequent measures is not admissible to prove: negligence . . . ").

60 Communication between physicians, especially during transfers between units and shifts, is strongly connected to patient safety. EHRs ameliorate the risk of errors due to miscommunication. *See* Martin Muller et al., *Impact of the Communication and Patient Hand-off Tool SBAR on Patient Safety: A Systematic Review*, 8 BMJ OPEN 1 (2018) (meta-analysis showing evidence that communicational tools helped improve patient outcomes); M. Leonard et al., *The Human Factor: The Critical Importance of Effective Teamwork and Communication in Providing Safe Care*, 13 QUAL. & SAF. HEALTH CARE 85 (2004) (effective communication between health care professionals is one of the common causes for medical errors and patient harm).

61 *See, e.g.*, Mohamed Ramadan & Khalid Al-Saleh, *Development of an Expert System for Reducing Medical Errors*, 4 INT'L J. SOFTWARE ENGINEERING & APPLICATIONS 29 (2013) (describing a method for developing a support system that should reduce medical errors).

62 Thomas R. McLean et al., *Electronic Medical Record Metadata: Uses and Liability*, 206 J.

require physicians to adopt EHRs based only on the system's costs and outcomes, physicians also consider the liability risks of implementing EHRs.

One way to overcome the disincentive to adopt risk-reducing practices is to prohibit plaintiffs from presenting evidence of them in court. For example, several states have enacted "apology laws" that make statements of apology, sympathy, and condolence inadmissible at trial, thus eliminating the fear that the apology can be used as evidence of fault.[63] Similarly, the Federal Rules of Evidence state that remedial measures taken after an accident are inadmissible as evidence that the previous conduct was negligent.[64]

While inadmissibility solves a problem that current medical malpractice law creates, it also makes it more challenging for patients to prove negligence, which reduces tort law's efficacy as a deterrent.

B. High Administrative Costs

A liability regime based on the injurer's conduct not only distorts the incentives to invest in risk-reducing measures but is also very costly to operate.[65] In any negligence-based regime, proving conduct, establishing the standard of care, and proving causation create substantial administrative costs. These costs are exceptionally high in medical malpractice cases. According to a recent estimate, more than half of payments related to medical malpractice claims are paid for administrative costs.[66]

These high costs harm both plaintiffs and defendants, but not to the same extent. Plaintiffs are disproportionately affected by the high litigation costs. [67] If

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AM. C. SURGEONS 405 (2008).

63 For a discussion on the constitutionality of laws barring healthcare providers' apologetic statements as evidence of fault, *see* Coleman v. Amon, 498 P.3d 638, 642–44 (Ariz. Ct. App. 2021) (decided that Arizona's apology law is not unconstitutional, as it serves a legitimate interest of encouraging healthcare providers to be more empathetic and candid with patients). Some argue that apology laws reduce patients' incentive to sue and thus reduce liability risk, similar to other tort reforms. *See* Yonathan Arbel & Yotam Kaplan, *Tort Reform through the Back Door: A Critique of Law and Apologies*, 90 S. CAL. L. REV. 1199 (2016) (arguing that apology laws should be viewed as further attempts to reduce medical malpractice liability, similar to other reforms). However, some evidence suggests that apology laws do not reduce the frequency of lawsuits or payments against surgeons and increase both for non-surgeons. *See* Benjamin J. McMichael et al., *Sorry Is Never Enough: How State Apology Laws Fail to Reduce Medical Malpractice Liability Risk*, 71 STAN. L. REV. 341 (2019).

64 *See supra* note 59.

65 For a discussion on administrative cost as part of the costs of accidents that should be minimized, *see* GUIDO CALABRESI, THE COSTS OF ACCIDENTS 26–31, 286–87 (1971).

66 BLACK ET AL., *supra* note 36, at 105–07 (showing that it costs more than $1 in overheads to pay $1 of compensation to the victim).

67 *Id*. at 195 (increased costs correlate with a drop in claims, especially of lower monetary value claims).

the costs of litigation are prohibitive, victims will not sue. Even if some costs can be avoided by settling out of court early on, administrative costs may still limit patients' access to justice in two ways. First, a hospital might suspect that a plaintiff lacks the resources to see the case through to trial and refuse to settle, knowing that the plaintiff will have no choice but to withdraw their claim.[68] Second, even if a hospital agrees to settle, the amount is likely to be low since the litigation costs limit the plaintiff's bargaining power.

The system's costs also affect the affordability of medical care. Proponents of tort reform claim that frivolous lawsuits lead to skyrocketing insurance premiums since insurers incur these costs even if they win most or all cases.[69] Indeed, most plaintiffs who received reasonable care will not receive compensation.[70] However, since insurers bear the costs of litigation, the risk of frivolous lawsuits affects the premiums,[71] and high premiums may result in a shortage of practicing physicians in general and high-risk specialties (such as neurosurgery and OB/GYN) in particular.[72] Such a care shortage negatively affects all patients.[73]

C. Limited Victim Compensation

The last adverse effect of the current liability regime is that victims are grossly undercompensated.[74] Medical malpractice can fulfill its goal of compensating

68 Philip Peters, *Twenty Years of Evidence on the Outcomes of Malpractice Claims*, 467 CLINICAL ORTHOPEDIC RELATED RES. 352 (2009) (showing that while physicians win 80–90% of cases deemed weak by other physicians, they lose only 50% of the cases that other physicians believe show strong evidence of negligence). However, the more significant source of under-enforcement is the result of the patient's decision to file a claim. Most victims of negligent medical errors do not file a claim and receive no compensation. *See* A. Russell Localio et al., *Relation between Malpractice Claims and Adverse Events Due to Negligence*, 325 NEW ENG. J. MED. 245 (1991) (showing that only a small fraction of adverse events due to negligence were followed by claims of medical malpractice).

69 See, e.g., Judy Donlen & Janet Spicer Puro, *The Impact of the Medical Malpractice Crisis on OB-GYNs and Patients in Southern New Jersey*, 100 N. J. MED. 12 (2003) (claiming that the medical malpractice crisis created an insurance affordability problem).

70 *See* Peters, *supra* note 68, at 352 ("malpractice outcomes bear a surprisingly good correlation with the quality of care as judged by other physicians").

71 Real defense costs have risen substantially over the years, and more than doubled since the 1980s (in real costs). Furthermore, payouts, changes in hourly legal fees, and litigation time do not account for this increase in defense costs. *See* BLACK ET AL., *supra* note 36, at 89–104 (showing that defense costs increased between 1988 to 2005 in all personal injury cases, but in medical malpractice cases the increase was more rapid, rising almost four times higher).

72 *See, e.g.*, John H. Chi, *Neurosurgery Tops Malpractice Risk*, 69 NEUROSURGERY N18, N20 (2011) (neurosurgeons were the most likely to be sued, but not the most likely to pay damages following a malpractice claim).

73 *See* Donlen & Puro, *supra* note 69 (claiming that insurance affordability problems lead to limited access for patients).

74 Low expected compensation also affects the efficacy of medical malpractice as a deterrent. When tortfeasors know their expected liability is lower than their expected harm, they are underdeterred. *See* Polinsky & Shavell, *supra* note 51, at 888–89 (when tortfeasors know that they

victims only if all victims of negligent care file a claim and receive full compensation.

In practice, only a fraction, as low as 6%, of medical negligence victims receive any compensation,[75] and most of these victims settle and receive only partial compensation.[76] Even the relatively few cases that reach a final verdict do not result in full compensation, since many plaintiffs agree to a reduced compensation post-verdict, limiting damages to the amount covered by insurance.[77]

There are several reasons for this underenforcement problem.

First, as illustrated above,[78] the substantial cost of litigation can discourage patients from filing a claim. In addition, lawyers working on a contingency fee are reluctant to represent plaintiffs in medical malpractice cases, knowing the substantial cost they must incur.[79]

Second, to win a case against a physician or medical facility, plaintiffs must prove that the care they received did not meet the applicable standard. When evidence of the physician's conduct is unavailable, patients cannot build a case even if they have the resources to do so. This might seem like a general problem with negligence law, but it is especially worrisome with regard to medical care, where physicians are in charge of recording the treatment in the patient's medical records and informing the patient of any errors.[80]

Last, even when negligence is evident, many patients will still fail to prove that it was the cause of their injury. Patients seek medical attention because they already face some risk of harm. In many, if not most, cases, it is impossible to know if the patient's harm resulted from negligent treatment or was an inevitable result of the underlying health condition.[81] Under prevailing law, the plaintiff must

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will pay less in damages than the harm they caused, they will have inadequate incentive to invest in care).

75 *See* BLACK ET AL., *supra* note 36, at 73 ("about 97 percent of the paid claims in our dataset are in cases that are settled prior to a verdict").

76 *See* Localio et al., *supra* note 68 (showing that only a small fraction of adverse events due to negligence were followed by claims of medical malpractice).

77 *See* BLACK ET AL., *supra* note 36, at 55–66 (showing that doctors rarely pay the full awarded compensation).

78 *Supra* Part I.B.

79 *See* Ronen Avraham & John M. Golden, *'From PI to IPIP': Litigation Response to Tort Reform*, 20 AM. L. & ECON. REV. 168 (2018) (suggesting that one potential side effect of tort reform is migration of in-state plaintiff attorneys' lawyers to IP, since caps on damages limit their fees, and their willingness to take on medical malpractice cases and their litigation costs); BLACK ET AL., *supra* note 36, at 195 (noting that some reforms are designed to make medical malpractice lawsuits more costly and less remunerative, explaining the drop in cases in general and small claims in particular).

