

UIC John Marshall Journal of Information Technology & Privacy Law

Volume 7
Issue 4 *Computer/Law Journal - Fall 1987*

Article 4

Fall 1987

Developing a New Set of Liability Rules for a New Generation of Technology: Assessing Liability for Computer-Related Injuries in the Health Care Field, 7 *Computer L.J.* 517 (1987)

James N. Godes

Follow this and additional works at: <https://repository.law.uic.edu/jitpl>



Part of the [Computer Law Commons](#), [Internet Law Commons](#), [Privacy Law Commons](#), and the [Science and Technology Law Commons](#)

Recommended Citation

James N. Godes, *Developing a New Set of Liability Rules for a New Generation of Technology: Assessing Liability for Computer-Related Injuries in the Health Care Field*, 7 *Computer L.J.* 517 (1987)

<https://repository.law.uic.edu/jitpl/vol7/iss4/4>

This Comments is brought to you for free and open access by UIC Law Open Access Repository. It has been accepted for inclusion in UIC John Marshall Journal of Information Technology & Privacy Law by an authorized administrator of UIC Law Open Access Repository. For more information, please contact repository@jmls.edu.

DEVELOPING A NEW SET OF LIABILITY RULES FOR A NEW GENERATION OF TECHNOLOGY: ASSESSING LIABILITY FOR COMPUTER-RELATED INJURIES IN THE HEALTH CARE FIELD

I. INTRODUCTION

The health care industry is constantly seeking to better arm itself for the battle it must wage against disease and injury. As with many other industries, the health care field has developed a great deal of technology to keep up with societal demands, including the increased utilization of computer software and hardware.

Computer technology's positive impact on the health field cannot be denied. Medical computers generally allow for more accurate and higher-quality service than more traditional methods and procedures.¹

With technological advancement, however, patients are unavoidably exposed to new and different forms of injury.² Paradoxically, as the ability to save life increases, so does the potential for harm.³ This forces the legal and medical fields to interact as they attempt to distribute liability for computer-caused or computer-related injuries.

There are many potential sources of liability, including manufacturers and health care providers, as well as many alternative theories of recovery. This Note will primarily focus on two theories, strict liability and negligence. Current law generally holds that strict liability principles are not applicable to doctors and hospitals.⁴ However, the theory of strict liability is being applied with greater frequency to manufacturers of medical instruments (including medical computers).⁵ Where neg-

1. See generally J. NORRIS, *Computers and Health Law*, in *COMPUTERS & THE LAW*, 272, 273 (3d ed. 1981).

2. See Brannigan & Dayhoff, *Liability for Personal Injuries Caused by Defective Medical Computer Programs*, 7 *AM. J.L. & MED.* 123 (1981).

3. M. SHAPO, *Materia Medica and Products Liability: Problems Inherent in Progress*, in *NEW DEVELOPMENTS IN LAW/MEDICINE* 105 (1974).

4. See *Hector v. Cedars-Sinai Medical Center*, 180 Cal. App. 3d 499, 225 Cal. Rptr. 595 (1986); *Silverhart v. Mount Zion Hosp.*, 20 Cal. App. 3d 1022, 98 Cal. Rptr. 187 (1971).

5. See *Johnson v. Sears, Roebuck & Co.*, 355 F. Supp. 1065 (E.D. Wis. 1973); *Grubb v.*

ligent, a physician or hospital may be held liable under a professional negligence theory.⁶

As an alternative to the law's current treatment of these technologically related harms, some argue that the law should treat varying types of computer-related injuries differently in terms of assessing liability. This Note sets forth four types of computer-related injuries and proposes legal standards for each. This Note will also focus on the goals of both tort law and the health care system. Lastly, this Note will analyze the applicability of both strict liability and negligence theories and will discuss which entities should be found liable under each of those theories.

This Note will set forth the proposal that the current law reaches the correct result by not applying the principles of strict liability to cases involving the liability of health care providers. Further, current proposals to apply strict liability principles to health care providers (as sellers of medical instrumentation) would defeat the goals of both the law and of health care, and would thus be detrimental to society.

II. THE EFFECT OF COMPUTERS IN MEDICINE

A. COMPUTERS IN MEDICINE GENERALLY

Computer technology has had a profound effect on the health care field. Computer programs are currently used (or are likely to be used in the near future) to perform various crucial functions in the health care field. These functions include patient record maintenance, hospital personnel performance reviews, medical education and many clinical and laboratory tasks.⁷ While computers can be used to perform simple functions like measuring body temperature, they can also be used to perform sophisticated testing procedures like computerized axial tomography (CT Scans). Computers can also monitor vital statistics in intensive care units and can even directly interact with the patients by administering intravenous fluids and anesthesia.⁸ This list of computer uses will continue to grow as technology advances the industry.