80 For a discussion on the disincentive to inform patients of medical errors, *see supra* Part I.A.2.

81 *See, e.g.*, Merrell Dow Pharm., Inc. v. Havner, 953 S.W.2d 706 (Tex. Sup. J. 1997) (in a mass tort case, parents claimed that pharmaceutical company's drug caused birth defects. The Texas Supreme Court denied compensation, because plaintiffs failed to prove that the defendant's drug

establish factual causation by showing that it is more likely than not that the negligent care caused the injury.[82] In probabilistic terms, the defendant is liable only if the negligent treatment increased the risk at least twofold, making it more likely than not that the added, unreasonable risk was the but-for cause of the adverse outcome. The preponderance of evidence requirement leads to significant underdeterrence, as the need to prove causation effectively bars high-risk patients from obtaining compensation regardless of conduct. Several states have, therefore, adopted the *loss of chance* doctrine, which allows courts to award compensation that is proportional to the reduced probability of recovery resulting from not receiving reasonable treatment.[83]

One might think that under-enforcement and partial compensation mean that current medical malpractice law does not affect how physicians practice medicine, as argued earlier. However, while under-enforcement reduces liability risk, it does not negate the distortionary effects of malpractice liability. Even when their liability risk is low, physicians may adopt practices that further reduce liability risk rather than the risk of accidents.[84]

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This part explored several ways in which current medical malpractice law fails to achieve its goals of promoting patient safety and compensating victims. It showed that the need to delineate the standard of care and to establish that the treatment falls below the standard distorts the incentives of physicians and hospitals, creates substantial costs, and results in grossly low compensation to victims.

These shortcomings may explain why the U.S. health system produces poor outcomes. While medical costs are higher in the United States than in any other

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increased the risk of such birth defects by more than 50%); *see also* Maytal Gilboa, *Multiple Reasonable Behaviors Cases: The Problem of Causal Underdetermination in Tort Law*, 25 LEG. THEORY 77 (2019) (explaining why the problem of causal underdetermination was overlooked by tort scholars and is perceived by courts as lack of causation).

82 This is in accordance with the preponderance of the evidence rule. *See* Dumas v. Cooney, 235 Cal. App. 3d 1593, 1611 (1991) (stating that California prefers the established rule of tort law causation, denying compensation for *loss of chance*).

83 For further discussion concerning the acceptance of the *loss of chance* doctrine, *see*, *e.g.,* Alice Ferot, *The Theory of Loss of Chance: Between Reticence and Acceptance*, 8 FIU. L. REV. 591 (2013); Matthew Wurdeman, *Loss-of-Chance Doctrine in Washington: From* Herskovits *to* Mohr *and the Need for Clarification*, 89 WASH. L. REV. 603 (2014).

84 *See* Leonard Berlin, *Medical Errors, Malpractice, and Defensive Medicine: An Ill-Fated Triad*, 4 DIAGNOSIS 133, 137 (2017) (claiming defensive medicine became a part of medical culture and education, so these practices are unlikely to decrease as litigation risk decreases).

country,[85] medical outcomes fall below those of many developed countries.[86] There are many possible reasons for this gap, but if medical malpractice law is part of the problem, it is worth exploring possible solutions.

The next part shows that SLUH may solve many of the problems discussed above, at least when applied to medical facilities.

II. STRICT LIABILITY FOR UNREASONABLE HARM

We can now turn to examine SLUH as an alternative liability regime. To understand how the suggested regime might work, consider the following variation on Example 1 above.

> Example 4. *Hospital-acquired infections*. Alex was admitted to the hospital due to a spinal injury that required simple surgery and a short hospital stay. Other than the spinal injury, Alex was generally healthy. While hospitalized, Alex developed an infection that caused permanent harm. A total of 150 patients contracted a similar infection while hospitalized during the same month. Should Alex and the other patients be compensated for their harm?

To apply SLUH to the circumstances of Example 4, we need to ask how many patients would have contracted an infection had the hospital taken reasonable care. For now, let us assume that, given reasonable care, it is likely that only 100 patients would have contracted an infection. Applying SLUH would simply mean that the hospital is liable for the harm to 50 patients. That is the unreasonable harm.

Stating that the hospital is required to pay for the harm of 50 unidentified patients means little in terms of monetary value. Compensation varies depending on each victim's age, income, pain and suffering, and other factors.[87] SLUH does not call for compensating specific victims fully. Instead, the hospital pays a fraction equal to the unreasonable harm divided by the entire harm. In this case, it calls for a third of the harm to all 150 patients who contracted an infection.

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85 *See, e.g.*, Irene Papanicolas et al., *Health Care Spending in the United States and Other High-Income Countries*, 319 JAMA 1024 (2018) (finding that the United States spent in 2016 nearly twice as much as ten high-income countries on medical care, and performed less well on many population health outcomes).

86 *Id.; see also* Luca Lorenzoni et al., *Health-Care Expenditure and Health Policy in the USA versus Other High-Spending OECD Countries*, 384 LANCET 83, 89 (2014) ("The USA is an outlier in the scenery of OECD health-care systems, for its staggering levels of expenditure, the extent of fragmentation of its system and the sheer complexity of its administration, the power of vested interests, and the large number of people left without adequate health insurance coverage").

87 *See* DAN B. DOBBS, PAUL T. HAYDEN & ELLEN M. BUBLICK, THE LAW OF TORTS, § 479 (2d ed. 2011) (describing the elements of damages for personal injury).

In the medical malpractice context, SLUH can operate best alongside an insurance scheme that covers reasonable harm, be that mandatory first-party insurance – meaning each patient buys insurance,[88] or social insurance is put in place that covers only reasonable harm.[89] The hospital, in turn, covers the costs of unreasonable harm, and all victims of medical errors receive full compensation. To illustrate, assuming that patients in Example 4 are insured for reasonable harm, 150 patients who contracted an infection would be fully compensated for medical costs, lost wages, and non-pecuniary loss.[90] Out of the total compensation, the insurer would cover two-thirds. The hospital would pay the remaining one-third of the compensation, as it represents unreasonable harm.

The following sections address the informational requirements for determining reasonable harm. They show that it is possible to implement this liability regime in large medical facilities and how implementing SLUH solves many of the problems created by current medical malpractice law.

A. Determining Reasonable Harm

To implement the SLUH regime, courts must determine the reasonable harm from accidents and decide if and to what extent the harm resulting from the injurer's actual involvement in accidents exceeded the reasonable level.

Determining the reasonable level of harm is similar, in some respects, to

88 Mandatory insurance schemes are widespread. For instance, employers are required by workers' compensation laws to provide third-party insurance to their workers. Similarly, in most states, drivers must acquire some combination of first-party and liability (third-party) insurance. *See* Omri Ben-Shahar & Kyle D. Logue, *Outsourcing Regulation: How Insurance Reduces Moral Hazard*, 111 MICH. L. REV. 197, 219–223 (2012) (describing mandatory insurance schemes for workplace and transportation accidents and illustrating the advantages these schemes offer). This additional insurance layer can either be included in a patient's general health insurance or bought separately for those who do not have any health insurance coverage. Alternatively, the medical facility may be obligated to acquire insurance for all patients and reimbursed by the patient's health insurance provider.

89 A social insurance scheme, similar to first-party insurance, offers compensation to patients who have suffered medical losses. The primary difference between the two insurance schemes is that first-party insurance is funded by individual patients who cover their own risks, while social insurance may be funded by other entities, such as the state. The premiums for social insurance are often not directly related to the risk of each individual insured. For a suggestion to eliminate tort liability altogether, and replace it with a social insurance scheme, *see* STEPHEN D. SUGARMAN, DOING AWAY WITH PERSONAL INJURY LAW: NEW COMPENSATION MECHANISMS FOR VICTIMS, CONSUMERS, AND BUSINESS 127-148 (1989); Stephen D. Sugarman, *Tort Reform through Damages Law Reform: An American Perspective*, 27 SYDNEY L. REV. 507 (2005); Kenneth S. Abraham & Lance Liebman, *Private Insurance, Social Insurance, and Tort Reform: Toward a New Vision of Compensation for Illness and Injury*, 93 COLUM. L. REV. 75 (1993).

90 RESTATEMENT (SECOND) OF TORTS: DAMAGES FOR PERSONAL INJURY, §§ 901–903; Fleming James Jr., *Damages in Accident Cases*, 41 CORNELL L. Q. 582, 598–605 (1956) (discussing the elements of personal injury compensation).

determining the standard of care under a negligence regime. To assess the standard of care, courts must determine how much each precaution measure reduces the risk and magnitude of injuries. Theoretically, after a court determines the reasonable risk for patients from the medical care (including, for example, the risk from each day of hospitalization, surgery, or diagnostic test), it simply multiplies the expected harm from each interaction by the number of interactions to determine the level of reasonable harm. For example, assuming there is a 1% chance of contracting an infection for each day of hospitalization when a hospital takes reasonable measures to prevent that risk, then a hospital that admitted patients for a total of 5,000 days should reasonably have fifty cases of hospital-inquired infections.[91]

Note that, unlike the negligence inquiry, determining the level of reasonable harm requires information about patients with no adverse events during their hospital stay. To start, the court needs to know the total number of hospitalization days for all patients, including patients who did not suffer from an infection or any other adverse event during their stay.[92] This information is not required under the negligence regime because that regime focuses on the hospital's conduct towards plaintiffs and disregards other patients. In addition, determining reasonable harm requires information about each patient's underlying (reasonable) risk. Since the reasonable risk to each patient might vary due to his or her characteristics, if the reasonable harm is not adjusted, hospitals may try to avoid liability by denying care to high-risk patients instead of investing in risk-reducing measures.

For example, the risk of complications after surgery depends on measures the medical staff implements before, during, and after surgery and on patient characteristics such as age, gender, and smoking.[93] If the reasonable level of harm is not adjusted to match patients' risk, hospitals will prefer to treat young, female, nonsmoking patients to avoid liability.[94] Adjusting for known risk factors minimizes this incentive to avoid liability by selecting low-risk patients (an adverse selection problem).[95]

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91 *See supra* note 25 and accompanying text.