Given the great importance of time in the handling of a medical emergency, health care computer usage promotes a higher degree of efficiency. It has been noted that, "[w]here time is crucial to patient

Albert Einstein Medical Center, 255 Pa. Super. 381, 387 A.2d, 480 (1978). See also Thomas v. St. Joseph's Hosp., cited *infra* note 43.

6. See *Molien v. Kaiser Foundation Hosp.*, 27 Cal. 3d 916, 616 F.2d 813, 167 Cal. Rptr. 831 (1980).

7. Norris & Szabo, *Removing Some Impediments to Development of America's Third and Fourth Generation Health Care Delivery Systems: Legal Aspects of Computer Medicine*, 7 AM. J.L. & MED. iii, iv (Summer ed. 1981).

8. J. NORRIS, *Computers and Health Law*, *supra* note 1.

safety, computers can save minutes, or even hours in providing a doctor with data necessary to make an informed decision."⁹

Utilization of this technology also has the potential of decreasing health care costs, since computers cut down on resources spent on the labor force.¹⁰ Computers achieve this goal by eliminating non-essential personnel positions and increasing efficiency by performing certain tasks that are traditionally boring and time-consuming for the remaining personnel.¹¹ Lower health care costs achieved by computer usage translate into more widespread use of this technology, which, in turn, enables higher-quality health care to be distributed throughout a larger segment of the population; computer usage also benefits a number of groups in society which currently suffer from a lack of medical resources.

Despite their considerable advantages, any technological advancements carry with them some unavoidable social costs. For instance, although advanced technology may play an integral role in reducing health care costs while maintaining the quality of care,¹² the new computer instrumentation may initially be extremely costly to install and implement. Further, there is a tendency for the provider to overuse even the most effective computers, and thereby "spoil[s] the overall cost-effectiveness of technologies that are not inherently poor or wasteful but merely wastefully employed."¹³

In 1980, the Congressional Committee on Science and Technology concluded that, in health care, unlike most other industries, "technology tends to *increase* the ratio of workers to patients,"¹⁴ and thus *actually increases* the cost of health care.¹⁵ The Committee attributed this anomaly to unrestricted spending by the medical industry.¹⁶ If this as-

9. *Id.*

10. See Norris & Szabo, *supra* note 7, at iv.

11. Note, *Computers in the Courtroom: Using Computer Diagnosis As Expert Opinion* 5 COMPUTER L.J. 217 (1984) [hereinafter Note, *Computers in the Courtroom*].

12. Brannigan & Dayhoff, *supra* note 2.

13. HOUSE COMM. ON SCIENCE & TECH., 96TH CONG., 2D SESS., REPORT ON TECH. AND THE COST OF HEALTH CARE 12 (Comm. Print 1980).

14. *Id.* at 1.

15. *Id.*

16. The medical industry's spending has been substantially curtailed since 1980 (due, in part, to external governmental regulation such as cutbacks in Medicare funding and insurance reimbursement). This curtailment may deprive much of the above-mentioned finding's validity. Nevertheless, these extreme efforts to curb the growth of medical spending may have disastrous effects, as they lead to decisions based upon political considerations—in effect taking medicine out of the hands of the medical community and into the clutches of government. In the end, indiscriminate curbs on medical spending will prove to be a distinctive to health care providers to employ the new technologies, as well as disincentive for development of new and better technologies. A fuller discussion of this predicament is beyond the scope of this Note.

sumption is true, there is now a great need for health care providers to balance the introduction of new technology with cost considerations. This is especially important due to the Reagan Administration's funding cutbacks in the health area.¹⁷ In 1985, the health care industry saw that for the first time in 20 years, its share of the gross national product (GNP) decreased from 10.7% to 10.6%.¹⁸

In addition to its initial and potential costliness, technological advancement carries with it the threat of new physical harms to the patient. These harms will be addressed below in greater detail.

Assuming that the inherent advantages of computer usage will be found to be compelling, and that the current trend towards greater computer usage will continue, we will have to find new ways of dealing with undesired side effects of the new technology.

B. INJURIES RELATED TO COMPUTERS IN THE HEALTH CARE CONTEXT

Four main classifications of computer-related injury arising in the health care context will be examined in this Note, and a legal standard will be proposed for each. Each such examination will be accompanied by an illustration for clarification.