92 *See* Shavell, *supra* note 40, at 2 ("By definition, under the negligence rule all that an tortfeasor needs to do to avoid the possibility of liability is to make sure to exercise due care if he engages in his activity. Consequently, he will not be motivated to consider the effect on accident losses of his choice of whether to engage in his activity or, more generally, of the level at which to engage in his activity."); SHAVELL, *supra* note 41, at 197-99 (same); *see also* RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL & EMOTIONAL HARM § 3 at para. H (2010).

93 Chun Kevin Yang et al., *Pulmonary Complications after Major Abdominal Surgery: National Surgical Quality Improvement Program Analysis*, 198 J. SURGICAL RES. 441 (2015) (age, gender, and smoking are correlated with postoperative complications).

94 Victims that suffer harm are not chosen at random, as those with higher risk are more likely to be represented than those with a lower risk.

95 Selection may persist if some risk factors are non-verifiable. If a surgeon can surmise that a patient is at higher risk than the estimate based on the patient's known risk factors, hospitals might still try to reduce liability be turning these patients down.

To complete the inquiry, the court must determine the level of harm caused by the tortfeasor over the relevant period (to all victims). This part of the factual inquiry requires the same information as under current medical malpractice law, which bases compensation on the harm victims suffer. There is a significant difference, however. SLUH requires the court to know the sum of the harm to all patients who suffered an adverse event, not just those who decide to file a claim. This requirement might constitute an obstacle when patient information is unavailable without cooperation.[96] When such information is readily available, the SLUH regime is best viewed as a collective litigation mechanism, similar to a class action.[97]

After the total level of harm is established, awarding compensation is a simple matter of subtracting the reasonable harm from the total harm and dividing the compensation among victims.

B. Dealing with Uncertainty and Errors

Courts might be uncertain about both the level of reasonable harm and the actual harm. Even when information about reasonable and actual harm is readily available, it might be inaccurate.[98] The risk of error in estimating unreasonable harm may distort the incentives that the SLUH regime creates.

If courts systematically overvalue the reasonable level of harm, it distorts the hospital's incentives. For example, if a hospital's reasonable harm is 100 but courts consider 130 to be reasonable, the hospital will have no incentive to reduce harm below 130.[99] The same argument cannot be made for errors in the other direction.

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96 The problem persists if we allow victims to opt out of SLUH litigation. David Rosenberg made a similar observation, discussing class action litigation of mass torts. *See* David Rosenberg, *Mandatory-Litigation Class Action: The Only Option for Mass Tort Cases*, 115 HARV. L. REV. 831 (2002) (arguing that *ex ante* potential victims prefer collective litigation but after learning of their individual harm, some victims prefer individual litigation, thwarting efforts to achieve optimal deterrence).

97 Class actions are usually designed as an opt-out mechanism. *See* John E. Kennedy, *Class Actions: The Right to Opt Out*, 25 ARIZ. L. REV. 3 (1983) (tracing the historical development of the right to opt-out of alternative offers). For SLUH to work it is important that compensation to all victims will be adjudicated together, meaning that it should replace the current medical malpractice regime, and not operate alongside it.

98 These risks mirror the risks of errors in setting the due care standard and in assessing the injurer conduct. *See* THOMAS J. MICELI, ECONOMICS OF THE LAW: TORTS, CONTRACTS, PROPERTY, AND LITIGATION 45–46 (1997) (discussing the effects of uncertainty over the determination of fault, showing it may cause over or underdeterrence); SHAVELL, *supra* note 40, at 224–28 (showing that uncertainty about the determination of the standard of care causes overdeterrence); Mark F. Grady, *A New Positive Economic Theory of Negligence*, 92 YALE L. J. 799, 806–13 (1983) (same); Omer Y. Pelled, *All-or-Nothing, or Something—Proportional Liability in Private Law*, 22 THEORETICAL INQ. L. 159, 178–84 (2021) (classifying uncertainty regarding fault as a case of unilateral uncertainty, and showing that unilateral uncertainty may result in over or underdeterrence).

99 This assumes that there are no other costs to liability, such as reputational costs. For the effect

If courts systematically undervalue the reasonable level of harm, hospitals will have to pay damages even when taking reasonable care. Nevertheless, they will not overinvest in risk-reducing measures. For example, if a hospital's reasonable harm is 100 (meaning that any measure that further reduces harm costs more than the harm),[100] but courts consider only 70 to be reasonable, the hospital will opt to pay 30 in damages as any further reduction in harm (by definition) costs more than it saves in damages.

Even assuming that the courts' estimations are unbiased, so they are correct on average, errors distort incentives since the effects of errors are one-sided. If the court (erroneously) decides that actual harm exceeds reasonable harm, the injurer will be liable for the difference. However, if the court (again, erroneously) decides that actual harm did not exceed reasonable harm, the hospital will not be rewarded a prize for causing less harm than is reasonable.[101] The risk of error leads injurers to underinvest in care. To see why, let us assume that while the reasonable harm is 100, there is an equal probability that a court will err and decide that it is 70 or 130. Hospitals can invest \$15 in measures that reduce harm from 120 to 100 but would not do so. If they invest in such measures, their expected liability is 15 (50% chance they will have to pay 30 in damages), and 25 if they do not invest in such a measure (50% chance they will have to pay 50 in damages). That means a hospital must invest \$15 to reduce its expected liability by \$10. Table 1 illustrates the problem.

Table 1: Errors in the estimation of reasonable harm

	Cost to Reduce Harm	*Actual Harm*	*Liability if Reasonable Harm \$70*	*Liability if Reasonable Harm \$130*	*Expected Liability*	*Total Cost*
No Measures	\$0	\$120	\$50	\$0	\$25	\$25
Measures	\$15	\$100	\$30	\$0	\$15	\$30

It is clear from the table that the hospital reduces its total costs, in this example, by not investing in care. The hospital gains nothing by investing in care when courts overvalue the level of reasonable harm.

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of such costs on optimal damages calculations, *see* Robert Cooter & Ariel Porat, *Should Courts Deduct Nonlegal Sanctions from Damages?*, 30 J. LEGAL STUD. 401 (2001) (discussing how nonlegal sanctions affect deterrence).

100 *See supra* note 40 and accompanying text.

101 Negative damages may have some attractive features. *See* Urs Schweizer, *But-for Causation and the Implementability of Compensatory Damages Rules*, 36 J. L. ECON. & ORG. 231, 247 (2020) (showing that to achieve efficient equilibrium when the standard of care is not set efficiently courts should award negative damages).

A straightforward solution to the distortion of incentives caused by errors is to allow negative damages, meaning that if the court determines that the harm a hospital creates falls below the reasonable level of harm, the hospital will receive a subsidy equal to the difference.[102] For example, if a hospital's reasonable harm is 100 but the courts consider 130 to be the reasonable level, the hospital will invest in care and reduce the harm to 100 to receive the subsidy.

Negative damages solve the problem of underinvestment in care when courts make symmetric errors. For instance, consider Table 2, which is a variation of Table 1, and includes negative damages. By adding a third care level to the table that costs an additional $15 but reduces harm by only $10, Table 2 demonstrates that negative damages do not encourage overinvestment in care measures.

Table 2: Errors in the estimation of reasonable harm with negative damages

	Cost to Reduce Harm	*Actual Harm*	*Liability if Reasonable Harm $70*	*Liability if Reasonable Harm $130*	*Expected Liability*	*Total Cost*
No Care Measures	$0	$120	$50	−$10	$20	$20
Care Measures	$15	$100	$30	−$30	$0	$15
Excessive Care Measures	$30	$90	$20	−$40	−$10	$20

As is clear from the table when negative damages are allowed the effects of errors are symmetrical – the hospital bears an additional cost when courts undervalue reasonable harm, and it receives a benefit when courts overvalue it. This symmetry means that a hospital's incentives are unaffected by the risk of error. It will, therefore, prefer to invest in care, as doing so reduces its total expected costs and will not overinvest in care. Even though excessive measures reduce liability when reasonable harm is set too low and increase the subsidy when reasonable harm is set too high, the additional cost exceeds the benefit.[103]

102 *See* David Gilo & Ehud Guttel, *Negligence and Insufficient Activity: The Missing Paradigm in Torts*, 108 MICH. L. REV. 277, 319 (2009) (suggesting subsidizing activity to correct otherwise distorted incentives).

103 Mathematically, the result is unsurprising. When negative damages are allowed, SLUH is identical to a strict liability regime minus a fixed sum equal to the courts' assessment of reasonable harm. Since the fixed sum is unaffected by a hospital's actions, it does not distort the hospital's incentives.

If legislators implement SLUH alongside an insurance scheme that covers the risk of reasonable harm to patients (be that mandatory first-party insurance or some form of social insurance),[104] then the problem is solved – each patient is insured for reasonable harm and receives full compensation. If the hospital's harm exceeds the level of reasonable harm, the hospital pays the difference. If, however, patients suffered less than reasonable harm, the hospital can receive the difference from the insurer.

A second source of errors in applying SLUH comes from uncertainty about the harm that occurred. Even if the courts accurately determined the reasonable level of harm, there is a risk of random variation in actual harm. We have assumed, for simplicity, that hospitals that take adequate care can foresee the number of accidents that will happen. For example, if all medical staff members regularly wash their hands and take other precautions to prevent infections, *exactly* 100 patients will suffer from infection over the relevant period. However, there is always variation in the harm that materializes, even when we control for factors that affect the risk.

We can think of SLUH as a regime that determines the mean level of harm from the injurer's conduct by using a sample: the actual harm over a specified period.[105] As with all samples, the level detected may vary randomly, but variance decreases as the sample size increases.[106] Therefore, SLUH is more accurate for large medical facilities that treat more patients and handle more accidents.[107]

Consider the example of hospital-acquired infections again. Assume that if a

104 *See supra* notes 88–89 and accompanying text.