In considering these examples, it is important to note that medicine is an inexact science. For example, there is bound to be a range of normal results from any given test (*i.e.*, ranging from low normal to normal to high normal), making it ever harder to approach 100% accuracy in the detection of disease. Each human body is unique in that they do not function exactly alike; there are always slight variations from person to person. For example, consider body temperature. Although 98.6° F. is considered the norm, not every healthy individual maintains a temperature of *exactly* 98.6°. Similarly, no two bodies have the same number of cells. This inevitable uncertainty¹⁹ makes it even more difficult to detect an abnormality. When computers are used, this problem is amplified because a computer can provide only the information that is programmed into it. Consequently, only those scores deviating from this normal range will be detected.²⁰

17. Del Real, *The Reagan Administration's Health Care Approach*, 4 ST. LOUIS U. PUB. L. FORUM 1 (1984).

18. Steinbrook, *Magnetic Imagers Become Important Diagnostic Tool*, L.A. Times, Dec. 26, 1985, at 1, col. 1.

19. See Fortess & Kapp, *Medical Uncertainty, Diagnostic Testing, and Legal Liability*, 13 LAW MED. & HEALTH CARE 213 (1985).

20. Brannigan & Dayhoff, *Medical Informatics; The Revolution in Law, Technology and Medicine*, 7 J. LEG. MED. 1, 39 (1986).

1. *Directly Caused Computer Injuries*

The first type of injury is that which is directly caused by the computer technology. An example of this type of injury would be radiation overexposure from an X-ray machine caused by a defective software program, rather than any negligent action by an administering technician. It is important to distinguish the case in which the computer program itself fails from those cases in which the equipment (*i.e.*, the X-ray machine) fails due to the malfunctioning of another part of the machinery or even from the integration process itself. This Note deals only with the former case, where there is a *computer program* malfunction.

2. *Indirectly Caused Computer Injuries*

The second type of injury also involves a defect in the program. This injury, however, is not physically caused by the technology, but is indirectly caused by the production of inaccurate information which the health care practitioner then relies upon. An example of such an injury would be one caused by a cardiac monitor that produces inaccurate information in an intensive care unit—information that a physician reasonably relies upon to prescribe emergency treatment without conducting further tests.

3. *Negligence Injuries*

The third class of injury would stem from the classic negligence case, in which a computer functions as expected, but the health care provider is negligent. This third type can be broken down into two subclasses: (a) one in which a hospital was negligent in the selection, installation or maintenance of the technology; and (b) one in which a physician negligently misreads, misapplies or fails to apply the computer test when warranted.²¹ An example of the former injury would be one caused by a computer with a defect; *e.g.*, the negligent hospital had reason to know that the computer equipment it employed was outdated. An example of the latter injury might result when a physician misreads the results of a CT Scan and fails to detect a brain tumor.

4. *No-fault Injuries*

The fourth class of computer-related injury is quite distinct from the three previous classes. This is the truly no-fault case. In this instance, the patient suffers an injury even though the program functions

21. Liability for failure to use computers (usage as the minimum standard of care) will receive no further treatment here. For a fuller discussion, see, NORRIS, *supra* note 1, at 273-4; Note, *Computers in the Courtroom*, *supra* note 11, at 221-3.

as expected and the personnel act in accordance with professional standards. Such injuries might occur when a physician relies on a computerized testing system (*i.e.*, a treadmill test for irregular heart circulation) to diagnose a patient with an abnormality which is not detected by that specific testing system. This failure could stem from an imperfection in the test since some false-negative results should be anticipated. In this instance, an attending physician has no reason to expect an abnormality, and thus, no further tests are run. Here, there is no negligence on the part of the physician and there is no defect in the computer program. As a result, the patient may die of a heart attack while running a marathon just days after he or she has received a clean bill of health.

This Note proposes that the law categorize the injury before assessing liability. The law presently errs by not treating these various types of injuries differently. Many of the current proposed legal approaches suffer from the same malady.

Finally, this Note urges that computers used in the health care field do warrant different treatment under the law than other types of medical technology. This is due, in part, to the sophistication of the technology—especially in terms of its manufacturing, marketing and use. For these and the reasons set forth below, computers cannot be treated in the same fashion as hypodermic needles and bedpans, and thus deserve special attention.

III. CONSIDERATIONS IN ASSESSING LIABILITY

A. GOALS OF THE LAW AND OF HEALTH CARE

To more efficiently allocate liability between manufacturers and the providers, it is helpful to enunciate the possible goals of the health care system and the tort law and to attempt to meet as many of these goals as is possible.

1. *Goals of the Health Care System*

The preeminent goal of any health care system is obviously to provide the best medical care possible, given the imposition of economic and other societal limitation.²² Meeting this goal entails providing the highest quality care (in terms of accuracy and efficiency) to the largest portion of the population at the lowest possible cost.²³ In light of recent funding cuts, the most likely way to achieve widespread quality medical care is to lower its cost. Some suggest that only the efficient use of fourth-generation health care systems, which utilize computer technolo-

22. *Cf.* Norris & Szabo, *supra* note 7, at iii.

23. *Id.*

gies, will achieve these goals.²⁴ It is reasonable then to conclude that the tort law should attempt to provide incentives (and to remove any distinctives) for health care providers to develop and to utilize new time, money, and life-saving technologies. It is important to note that computer programs represent an integral part of this technology when one assesses distributor, manufacturer, and programmer liability.

It is also important to keep health care provider's costs down, so as not to provide a disincentive to utilize the technology. For example, it may be very expensive to obtain insurance on the equipment that would protect a health care provider in case of injury to a patient.²⁵ When assessing liability one should keep in mind that the manufacturer may be able to insure its product at a much lower cost.²⁶

2. Goals of the Tort Law

The tort law seeks to promote three primary goals. The primary task is to compensate victims and their families. If the law is presented with a poor helpless victim and a corporate manufacturer, the victim should be compensated by the manufacturer because the latter is better able to accept financial responsibility for, and to guard against, the loss.²⁷

The related notion of cost spreading represents the second goal of the tort law. This theory suggests that risk should be shifted away from the consumer (patient) if the dangerousness of the product is not reflected in the price and if the risk distribution benefits of the shift can be said to exceed detriments.²⁸ The RESTATEMENT (SECOND) OF TORTS notes that "the consumer of such products is entitled to the maximum of protection at the hands of someone, and that the proper persons to afford it are those who *market* the products."²⁹ It is assumed that manufacturers can spread costs throughout society by slightly increasing the price of their product. Likewise, manufacturers presumably figure the risk into the sale price.³⁰ Based on an ability to absorb and distribute

24. *Id.* at iii-iv. Fourth-generation health care systems are those that are both automated and integrated. It is preceded by physicians' offices (first generation systems), unintegrated hospitals, clinics, nursing homes, clinical laboratories (second generation systems) and multi-institutional integrated systems or single hospitals (third generation systems).

25. Crump & Maxwell, *Should Health Service Providers Be Strictly Liable for Product-Related Injuries? A Legal and Economic Analysis*, 36 SW. L. J. 831, 854 (1982).

26. W. PROSSER & W. KEETON, *THE LAW OF TORTS* § 4, at 24-5 (W. Keeton 5th Ed. 1984).

27. Crump & Maxwell, *supra* note 25, at 851.

28. This is to say that the patient is not knowingly paying a reduced rate for a product that is less than ideally safe.

29. RESTATEMENT (SECOND) OF TORTS § 402A comment c (1965) (emphasis added).

30. W. PROSSER & W. KEETON, *supra* note 26, at 23.

the cost of liability, the cost spreading theory suggests that manufacturers are the proper risk bearers.

Another purpose of the tort law is to deter the sale and marketing of unsafe products.³¹ The law seeks to deter behavior that leads to a net social loss (*i.e.*, the harms outweigh the gains from the product). Liability serves as an incentive to discontinue the production and use of unsafe products, as well as an incentive to research and develop new and better products.³²

3. *A Model for Assessing Liability*

This Note now attempts to provide a model for assessing liability for computer-related injuries in the health care context. This requires a delicate balancing of the goals of the health care profession with those of the tort law to determine how the liability should be apportioned.

There are many potential sources of liability for a patient who is either directly or indirectly harmed by a medical computer program. Because of the complexity of the developmental, integrational, and utilizational processes involved in making computerized medicine possible, patients (or their representatives) are often unable to identify the point in the distributional chain at which a defect occurred. Thus, patients are unable to prove any negligent behavior on the part of any parties in the chain. In fact, the distributional chain is often so complex that those who *should* be in a position to point out fault for the defect, (*e.g.*, the hospital or physician), are often unable to identify such fault with any degree of certainty.³³ The complex technology is simply beyond the understanding of most lay persons, including health care providers.