105 The class of victims in SLUH litigation is not strictly a sample since it involves everyone who was injured. For an analysis of tort litigation as a sampling of the injurer's conduct, *see* Fennel, *supra* note 13.

106 This variation can be statistically estimated by the standard error of the sample mean, which is affected by the sample size.

107 In some ways, treating the hospital as a unit of investigation may be somewhat arbitrary, stemming from conceptual convenience. SLUH can be applied to a smaller unit, such as a department within a hospital, or to a larger unit, such as a network of hospitals. However, SLUH can only work effectively if there is a single entity that is both financially and operationally accountable. Two conditions need to be met for this to be true. The first condition is that there should be a single entity responsible for paying for damages. This condition is held for a department within a hospital, the entire hospital, and a network of hospitals. It does not hold for two hospitals that belong to different networks. The second condition is centralized management, which means that the entity responsible for paying for damages should have some level of control over the actions of any sub-divisions. Expanding the scope of SLUH from a small unit, like a department, to a larger one, like a hospital, can enhance the accuracy of the results as the sample size increases. This indicates that larger facilities have a lower variance in damages, which gives them an advantage due to their size. However, the size of the hospital has no impact on expected damages, and hence, risk-neutral business entities, such as hospitals, are generally not concerned about this advantage. Applying SLUH to a network may be advantageous when private physicians and several hospitals treat patients within the same network.

hospital takes reasonable care, 100 patients will, on average, contract an infection during hospitalization in a year. Two problems may arise. First, after some time, say eleven months, the hospital might realize that despite acting reasonably, due to bad luck, 130 patients have already contracted an infection. Alternatively, the hospital might realize that despite acting reasonably (without taking excessive care), due to good luck, only 70 patients contracted an infection. In both cases, the actual harm indicates a level of care that does not match the hospital's investment.

The same solution – negative damages – solves this problem as well. If negative damages are allowed, the hospital will take adequate care during the last month, knowing that that is the best strategy to reduce its liability (if, due to bad luck, the harm was high) or to maximize the subsidy (if, due to good luck, the harm was especially low).

C. Available Data About Reasonable Harm in Medicine

The previous sections laid out the theoretical foundations of the SLUH regime and showed what information is required to implement it. To replace current medical malpractice law, we need to know whether the information required to implement SLUH is available. Even if it is not, the foregoing theoretical exercise has value: it may persuade us that the information is worth gathering. Once health regulators compile the data, we can examine the practical use of SLUH once more.

We will not have to wait long. Legislators can already apply SLUH instead of the current medical malpractice law to most risks. In fact, although no one has suggested examining the outcomes of hospitals to determine legal liability, medical associations have assessed the safety and efficacy of various hospital departments based on outcomes for some time. For example, the American Heart Association (AHA) has long suggested comparing heart surgery patient outcomes with the anticipated risk-adjusted rate of complications to assess efficacy and safety in cardiovascular surgery departments.[108] In addition, the State of New York, the U.S. Veterans Administration, and the Society of Thoracic Surgeons have created cardiac surgery registries that record risk-adjusted outcome data based on these suggestions. These datasets have been used to conduct several performance assessments and interventions at the hospital level.[109]

The American College of Surgeons (ACS) has implemented a much more robust program known as the National Surgical Quality Improvement Program (ACS NSQIP). More than 2,500 participating hospitals send detailed reports of

108 *See* Hillis et al., *supra* note 16, at § 5.1 (finding that "the common denominator among successful performance improvement strategies is the implementation of a formal quality assessment and feedback program benchmarked against regional or national results").

109 *Id*. (noting that these datasets where developed "[t]o address the need for valid and reliable risk-adjusted outcomes data").

their surgeries, including outcomes and complications, and receive an assessment of patient safety based on risk-adjusted outcomes.[110]

The massive dataset that ACS NSQIP has created allows physicians to assess the risk of any complication following surgery, as well as the risks of specific complications, according to the surgery type, the patient's comorbidities (e.g., hypertension, diabetes, or cancer), and personal characteristics that might affect the risk of complications, such as age, sex, weight, and smoking habits.[111] Since these risk calculations assume reasonable care, they allow us to assess a hospital's risk-adjusted rate of complications, such as surgical-site infection,[112] and compare them to the actual rate a hospital experiences. These risk management programs are very similar to SLUH and require the same data.

The information allows the court to determine the reasonable and actual level of harm due to medical errors, infections, complications, and other relevant risks in each department. Subsequently, the courts can assign liability to each department and each type of harm separately provided that each department has enough patients. Alternatively, the courts can determine the total liability for the entire hospital based on the sum of reasonable and actual risk in each department.

The first option resembles the negligence inquiry under current medical malpractice law. We usually think of reasonable care vis-à-vis a specific risk that precautions might prevent.[113] If we take the same approach to harm, we should look at specific types of harm rather than the total harm suffered by patients in the hospital. This approach also provides valuable information to the hospital (and other hospitals) about the risks it needs to decrease further.[114]

The second option has several advantages. First, dividing risk types might obscure cases of unreasonable harm because the risk of specific complications might be too low to detect deviations in hospitals smaller than a certain size. Second, from an incentives standpoint, we care about total harm, not the rate of one type of complication. When a practice reduces one type of risk but increases another, it should be encouraged if it lowers the total expected harm (i.e., from

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110 *See* Mark E. Cohen et al., *Improved Surgical Outcomes for ACS-NSQIP Hospitals Over Time*, 362 ANNALS OF SURGERY 267 (2016) (describing the methodology of data collection in ACS-NSQIP and showing that participating in the program led to a reduction in postoperative complications).

111 The ACS NSQIP surgical risk calculator is available at https://riskcalculator.facs.org/RiskCalculator/.

112 *Id*. (the risk calculator uses twenty patient predictors and the planned procedure to predict the chance that patients will have any of eighteen different outcomes, one of which is surgical-site infection).

113 *See* RESTATEMENT (THIRD) OF TORTS, *supra* note 92, at § 29 ("an actor's liability is limited to those harms that result from the risks that made the actor's conduct tortious").

114 *See* Teitelbaum, *supra* note 46, at § 4 (showing that when it is difficult to compute the standard of care, searching for more efficient precautions involves learning-by-experimentation).

both complications combined). By examining each complication separately, we might discourage such practices.

Interestingly, negative damages allow us to enjoy the benefits of both options. Courts should assess each risk separately, thus informing the hospital about unreasonable harm and indicating that it should adopt specific practices. At the same time, if the hospital realizes it can reduce one type of risk below the reasonable harm threshold while creating another less substantial risk, it will do so, knowing it will receive the subsidy for lower-than-reasonable harm.

Courts can use the rich data regarding risks to further adjust the reasonable harm assessment to the hospital's characteristics.[115] For example, smaller-volume hospitals may have a higher risk of surgery complications than high-volume ones.[116] Courts should consider only those characteristics related to the cost of care measures and experience.[117] If low-volume hospitals have higher complication rates because volume is correlated with resources, and hospitals with fewer resources cannot invest as much in care, the reasonable level of harm can be adjusted according to resources, not volume.[118] If a high volume of surgeries provides experience in performing surgeries, which affects the success rate, reasonable harm should be adjusted accordingly.

Programs such as ACS NSQIP show that it is possible to assess reasonable harm, at least regarding complications and medical errors. This conclusion should not come as a surprise. Medical care, in general, and particularly in hospitals, is information-intensive. Hospitals record information about treatment and outcomes in the patient's medical records and submit that information to insurers for payment. Many adverse events, such as hospital-acquired infections, are also

115 Some hospitals serve certain types of patients. For example, veterans' health facilities cater to a specific type of patients (veterans), who might face different risks than other patients. As long as these patient-related risks, however, are already a part of the risk-adjusted reasonable harm assessment, the fact that the medical facility treats veterans should not be further taken into account.

116 See, e.g., M. Moschini et al., *Critical Review of Outcomes from Radical Cystectomy: Can Complications from Radical Cystectomy Be Reduced by Surgical Volume and Robot Surgery?*, 2 EURO. UROLOGY FOCUS 19 (2016) (finding correlation between hospital volume and patient outcomes and complications).

117 A similar discussion has been raised concerning the personalization of the standard of care under negligence. *See* Omri Ben-Shahar & Ariel Porat, *Personalizing Negligence Law*, 91 N.Y.U. L. REV. 627 (2016) (suggesting that courts would set a personalized standard of care for each injurer, based on the injurer characteristics).

118 Allowing a poorly funded community hospital a higher level of reasonable risk reflects the ability of the hospital to avoid risks but implies that the patients in these hospitals, who usually come from low-income families, may receive a lower level of care. Ignoring the hospital's ability to reduce risks will not reduce the hospital's rate of compensation and will only serve to increase the hospital's liability, further reducing the poorly funded hospital's ability to treat patients. A similar dilemma exists regarding the standard of care in a negligence regime. *See id.* at 627, 637, 643–44 (2016); OMRI BEN-SHAHAR & ARIEL PORAT, PERSONALIZED LAW: DIFFERENT RULES FOR DIFFERENT PEOPLE 61–64, 67–69 (2021) (the standard of care should be based on the resources available to the injurer).

reported to a centralized registry. The collected data includes treatments and outcomes of all patients, allowing us to compare reasonable harm to actual harm.[119]

One of SLUH's limitations is that it requires continuous access to data about patients' characteristics and outcomes. ACS NSQIP and similar programs gather data based on the continuous cooperation of participating hospitals. These hospitals receive advice about how to improve patient safety, so they have no incentive to send misleading information. We may fear that once the information is used to assign liability, hospitals will no longer willingly share information or that some might try to hide complications and overestimate patients' risks. This fear is justified as some complications are recorded in patients' charts but underreported to insurers.[120] The risk of this happening, however, can be mitigated. First, if legislators decide to apply SLUH, hospitals should be required to grant access to patients' data directly from their medical charts (it is difficult to underreport a complication in a patient's chart). Regulators and plaintiff lawyers can later supplement the data with post-discharge patient surveys[121] and assess the data's accuracy by reviewing a random sample from the patient pool.