The parties from which a victim or its representatives may recover include:

- (1) The manufacturer of a software program;
- (2) Manufacturers of equipment (*i.e.*, those who integrate software with the rest of the equipment);
- (3) Program Distributors;
- (4) Programmers and medical consultants (experts);
- (5) Hospitals and other health care providers;
- (6) Medical personnel (physicians, technicians, nurses).³⁴

It is important to note that under general tort law principles, the scope of liability is very broad. As such, any participant in the marketing of

31. *Id.* § 98 at 693.

32. *Id.* at 608-10.

33. Crump & Maxwell, *supra* note 25, at 885.

34. Brannigan & Dayhoff, *supra* note 2, at 124-25.

the product could conceivably be held strictly liable.³⁵

When assigning tort liability, we must be careful to provide the correct incentives to each of the aforementioned parties. Doing otherwise could bring about disastrous results,³⁶ such as a misallocation of resources, and hence, a generally lower standard of health care to a large segment of our population. The next section of this Note analyzes the allocation of liability for four types of injuries associated with computer medicine. It also proposes a model which will best satisfy the goals of both the health care system and the legal system. The end result sought by this proposal is a higher-quality, lower cost health care system which is accessible to a large segment of the population.

IV. TREATMENTS OF COMPUTER ACCIDENTS

A. PRESENT TREATMENT

Given computer technology's recent entry into the medical field, the law is very much unsettled.³⁷ Numerous legal theories have been applied to deal with the problem, including breach of contract, ordinary negligence, professional negligence (malpractice), breach of warranty, and strict product liability.³⁸ This Note deals primarily with the latter three, and emphasizes professional negligence and strict liability. Although the medical profession has traditionally been governed by the law of professional liability, recent trends in the law have moved towards strict liability. While manufacturers of medical computer products may be held strictly liable,³⁹ the question of whether or not hospitals and physicians should be held to that same standard when faced with liability for computer-related injuries is a more difficult and an unresolved issue.

To date, no cases have reported that a hospital has been held strictly liable for "selling" or utilizing defective computer programs. In fact, most courts have refused to apply the theory of strict liability to hospitals and health practitioners in any instance.⁴⁰ Instead, those courts apply a professional malpractice theory of liability. For example, a California Appellate Court held that:

A hospital is not ordinarily engaged in the business of selling any of the

35. W. PROSSER & W. KEETON, *supra* note 26, at § 100 at 705-6.

36. Injuries are classified as externalities by economists because they are external to the market system. Allocating liability for such externalities to those entities that are best able to bear the loss is one goal of an efficient tort law. *See supra* notes 27-32 and accompanying text.

37. *See generally* J. NORRIS, *supra* note 1.

38. *See generally* Norris & Szabo, *supra* note 7.

39. *See generally* Crump & Maxwell, *supra* note 25.

40. Crump & Maxwell, *supra* note 25, at 855-56.

products or equipment it uses in providing such services. The essence of the relationship between a hospital and its patients does not relate essentially to any product or piece of equipment it uses but to the professional services it provides.⁴¹

Only a small minority of courts have held a hospital strictly liable for products which were defective. The holdings of these cases are questionable and seem to be very limited.⁴² For example, in *Thomas v. St. Joseph's Hospital*,⁴³ the plaintiff's husband dropped a lighted match, which in turn, ignited his hospital-supplied gown and fatally burned him. The appellate court acknowledged that an incidentally supplied product, which is furnished as part of the health care treatment, will not constitute a sale for tort law purposes.⁴⁴ Accordingly, the court found that any health care related liability should be measured under a negligence theory rather than under the principles of strict liability.⁴⁵ In this particular instance, however, the appellate court found that the hospital's furnishing of a gown was not necessarily a rendering of service. In remanding the matter back to the trial level, the court found that the hospital's supplying of gowns could be deemed unrelated to the essential professional relationship between provider and patient.⁴⁶ Given the holding in this case, health care practitioners are left wondering whether computer-related medical products are either (a) supplied during the course of health care services; or (b) unrelated to the essential relationship between provider and patient.

B. PROPOSALS BY COMMENTATORS

In a very thought-provoking article, Brannigan and Dayhoff⁴⁷ suggest that computer programs should be seen as products rather than services (a point which will be discussed in greater detail below). Consequently, manufacturers and all subsequent distributors and sellers should be strictly liable to patient/consumers who suffer harms because of these programs.⁴⁸ This would include holding the hospitals and/or health care practitioners liable as one would hold manufacturers liable under certain circumstances, or as one would hold final "sellers" of the computer product liable to the patient.⁴⁹

41. *Silverhart v. Mount Zion Hosp.*, 20 Cal. App. 3d 1022, 1027, 98 Cal. Rptr. 187 (1971).