D. Advantages of SLUH over Medical Malpractice Law

Tort reform became a popular legislative tool for addressing the shortcomings of the medical malpractice liability regime.[122] The most common reform used to decrease medical malpractice liability risk is placing caps on damages.[123] Even the ban on apologies as evidence of negligent treatment was recognized as a (soft) form of tort reform.[124] The data suggest these reforms failed to significantly reduce the cost of medical care, increase access to care, or improve safety. The current system's limitations include inadequate incentives to invest in reasonable

119 *See supra* note 110 and accompanying text.

120 Steven M. Steinberg, et al., *Comparison of Risk Adjustment Methodologies in Surgical Quality Improvement*, 144 SURGERY 662, 665 (2008) (finding that ACS NSQIP identified 26% more complications than what is reported to insurers).

121 For a study suggesting that post-discharge interviews can reveal preventable events which were not documented in patients' records, *see* Joel S. Weissman et al., *Comparing Patient-Reported Hospital Adverse Events with Medical Record Review: Do Patients Know Something That Hospitals Do Not?*, 149 ANNALS INTERNAL MEDICINE 100 (2008).

122 For an extensive examination of the challenges of the medical malpractice system, as well as critical analysis of the effects of tort reforms on outcomes and medical costs, *see generally* BLACK ET AL., *supra* note 36.

123 *Id*. at 111–21 (reviewing the use of capping noneconomic damages in Texas); *see also* Avraham & Schanzenbach, *supra* note 53 (examining the effect of caps on damages on treatment intensity in eight states).

124 *See* Arbel & Kaplan, *supra* note 63, at 1201 (maintaining that apology laws are structured as "de facto tort reform"); W. Kip Viscusi, *Medical Malpractice Reform: What Works and What Doesn't*, 96 DENV. L. REV. 775 (2019) (same).

precautions,[125] high administrative costs,[126] and a low compensation rate.[127] SLUH solves all these problems.

1. SLUH Creates Better Incentives to Invest in Care

A negligence-based regime distorts incentives in three ways: (i) it encourages hospitals to prioritize care measures that are more likely to be part of the negligence inquiry; (ii) it encourages defensive medicine; and (iii) it discourages risk-reducing practices that may later be used as evidence of prior negligence.

Negligence law encourages hospitals to prioritize measures that are included in the negligence inquiry. Under SLUH, liability depends only on outcomes. SLUH thus incentivizes hospitals to take all measures that reduce patient harm at a low cost, regardless of whether the court observes such measures.

Consider, for example, the response time at an intensive care unit (ICU). Patients in the ICU are connected to a monitor that sounds an alarm if the patient's vital signs cross a threshold. The nursing staff's response time affects patient outcomes and is easy to monitor and record. In such cases, the court might examine only the staff response time and ignore other, less salient circumstances. In response, nursing staff at the ICU might try to reduce the response time to every alarm at the expense of other safety measures. For example, sterilization might be impaired if a nurse abruptly stops treatment for one patient to respond to an alarm from another patient's monitor.[128]

Second, SLUH eliminates the incentives to adopt defensive practices. These practices are supposed to reduce liability risk at a reasonable cost without affecting patient outcomes. Since under SLUH, liability is determined only by patient outcomes, physicians will be encouraged to prescribe only those tests and treatments that are likely to (efficiently) affect outcomes.

Third and last, SLUH reduces the disincentive to collect and share information about mistakes. Under current medical malpractice law, information about preventable harm and errors can lead to litigation and liability.[129] Under SLUH,

125 *See supra* Part I.A.

126 *See supra* Part I.B; BLACK ET AL., *supra* note 36, at 168–70 (showing that while tort reform in Texas during 2003 did limit physicians' exposure to liability, it had little effect on improving access to care for patients).

127 *See supra* Part I.C.

128 *See* Yuval Bitan, et al., *Nurses' Reactions to Alarms in a Neonatal Intensive Care Unit*, 6 COGNITION, TECH. & WORK 239 (2004) (showing that nurses prioritize responses to alarms, treating patients in need quickly but ignoring alarms to focus on other tasks when these alarms are not likely to have medical significance).

129 See, *e.g.*, Sandra Petronio et al., *Disclosing Medical Mistakes: A Communication Management Plan for Physicians,* 17 PERMANENTE J. 73 (2013) (despite a consensus that disclosure of medical error is ethically and legally appropriate, concern about medical malpractice suits, among other concerns, make disclosure difficult).

sharing information becomes a vital tool to reduce liability. While it is true that physicians might still be reluctant to tell their colleagues about their mistakes for reputational reasons,[130] the legal system under SLUH works against this tendency instead of encouraging it.

Adopting SLUH may indirectly promote patient safety and care. Currently, programs such as ACS NSQIP are voluntary and limited to specific medical practices and participating hospitals. Nevertheless, the massive data gathered by ACS NSQIP allows researchers to explore numerous questions regarding care practices,[131] staff management,[132] and risk factors for diseases or complications.[133] Under SLUH, data will be collected from more hospitals, covering more procedures and risks. This great mass of information will constitute an extensive database for future studies, further advancing patients' safety and care.

2. Reducing Administrative Costs

The current liability system creates high, often prohibitive, litigation costs for plaintiffs, with increasing costs for defendants as well.[134] One reason for this excessive cost is plaintiffs' tendency to sue multiple defendants, including physicians and hospitals.[135] Under SLUH, only the hospital is sued since the individual physician and her or his conduct are irrelevant.

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130 *See, e.g.*, Tsachi Keren-Paz, *Liability Regimes, Reputation Loss, and Defensive Medicine*, 18 MEDICAL L. REV. 363 (2010) (analyzing the effects of negligence and strict liability on physicians' reputation).

131 *See, e.g.*, Angela M. Ingraham, et al., *Comparison of Outcomes after Laparoscopic versus Open Appendectomy for Acute Appendicitis at 222 ACS NSQIP Hospitals*, 148 SURGERY 625 (2010) (analyzing data of 32,683 appendectomy patients from 222 participating hospitals to find the relative risk of different approaches given patients' characteristics).

132 *See, e.g.*, Hadiza S. Kazaure, Sanziana A. Roman & Julie A. Sosa, et al., *The Resident as Surgeon: An Analysis of ACS-NSQIP*, 178, J. SURGICAL RES. 126 (2012) (analyzing data of patient outcomes based on whether the operation was conducted by a resident, a resident guided by an attending, or an attending operating alone found that residents had a longer operating time, but selection of surgeries to residents and supervision prevented compromising patient outcome for medical education).

133 *See, e.g.*, Hadiza S. Kazaure, et al., *Cardiac Arrest Among Surgical Patients: An Analysis of Incidence, Patient Characteristics, and Outcomes in ACS-NSQIP*, 148 JAMA SURGERY 14 (2013) (analyzing data of 6,382 patients who underwent CPR following surgery to find risk factors to and from postoperative heart failure).

134 *Supra* Part I.B.

135 Hospital enterprise liability was considered as a way to reduce administrative costs by making the hospital the sole defendant in each case involving care inside a hospital. *See* Kenneth S. Abraham & Paul C. Weiler, *Enterprise Medical Liability and the Evolution of the American Health Care System*, 108 HARV. L. REV. 381, 406 (1994) (explaining the potential of administrative cost reduction in enterprise liability); Philip G. Peter Jr., *Resuscitating Hospital Enterprise Liability*, 73 MO. L. REV. 369, 388 (2008) (hospital enterprise liability as a more economical administrative system).

More importantly, the high costs of litigation stem from the need to collect evidence and produce expert reports regarding conduct and causation.[136] The cost of litigating these issues is substantial, even relative to the stakes of the average case.[137] SLUH eliminates some of these costs. Since the court compares the actual harm to a level of harm determined to be reasonable without trying to identify which incident resulted from which conduct, there is no need to prove causation in any individual case. Furthermore, since conduct is never examined, there is no need to collect evidence regarding the standard of care applicable to each incident or the actual conduct.

SLUH creates its own costs, of course, including the cost of collecting and assessing patient data. If hospitals have the ability to manipulate data, plaintiffs' lawyers will need to carefully review the accuracy of the hospital's reports on their patients' outcomes. To verify the precision of the hospital's report on adverse outcomes, lawyers may contact a random sample of the hospital's patients. This process will ensure that the hospital has reported all adverse outcomes correctly, but it creates additional costs. Nevertheless, this all costs much less per case than the current regime. Assessing a sample of patients is costly, but the information is readily available. Examining conduct requires much more evidence, and that evidence is likely unavailable.

3. Better Enforcement

The last major concern regarding the current liability regime is that most victims never receive any compensation.[138] This well-known phenomenon can be attributed, at least partially, to the high litigation costs and difficulty in proving negligent conduct and causation. Since the expected liability from negligence is much lower than the expected harm, the current law is a poor deterrent.

SLUH solves the problem of underenforcement by operating as a form of aggregate litigation, similar to a class action. Like in class actions, lawyers and class representatives collect the evidence and manage the litigation for all the class members. Victims do not necessarily even know that their case is being litigated until the court assigns liability and the compensation stage commences. At this point, each class member must bring evidence regarding their individual harm, including medical costs, lost wages, and non-pecuniary losses such as pain and suffering.[139]

Assuming SLUH is applied alongside mandatory first-party insurance, the insurer will pay all victims full compensation, and the hospital will just have to

136 *See supra* notes 81–83 and accompanying text.
137 *See supra* notes 69–67 and accompanying text.
138 *See supra* notes 68, 75–76, and accompanying text.
139 *See supra* note 96.

pay the insurer for unreasonable harm, meaning that only one entity receives compensation.