42. *Crump & Maxwell*, *supra* note 25, at 832-34.

43. 618 S.W. 2d 791 (Tex. Civ.App. 1981).

44. *Id.* at 796

45. *Id.*

46. *Id.* at 796-98.

47. *See generally* Brannigan & Dayhoff, *supra* note 2.

48. *Id.*

49. *Morris, Physician and Hospital Liability for Defective Products Used in the Treatment of Patients*, 46 INS. COUNC. J. 566 (1979). This situation would obviously be dif-

Equating hospitals and health care practitioners to product sellers, however, seems very tenuous. For example, health care providers do not have the same knowledge or means of testing that product sellers have. Rather, they rely on manufacturers just as the ultimate consumer does.⁵⁰

Commentators see the issue of classifying computer technology as a product or a service as crucial in assessing liability.⁵¹ If the program was viewed as a product, those commentators would impose strict product liability.⁵² Under such a theory of liability, the plaintiff would not need to prove the same absence of due care element that is necessary in a malpractice (negligence) action.

In instances in which traditional negligence and warranty remedies are no longer available (*i.e.*, running of the statute of limitations), strict products liability may be a viable option. Under a products liability theory, the consumer need only prove the presence of a defect. The RESTATEMENT (SECOND) OF TORTS has enunciated the following commonly used definition:

The article sold must be dangerous to the extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics.⁵³

This definition brings to light the difficulties in applying strict liability principles to health care practitioners who do not provide their products in the same manner as conventional manufacturers or sellers would provide their products.

While strict liability focuses on the product, the emphasis of professional liability falls on the "producer". Many commentators advocate this type of liability for health care practitioners.⁵⁴ If the use of computer programs was viewed as a service, rather than as a product, professional negligence principles would generally apply.

Health care providers and practitioners are expected to exercise the same degree of care and skill commonly exercised by the average provider engaged in practice under the same or similar circumstances.⁵⁵ The courts have generally applied these and other negligence principles in health care cases because they find that the products are incidental

ferent if the provider actually developed the technology, as may be the case with a research hospital, for example.

50. See generally Brannigan & Dayhoff, *supra* note 2; Crump and Maxwell, *supra* note 25.

51. See generally Brannigan & Dayhoff, *supra* note 2.

52. RESTATEMENT (SECOND) OF TORTS § 402A comment i (1977).

53. See generally Crump & Maxwell, *supra* note 25.

54. Note, *Computers in the Courtroom*, *supra* note 11, at 219-20.

55. Crump & Maxwell, *supra* note 25, at 831.

to a service; the provision of medical care.⁵⁶ Extending these principles to computer program usage by health care providers, liability would be imposed only if the providers were negligent in the selection, installation, operation and/or maintenance of computer programs.⁵⁷

Physicians and technicians, on the other hand, would be held liable only if they had negligently relied on improper computer-generated information (*i.e.*, if further testing would have been warranted, or if the information was so obviously inaccurate that a similarly-situated physician would have recognized that fact immediately), or if a computer-controlled treatment had been negligently supervised or administered.⁵⁸ As technology becomes more readily available, physicians could eventually be held liable for not performing computer tests if such tests are deemed to be characteristic of the minimum acceptable level of care. Where the industry has been lax in regulating itself, courts have set the appropriate standard of care themselves.⁵⁹ This, however, has not yet occurred in a medical computer related case, and is beyond the scope of this Note.

The decision as to whether a medical computer program will be classified as a product or service will ultimately be based upon policy considerations, since these programs cannot be readily pigeonholed.⁶⁰ In this type of case, the courts have traditionally applied an "essence of the transaction" test,⁶¹ whereby they look to the predominant purpose of the transaction to determine whether the sales or service aspect of the contract is controlling. This general test, however, does not easily conform to the health care context. If the service aspect prevails, the product will be seen as part of a service. Given such a scenario, product liability principles would not apply.

Supporters of Brannigan and Dayhoff's position would argue that the computer program is a product, and therefore strict liability principles should be applied. They base this conclusion on the software's tangible format, the possibility of ownership and the possibility of correcting defects.⁶² Brannigan and Dayhoff acknowledge that, if strict liability is applied, both providers and practitioners would have exposure to liability. The authors find this to be an acceptable side effect because strict liability principles rather than the negligence standard

56. Brannigan & Dayhoff, *supra* note 2, at 128-29.

57. *Id.* at vi.

58. *See, e.g.*, The T.J. Hooper, 60 F.2d 737 (2d Cir. 1932); Helling v. Carey, 83 Wash. 2d 514, 519 P.2d 981 (1974); Note, *Computers in the Courtroom*, *supra* note 11, at 221-22.

59. Brannigan & Dayhoff, *supra* note 2, at 130.

60. Crump & Maxwell, *supra* note 25, at 834.

61. Brannigan & Dayhoff, *supra* note 2, at 130-32.

62. *See id.* at 133; Crump & Maxwell, *supra* note 25, at 854.

better serve the primary goals of tort law.⁶³

Other commentators argue that medical professionals are service providers who *incidentally* sell these products within the scope of their duty.⁶⁴ This notion is based on the idea that hospitals are more easily compared to consumers (rather than sellers) because they depend, as do the patient/consumers, upon the manufacturer to discover and "debug" defects. This is due, in part, to the complexity of computer technology.⁶⁵ Holding the health care providers strictly liable forces them to adopt the role of an insurer, a role which they are ill-suited to perform.⁶⁶

Classifying computer programs as services rather than products is thought to be desirable because it allows victims to recover damages from the providers and/or practitioners only if negligence can be proven. This is much more difficult than merely proving the existence of a defect which is necessary in a strict liability action. This difficulty in triggering liability by implementing a negligence standard would indeed lead to lower health care costs. Additionally, the service label would be more beneficial because hospitals can insure against malpractice more easily than they can obtain indemnification against strict liability claims.⁶⁷ According to the proponents of this service-provider viewpoint, classifying the technology as a service would appear to be the correct result under current circumstances.

The major problem with this treatment of computer programs is that by classifying their usage as a service rather than as a product, we simultaneously preclude a potential product liability claim against the manufacturer as well. Since a victim may recover substantially less under a negligence theory because of its higher burden of proof, a classification of computer program usage as a service would be undesirable. In fact, this higher burden might preclude victims from recovering against the manufacturer at all. Finally, a victim seeking recovery under the less desirable negligence theory may have difficulty showing when the defect occurred during the manufacturing process.⁶⁸

C. AN ADDITIONAL PROPOSAL: BEST OF BOTH WORLDS

As a solution to this dilemma, a hybrid of the strict liability and negligence models might be warranted in some circumstances. The ma-

63. See Crump & Maxwell, *supra* note 25, at 831.

64. *Id.* at 855.

65. *Id.* at 836, 842.

66. Since hospitals have rarely been held to a theory of strict liability, few have insured themselves against such claims. *Id.* at 854.

67. Brannigan & Dayhoff, *supra* note 2, at 126, 129.

68. *Id.* at 143.

for analytical error made in the current law and the proposals dealing with the computer liability problem is that courts treat all medical computer cases alike. A better approach would be to identify the most common computer-caused accidents and deal with each in a separate manner. The complexity of modern computer programs and the special circumstances surrounding the health field justify a more specialized treatment of the same by tort law. As previously noted, the health care field does not neatly conform to any of our traditional legal theories. Given this situation, any arising case could be analogized to one of the four injury models set forth below.

1. *Type I: Directly Caused Computer Injuries*

The first type of injury occurs when computer technology itself harms the patient. An X-ray program "bug", which causes larger than acceptable doses of radiation to be administered and results in radiation sickness, is an example of this first category of injury.

If the courts decide to treat this as a typical products liability injury, the software manufacturer, the distributor and the integrator of the machinery would most likely be held liable. This, in itself, would seem to satisfy the goals of the law set forth in Section III above. The victim would probably recover damages upon proof of the existence of a defect. The application of strict liability principles would be superior to the usage of negligence law because the complexity of computer program manufacturing might prevent the plaintiff from pinpointing the time at which the defect occurred.⁶⁹ Recovery under strict liability would impose liability on the party that was best able to avoid the risk and in a better position to compensate the injured party. In most circumstances this best cost avoider and better compensator would be the manufacturer.

Any increased costs due to liability for defective products can be distributed throughout the chain of distributors, sellers, providers and, of course, the patients. Since the manufacturer can also easily obtain insurance to indemnify it against defective products, the risk and cost spreading goals of the tort law are better served by a strict liability approach.

The goal of deterrence, however, may or may not be necessary or desirable in such health care cases. Society might be ill-served by any "chilling" effect on the production of useful products. Manufacturer-imposed liability does not necessarily need to be a deterrent to production, because of the availability of insurance and the manufacturer's ability to spread costs over a larger market.