III. CRITICISM AND OBJECTIONS

One objection to the SLUH regime may be that victims of negligent treatment will receive only partial compensation for their harm, assuming that the liability regime is implemented without first-party insurance. Partial compensation may seem especially troubling for patients who can easily prove that their harm resulted from negligent treatment, even though the hospital's total rate of harm was under the reasonable harm threshold. Another objection to the SLUH regime is that it might encourage practices that reduce harm in the short run while discouraging practices that temporarily increase patient risk while improving patient safety over time. Additionally, one could argue that other liability regimes can better resolve the problems of the current medical malpractice regime. Finally, SLUH may face strong political opposition. The discussion below addresses each of these objections in turn.

A. Compensating Victims

When hospitals are liable under the SLUH regime, the amount paid in damages is close to the amount the hospital would have paid under the negligence regime if every patient harmed by negligent care received full compensation. However, the distribution of compensation among patients may be different. Under a negligence regime, only victims of negligent care receive compensation. Under SLUH, when a complementary insurance scheme that covers reasonable harm is in place, every patient who suffered from an adverse event is fully compensated, partially by the insurer. One could argue that even though all patients are compensated, and the hospital pays exactly what it should have under a negligence regime, the compensation scheme is still unjust. According to corrective justice principles, the hospital, as a tortfeasor, must compensate only those patients who received negligent care and suffered harm as a result, and should not compensate at all patients who had an adverse outcome from bad luck, after receiving reasonable care. [140] It is not easy to reconcile these characteristics of the SLUH regime with corrective justice principles. It is unfair to hospitals that compensate patients who did not sustain a normative loss, and it is unfair to victims of negligent care whose normative losses are not fully compensated.[141]

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140 Ernest J. Weinrib, *The Gains and Losses of Corrective Justice*, 44 DUKE L.J. 277, 283 (1994) (distinguishing between material loss and normative loss, and stating that "if you injure me nontortiously, the loss I suffer falls under the material conception, but because you have breached no norm, the normative conception of loss is inapplicable").

141 *Id*. at 290 ("one cannot justify tort liability by reference to the need both to deter actors and

Furthermore, if a complementary insurance scheme is unavailable, victims receive only partial compensation, in which case victims of negligent care are denied some or even most of the compensation they would have received under the negligence regime. Even if patients are only partially compensated, there are several reasons beyond the incentivizing rationale discussed above to prefer the SLUH compensation system to the existing one.

Risk-averse patients prefer to receive partial compensation with certainty rather than full compensation with some probability.[142] Patients always face some risk regardless of the hospital's care level. Let us assume that out of 100 patients who had an adverse event, 50 suffer harm from reasonable risk, and 50 others suffer harm from negligent care. Risk-averse patients prefer compensation for half of the harm whenever harm is done to full compensation in half of the accidents. If patients are especially fearful of being undercompensated when a negligent doctor injures them, they can always purchase insurance, even if insurance is not required.

Another reason for patients to prefer SLUH to the current system is that patients pay for the distorted incentives that the current regime creates. When physicians and hospitals pay high insurance premiums and adopt defensive practices, patients directly bear the costs. Adopting SLUH will decrease the cost of care and improve outcomes while retaining a (limited) right of compensation when negligent care increases harm caused to patients.

Last, and most importantly, while SLUH might not fully adhere to the principles of corrective justice, it is undoubtedly better than the current medical malpractice regime. Today, only a tiny fraction of patients receive any compensation; of those, only a fraction receive full compensation.[143] It is difficult to argue that the current system promotes justice when in practice, many patients are injured by negligent care, and almost no one is compensated.[144] Under SLUH,

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to compensate sufferers. To be sure, such a combination produces a normative gain for the defendant and a normative loss for the plaintiff. But because the reason for thinking the defendant to have gained is not the same as the reason for thinking the plaintiff to have lost, the gain and the loss are not normatively correlative"); *see also* ERNEST J. WEINRIB, THE IDEA OF PRIVATE LAW 157 (2012) ("Corrective justice requires not factual but normative loss consisting in wrongful infringement of the plaintiff 's right").

142 *See* David Rosenberg, *Individual Justice and Collectivizing Risk-Based Claims in Mass-Exposure Cases*, 71 N.Y.U. L. REV. 210, 246 n.90 (1996) (noting that risk-averse individuals "would, of course, prefer an averaging rule that conformed to the insurance model as against the standard, all-or-nothing rule that, depending on the fortuitous availability of a preponderance of evidence showing specific causation, awards the individual claimant 100% of the loss or nothing."); *see generally* STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW 186–87 (1987) (explaining that as opposed to risk-neutral parties, risk-averse parties "care not only about the expected value of losses, but also about the possible magnitude of losses").

143 *See supra* note 68 and accompanying text.

144 One might argue that corrective justice is only concerned with those patients who file a

a hospital's duty to compensate is closely related to its violation of patients' rights, such that victims receive at least partial compensation when it does cause unreasonable harm.

B. Short-Termism Under SLUH

Short-termism refers to the tendency to give excessive weight to short-term outcomes over long-term outcomes. In the medical malpractice context, short-termism refers to practices that reduce risk in the short term instead of practices that might not affect short-term risk or might even increase it, but that significantly decrease risk in the long term.

The SLUH regime assigns liability according to the harm the hospital creates over some period. A problem arises when investments in care may increase harm during one period but significantly decrease it over the next several periods.

For example, a hospital might consider purchasing a new EHR system. These systems improve information sharing and thus reduce the risk of errors when patients are transferred from one physician to another. However, it takes time for staff to become proficient in these systems, and the number of accidents may increase during that time.

Interestingly, with negative damages (i.e., a subsidy for hospitals that create less than reasonable harm), hospitals will still have an incentive to invest in precautions because they will know that while they might pay more damages in the short run, decreasing harm will translate to lower (or negative) damages in the long run.

However, a significant problem might arise with respect to physicians' training. New doctors learn to treat patients during residency by practicing (under some supervision). As doctors-in-training, residents naturally pose a higher risk of error than experienced physicians. While limiting what residents are allowed to do may reduce that risk in the short run, it hinders their training and thus increases the risk to (other) patients in the long run. The problem is that, unlike acquiring new technology, when a hospital invests in training physicians, the hospital assumes the risk of more errors, but it may not recoup any return on that investment because physicians often change workplaces, especially after residency. Training physicians is a public service, and hospitals should be encouraged to do so.[145]

The specific problem of physician training can be solved under SLUH by

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claim, since an important aspect of the right to autonomy is the person's right to decide whether to enforce.

145 *See* Ariel Porat, *Private Production of Public Goods: Liability for Unrequested Benefits*, 108 MICH. L. REV. 189, 190–91 (2009) (reviewing the different legal treatment of negative and positive externalities); Giuseppe Dari-Mattiacci, *Negative Liability*, 38 J. LEGAL STUD. 21, 22–23 (2009) ("In general, positive-externality problems are commonly regarded as a justification for public goods provision, subsidies, or regulation rather than for liability").

adjusting reasonable harm to fit a hospital's specific characteristics. Considering the residency training program when determining the reasonable level of harm will encourage hospitals to train physicians.

C. Other Alternatives

SLUH is not the only regime that can address current medical malpractice law issues. In this section, I will briefly discuss some alternatives.

One potential solution, previously mentioned, is to hold hospitals solely responsible for negligent treatment, rather than individual physicians, through the enterprise liability system. Under the current system, plaintiffs sue the physician for direct liability, while they may also sue the hospital as either directly or vicariously liable for the physician's actions. In some cases, several physicians may be involved in the treatment, further complicating the case. Enterprise liability reduces the administrative costs associated with the current system by eliminating the additional costs that additional defendants bring.

However, the plaintiff needs to prove all the elements of negligence under enterprise liability, creating most of the problems associated with the current medical malpractice regime. Enterprise liability still encourages the hospital to adopt defensive practices, discourages information-sharing, and makes it challenging to establish liability in cases where conduct and causation are difficult to prove.

The most obvious alternative to SLUH is a simple rule of strict liability or a no-fault system. Under such a rule, hospitals will pay for every adverse event in their facilities, regardless of fault. Such a system is even less expensive to implement than SLUH because courts are not required to determine the reasonable level of harm. Furthermore, since hospitals will pay for both harm and harm prevention, strict liability creates efficient incentives to invest in care. This regime also eliminates incentives for defensive practices since fault is not dependent on evidence of conduct. Moreover, since patients do not need to litigate complicated issues on conduct and causation, such a system would likely reduce the problem of under-enforcement.

However, strict liability creates other problems that might make it less efficient than the current, negligence-based regime, and clearly less desirable than SLUH. Most importantly, hospitals might deal with strict liability by not treating high-risk patients.[146] SLUH solves this problem by adjusting the reasonable level

146 *See* Andis Robeznieks, *Wary Physicians*, 35 MOD. HEALTHCARE 8 (2005) (finding that defensive clinical practices lead to a high degree of avoidance of treating risky patients); John Adwok & Ellen Hope Kearns, *Defensive Medicine: Effect On Costs, Quality & Access to Healthcare*, 3 J. BIOLOGY, AGRIC. & HEALTHCARE 29, 31 (2013) ("Perhaps the practice of over-investigating patients provides an element of protection for the doctor and a marginal benefit for the patient, but the

of harm to the patient's underlying risk. Furthermore, SLUH can be applied to any adverse event, including errors, complications, and hospital-acquired infections, whereas applying a no-fault regime to these risks is impossible. The cost of paying for all adverse events in a hospital, most of which are beyond the hospital's control, would be astronomical.[147]

In theory, hospitals can be strictly liable only for medical errors (negligent or not) and not for every adverse result of medical care. This type of strict liability creates two problems, like those plaguing the current negligence regime. First, even if they can, hospitals will have no incentive to reduce risks that fall outside the scope of what is considered medical error under the regime. Programs such as ACS NSQIP show that some hospitals fail to use simple measures to reduce the risk of complications, and these failures are not considered medical errors.[148]

Second, to determine whether an adverse event was caused by medical error, courts must assess the medical care provided and determine causation. In many instances, patients do not know if their harm came about due to medical error. Having to prove causation aggravates the problem. Since patients face risk regardless of care, it is difficult for them to prove that medical error rather than inherent risk caused their harm. These evidentiary constraints limit patients' ability to obtain compensation for medical errors under a strict liability regime.[149]

One last alternative worth exploring is a negligence regime coupled with proportional liability. In a proportional liability regime, plaintiffs need not prove causation to obtain compensation. Instead, if they prove they received negligent care, they will receive compensation discounted by the probability that the harm was caused by a physician's negligent conduct.[150]

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overwhelming evidence suggests it increases the cost of care and may increase patient risk.").

147 No-fault liability for medical errors has been debated and deemed unfeasible due to high rates of compensation. *See*, *e.g.*, Kristie Tappan, *Medical-Malpractice Reform: Is Enterprise Liability or No-Fault a Better Reform*, 46 B.C. L. REV. 1095, 1114–15, 1121–24, 1126–27 (2005) (limited resources justify limiting compensation for victims of negligent treatment or restrict the amount of payments made to them; the implementation of such a regime may face political opposition from the plaintiffs' bar, who may see it as a threat to the scope of their work); Frank J. Vandall, *Applying Strict Liability to Professionals: Economic and Legal* Analysis, 59 IND. L. J. 25 (1983) (A no-fault regime that covers a wide range of complications is likely to be too expensive for hospitals.)

148 *See supra* notes 106–110.

149 Some suggest a no-fault system for medical errors could potentially solve the issue of smaller claims that are currently never compensated due to the high administrative costs of the current liability system. This solution involves having claims decided by a medical board instead of a judge. The board will only have to determine whether a medical error occurred and if it caused the injury, without going through a lengthy legal process. *See* BLACK ET AL., *supra* note 36, at 342–43. However, I am skeptical about this solution as it may still involve substantive costs in determining what exactly happened and whether a doctor's actions, whether negligent or erroneous, caused the injury.

150 In medical malpractice cases, proving causation is inherently difficult since patients require medical treatment because of some inherent risk. Some jurisdictions allow for proportional liability under the *loss of chance* doctrine. *See, e.g.*, Herskovits v. Group Health Coop. of Puget Sound, 664

In some ways, the SLUH regime is similar to proportional liability. Under SLUH, the hospital's liability is determined according to each victim's harm discounted by the probability that his or her harm would have been avoided had the hospital acted reasonably when treating all its patients.[151] However, SLUH has an informational advantage since it does not require the court to assess the conduct and the probability of causation in each case. Instead, SLUH averages the ratio between reasonable and unreasonable harm across all cases. Thus, while proportional liability creates better incentives than the current negligence-based regime,[152] SLUH is less expensive to implement and creates better incentives for hospitals to reduce the risks posed to patients.

D. Political Feasibility

Earlier we have seen that it is possible to meet the informational requirements SLUH poses, meaning that the liability regime is technically feasible.[153] However, changing the liability regime would require amendments to current legislation, and we must consider whether such changes are politically feasible. Theoretically, if healthcare networks or major hospitals find SLUH more favorable than the current liability regime, they may choose to adopt the regime voluntarily through contractual agreements with their patients. These contracts would require patients to give up their right to sue for negligence. Instead, they would automatically be entitled to a portion of the compensation under SLUH if they suffer from an adverse outcome and the hospital surpasses the reasonable harm threshold. However, courts will likely find any clause that prospectively eliminates the hospital's liability for negligence unconscionable and thus unenforceable, exposing the hospital to the risk of liability under both regimes.[154] Even if courts

P.2d 474, 476–77 ("The ultimate question raised here is whether the relationship between the increased risk of harm and Herskovits' death is sufficient to hold Group Health responsible. Is a 36 percent (from 39 percent to 25 percent) reduction in the decedent's chance for survival sufficient evidence of causation . . . We answer in the affirmative."). For further discussion, *see* Ariel Porat, *Misalignments in Tort Law*, 121 YALE L. J. 82, 110–11 (2011).

151 *See supra* Part II.A.

152 *See* Steven Shavell, *Uncertainty over Causation and the Determination of Civil Liability*, 28 J.L. & ECON. 587, 589 (1985) (stating that whenever there is uncertainty over causation, liability in proportion to the probability of causation creates better incentives than any threshold criterion); John Makdisi, *Proportional Liability: A Comprehensive Rule to Apportion Tort Damages Based on Probability*, 67 N.C. L. REV. 1063, 1067–75 (1989) (claiming that proportional liability promotes both efficient incentives and corrective justice principles); Porat, *supra* note 150, at 108–14 (same); Pelled, *supra* note 98, at 173–78 (arguing that uncertainty over causation should be treated the same as uncertainty regarding the level of harm, and allow for proportional liability).

153 *See supra* Part II.C.

154 *See* RESTATEMENT OF THE LAW THIRD, TORTS: MEDICAL MALPRACTICE. TENT. DRAFT 1 § 9 (Am. L. Inst. Tentative Draft No. 1, 2023) ("(1) An agreement that prospectively eliminates or substantially curtails the liability of a medical professional or institution to a patient for breach of a

are convinced that victims of negligence will receive limited compensation under SLUH, they may still refuse to enforce clauses that limit the scope of liability for personal injury and wrongful death because it violates public policy.[155]

It is unlikely that SLUH can be implemented through courts' decisions without legislative support. Although courts have previously implemented several aggregative mechanisms, such as market-share liability,[156] to address issues with the traditional liability paradigm, these solutions utilize aggregative measures to loosen the factual causation requirement rather than the burden of proving negligence.[157]

Two interest groups might oppose implementing SLUH – the healthcare industry and the plaintiffs' bar. Healthcare providers may fear that implementing SLUH will increase their payments substantially, as today, most victims of negligent treatment receive no compensation. On the other hand, SLUH eliminates the incentives to practice defensive medicine, which supporters of tort reform believe creates a significant financial burden for healthcare providers.[158]

Opposition from plaintiffs' lawyers may arise against SLUH because it

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duty . . . is unenforceable").

155 For example, in Gessa v. Manor Care of Fla., Inc., the Florida Supreme Court refused to enforce a clause limiting punitive damages and noneconomic damages to $250,000. *See* Gessa v. Manor Care of Fla., Inc., 86 So. 3d 484, 493 (Fla. 2011).

156 *See* Sindel v. Abbott Labratories, 26 Cal. 3d 588 (1980) (formulating the rule of market share liability, which allots compensation between multiple manufacturers according to their market share); David A. Fischer, *Products Liability – An Analysis of Market Share Liability*, 34 VAND. L. REV. 1623, 1623–26 (1981) (explaining the importance of market share liability). *But see* Ernest J. Weinrib, *Casual Uncertainty*, 36 OXFORD J. LEGAL STUD. 135 (2016) (criticizing the use of market share liability as violating the principles of corrective justice). Alternative liability doctrine is another aggregative solution to uncertain causation. First implemented in the celebrated case of Summers v. Tice, it states that when multiple defendants create an unreasonable risk to the victim, but it is unclear which defendant caused the victim's injuries, the burden of proof shifts to each defendant to demonstrate that they did not cause the plaintiff's injury. If a defendant fails to prove that their actions did not cause the injury, they will be held jointly and severally liable for the plaintiff. *See* Summers v. Tice, 33 Cal. 2d 80; Roger B. Dworkin, *Easy Cases, Bad Law, and Burdens of Proof*, 25 VAND. L. REV. 1151, 1167–76 (discussing Summers v. Tice); Randy S. Parlee, *Overcoming the Identification Burden in DES Litigation: The Market Share Liability Theory*, 65 MARQ. L. REV. 609, 622–27 (1982) (explaining the importance of Summers v. Tice).

157 See PORAT & STEIN, *supra* note 20, at 59–67 (suggesting joint tortfeasor liability as a solution to uncertainty when several potential tortfeasors might have caused the injury). There is a theoretical justification for distinguishing between factual causation and negligent conduct. While causation may be uncertain for all parties, including potential injurers, the conduct – as an element of liability – is known to the defendants. This difference in the state of information alters the way aggregative and probabilistic solutions to uncertainty affect injurers' incentives. See Pelled, *supra* note 98, at 171–73 (explaining that the difference in the state of information of the parties affects the way in which different aggregative solutions affect the incentives of the parties).

158 Sandro Vento, Francesca Cainelli & Alfredo Vallone, *Defensive Medicine: It is Time to Slow Down an Epidemic*, 6(11) WORLD J. OF CLIN. CASES 406, 407 (2018) (defensive medicine leads to an increase in healthcare costs).

consolidates claims during the initial stage of determining whether the hospital exceeded the reasonable harm standard, which means that only a few attorneys are representing the group of patients who suffered adverse outcomes at the hospital, leaving most lawyers that specialize in medical malpractice unemployed. However, if SLUH is implemented alongside insurance covering reasonable harm, plaintiffs' lawyers should expect many more claims. Each patient will have a shorter procedure, possibly in front of a medical review panel, to determine the extent of their harm. Most of these claimants are not recovering damages today and, therefore, do not pay attorney fees.

SLUH may find support from two other interest groups – physicians and patients. Physicians may prefer a system that doesn't scrutinize their actions individually and doesn't require a lengthy trial.[159] SLUH reduces the reputational costs of the current liability regime.[160]

If patient groups are aware of the significant costs and limitations of the current medical malpractice system, they may also support SLUH. By improving the incentive to offer reasonable care while reducing the incentive to practice defensive medicine, SLUH should help to reduce the costs of care and improve patient safety.

If implementing SLUH nationwide is politically unfeasible, it can still be implemented gradually. Some states can decide to enact SLUH, similar to other state-specific tort reforms. Furthermore, states can initially apply SLUH to volunteering hospitals and limit the liability regime to the units in the hospital that already report about adverse events to an existing registry. Volunteering units would only bear liability for excessive harm, and would not face negligence claims in court. If SLUH operates as anticipated, participating units will owe very little liability and pay lower insurance premiums. If the physicians' claims about defensive medicine are valid, we should also see a substantial drop in medical costs. A successful experiment will likely induce other hospitals to join.[161]

159 Paul C. Weiler, *The Case for No-Fault Medical Liability*, 52 MD. L. REV. 908, 926–28 (1993) (one advantage of no-fault medical liability regime is that it can lead to shorter procedures and cost savings).

160 From a social perspective the information-production of a negligence regime may be viewed as an advantage, but from the physicians' perspective the regime mainly creates costs. *See* Assaf Jacob & Roy Shapira, *An Information-Production Theory of Liability Rules*, 89 U. CHI. L. REV. 1113, 1127 (2022) (negligence regime is better at providing patients with information about their physicians than strict liability).

161 For a discussion about the advantages of experimenting with the administration of legal rules, *see* Colleen v. Chien, *Rigorous Policy Pilots: Experimentation in the Administration of the Law*, 104 IOWA L. REV. 2313 (2018)

IV. APPLYING SLUH TO OTHER AREAS OF TORT LAW

Thus far, we have explored the advantages of SLUH as an alternative to medical malpractice law. This regime, however, can apply to other areas of tort law.

In general, the SLUH regime should be considered whenever (i) due to risks inherent in the injurer's business, it frequently causes harm; and (ii) it is difficult and expensive to set the standard of care, observe the conduct, and prove causation in each incident.

One type of case that meets these criteria is mass exposure to pollution. Environmental torts pose a significant causation problem. Even if a court can determine that a tortfeasor increased the risk to the people exposed, it is impossible to determine whose illness was caused by the exposure. If the law allows the polluter to create some harm from pollution,[162] it would be even more difficult to decide who developed the disease because of the excessive pollution. SLUH solves this problem by awarding damages according to the excess harm without requiring victims to prove causation.

Product liability might be another prominent example. Liability for design defects presents many of the same difficulties as liability for negligence.[163] Plaintiffs must prove that the design is defective and that the defective product in fact caused their accident.[164] When the use of a particular product might reasonably result in accidental harm, it is easier for a court to determine whether the harm crossed a reasonable harm threshold and make the manufacturer pay damages for the difference between reasonable harm and actual harm than it is to determine if an alternative, safer design is reasonable.

This is especially true for smart AI devices and autonomous vehicles (AVs). The design of these devices raises challenging questions regarding tort liability.

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162 *See* Polinsky & Shavell, *supra* note 51, at 888 (discussing different general reasons tortfeasors sometimes escape liability for harms for which they should be liable).

163 *See, e.g.*, Prentis v. Yale Mfg. Co., 365 N.W.2d 176, 184 (Mich. 1984) ("in a design defect case, the issue is whether the manufacturer properly weighed the alternatives and evaluated the trade-offs and thereby developed a reasonably safe product . . . [t]he risk-utility balancing test is merely a detailed version of Judge Learned Hand's negligence calculus."); Castro v. QVC Network, 139 F.3d 114, 116 n.3 (2d Cir. 1998) (holding that the risk-utility calculus in product liability cases "is in many ways similar to the Learned Hand negligence test"); Liriano v. Hobart Corp., 132 F.3d 124, 131 n.12 (2d Cir. 1998) (a design defect is determined by a cost-benefit analysis to gauge the benefits of a product in relation to its dangers, similar to the Learned Hand cost-benefit analysis undertaken to determine whether negligence exists).

164 *See, e.g.*, Blair v. Eagle-Picher Indus., Inc., 962 F.2d 1492, 1495 (10th Cir. 1992) ("[i]n order for a plaintiff in Oklahoma to prevail . . . the plaintiff must first prove that the defendant's product actually caused the injury"); Cole v. Janssen Pharm., Inc., 759 F. App'x 518, 519 (7th Cir. 2019) (in product liability cases, a plaintiff has the burden of proving that a defective product is a legal cause of an injury).

Automobile accidents (including nonlethal accidents) are very common.[165] While AVs should be safer than cars with human drivers (because robots are not prone to lapses in attention and other human failings), it is difficult to design a system that can determine when such a device malfunctions or is defective in the sense that another design would have prevented a particular accident. There are two main issues with finding a smart device defective. First, most devices use learning algorithms that render their decision-making process a "black box."[166] The device learns patterns from information not easily translated to considerations humans can readily follow.[167] For example, if an AV swerves, it may be because of a malfunction, or swerving is the best way to reduce harm from a collision. It is unlikely that future inquiry could easily distinguish between the two options.

Second, looking at the actions of a smart device or other AI-driven device in a particular instance challenges how we would usually define a design defect.[168]AI-based systems make decisions that, until recently, were reserved for human actors, but they follow a different decision-making process. The only practical way to determine whether their design is reasonably safe is to examine their accident rate rather than a decision in a particular instance. Again, think of road accidents involving AVs. Assume that one manufacturer designed a system that reduces the risk of road accidents by 50% relative to human drivers, but it does so by avoiding all accidents that human drivers would not have avoided and creating a new risk of road accidents that reasonable human drivers would always avoid. By focusing only on AVs' accidents, courts might determine that the design is defective since even the alternative of human drivers is safer. Only by comparing the total harm these vehicles cause over time to a level of harm determined to be reasonable is it possible to determine whether the design is reasonably safe compared to the alternative (be it a reasonable human driver or a differently designed other AV).

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165 *See supra* note 2.

166 Alice Guerra, et al., *Liability for Robots I: Legal Challenges*, 18 J. INSTITUTIONAL ECON. 331 (2022) (describing the challenges of attributing fault to an AI device).

167 Suhrid A. Wadekar, *Autonomous Vehicles: As Machines Learn to Drive, What Must We Learn?*, 27 B.U. J. SCI. & TECH. L. 345, 361 (2021) (noting that "even if functionality testing shows that the AV Software would behave as specified, that in itself would generally not provide adequate assurance about the safety of the AV"); Rick Salay & Krzysztof Czarnecki, *Using Machine Learning Safely in Automotive Software: An Assessment and Adaption of Software Process Requirements in ISO 26262*, ARXIV ABS/1808.01614, 7 (2018) (explaining that autonomous driving requires perception of the environment, and this functionality may not be completely specifiable. Since a vehicle must move around in a human world, advanced functionality must involve perception of human categories, such as pedestrians. There is evidence that such categories can only partially be specified using necessary and sufficient conditions).

168 For the restatement's definition of defect in design, *see* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998) ("[a product] is defective in design when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the alternative design renders the product not reasonably safe").

CONCLUSION

Tort liability is a peculiar way to regulate behavior. It aims to reduce accidental harm but does not try to observe the overall harm tortfeasors create over time, even when such information is readily available. Instead, the tort system imposes liability based solely on conduct. For the paradigmatic injurer and victim, there are no practical alternatives. When an injurer is involved in a few accidents in their lifetime, it is impossible to draw any meaningful statistical inferences from such accidents. For example, most car drivers will be involved in only a few accidents, if that, over their driving life. Similarly, most physicians might make a medical error, but very few are involved in several serious incidents over a short period. The only liability regimes available when dealing with small-scale injurers are, therefore, based on conduct or strict liability.

The same is not true for large organizations involved in many incidents, for which it makes little sense to examine the level of care in every instance. This article, therefore, analyzed the use of the aggregative liability regime and examined how applying it to medical facilities can promote patient safety and reduce the cost of medical care.

As mentioned above, the SLUH regime is designed for large-scale injurers. In the medical context, the regime applies to hospitals, not private practices.[169] It nonetheless significantly changes the medical malpractice system. Hospitals employ around 40% of the doctors operating in the United States and more than half of the physicians in most EU member states.[170] Furthermore, many of the high-risk procedures, which are the kinds of procedures that would benefit most from a functioning tort system, are done in hospitals.

The current liability system fails most patients. It offers little in terms of compensation while distorting treatment decisions. Patients should welcome the shift to the SLUH regime. Doctors should welcome it as well. Many complain about the fear of liability and the incentive it creates to overprescribe, overtest, and

169 Some injuries cannot be solely directed at the hospital. Patients arrive at the hospital after receiving initial treatment at a private clinic, and patients may have suffered an injury due to the combined negligence of the private physician and the hospital staff. A following suit may be directed at both a private practitioner and a hospital. In these types of situations, where SLUH has to be implemented alongside a negligence inquiry against third parties, the plaintiff would recover damages from the hospital for a portion of the harm, according to SLUH, and could sue the private practitioner for the share of the harm not covered by the hospital.

170 *See* BUREAU OF LABOR STATISTICS, U.S. DEPARTMENT OF LABOR, *Occupational Outlook Handbook: Physicians and Surgeons* (last modified Sept. 6, 2023), https://www.bls.gov/ooh/healthcare/physicians-and-surgeons.htm; WHO Reginal Office for Europe, *% of Physicians Working in Hospitals*, EUROPEAN HEALTHCARE FOR ALL DATABASE (last updated Oct. 4, 2023), https://gateway.euro.who.int/en/indicators/hfa_506-5270-of-physicians-working-in-hospitals.

overtreat.[171] SLUH should make these phenomena a thing of the past.

171 *See, e.g.*, Summerton, *supra* note 52.