69. Crump & Maxwell, *supra* note 5, at 856.

A negative side effect of applying traditional strict product liability to these type of injuries is that the chain of liability extends to include the hospital and the practitioner. The same three legal goals, which are satisfied when applying products liability to manufacturers, are *not* similarly satisfied when applied to health care providers.⁷⁰ The compensatory rationale is barely satisfied when applied to hospitals and physicians because these parties may not be able to insure against strict liability claims as readily as they can against malpractice actions.⁷¹ In fact, the victim may be in a better position to insure against the risk of injury via life or health insurance.

Likewise, providers and practitioners are in a much worse position to spread the risks and costs. They can only pass the costs on to their patients. This, however, will increase the cost of health care without a corresponding increase in quality. For example, a million dollar judgment against a syringe manufacturer who produces ten million needles a year might increase consumer costs only ten cents. The same judgment levied against a small rural hospital serving one thousand patients annually would increase the cost to each patient by one thousand dollars.⁷² While this situation would be different if the manufacturer was a small company, the manufacturer would still be in a better position to insure against the risk.

If deterrence is a necessary goal in these circumstances, the manufacturer (rather than the hospital) is in the better position to detect or control defects, even if it does this by keeping the product off the market.⁷³

As previously mentioned, applying traditional strict product liability concepts to providers and practitioners would result in an increase in health care costs without any accompanying improvement in the quality of care. There would also be a disincentive for hospitals and physicians to employ computer technology in their future treatments. The patient would indeed receive monetary compensation, but only at an unacceptable social cost—an increase in health care costs for everyone in the future.

As a better alternative, this Note suggests that the courts cut off strict liability at the level of the distributor, whereby hospitals and physicians would never be held strictly liable. They would instead be held to a theory of professional liability, while the manufacturer would be held strictly liable. This scheme would allow a radiation overdose vic-

70. *Id.* at 854.

71. *Id.* at 853.

72. *Id.* at 854.

73. An example of such special circumstances would be if there was some reason to doubt the reliability of the outputted information. In such an event, this improper reliance would constitute malpractice.

tim to recover from the manufacturer in strict liability, and/or from the hospital, physician or technician if they were negligent (i.e., if they should have known the X-ray program was not functioning properly, but used it anyway).

The cost-spreading rationale would also be satisfied because manufacturers and hospitals would be able to obtain insurance against strict liability and malpractice claims, respectively. This combination of the current proposals would more effectively satisfy the goals of both the tort law and the health care system than the current law does.

2. *Type II: Indirectly Caused Computer Injuries*

The Type II injuries are more indirect in that they are caused by computers which produce incorrect information. This incorrect information may be relied upon by the practitioner, who may have no reason to doubt the information. This type of situation might involve the malfunctioning of the cardiac monitor found at the nurse's station at the Intensive Care Unit of a hospital facility. Health care personnel normally rely on such an information-gathering system without conducting further tests because of time limitations. If the monitor shows a normal pattern for a patient who is experiencing a rapid heart beat, there is a good chance that injury may result.

This type of injury should be treated much the same as Type I injuries for many of the same reasons. Under exceptional circumstances, however, the plaintiff experiencing this type of injury would be able to recover from both the manufacturer (in strict liability) *and* the health care provider (under professional negligence standards). There is a much stronger case for extending liability here, as the provider may arguably be at fault as well. Given this situation, the deterrence of bad medicine might also be achieved. Providers can insure against a malpractice claim and minimize any increase in health care costs. It should be emphasized that the concepts of liability would be essentially the same as in Situation I. Situation II, however, allows for greater recovery by the patient if there is an act of malpractice as well as a defect in the computer system.

3. *Type III: Negligence Injuries*

This third type of injury is one in which the computer functions effectively, but (a) the hospital is negligent in the selection, installation or maintenance of the program; or (b) the physician misreads the information, misapplied the program or fails to apply it when it should have been applied. The former instance might occur when a hospital employs a knowingly outdated computer program just to cut costs. An example of the latter would be an injury resulting from a physician's

failure to detect an obvious abnormality in the results of a CT Scan. Even though these are the classic cases of negligence, they should be treated slightly differently than by the present law. Currently, the patient might be able to recover both from the manufacturer in strict liability and from the physician or hospital for their negligence.

To satisfy both the goals of the law and those of health care, this Note proposes that no strict liability should be imposed under these circumstances. Accordingly, the hospital or physician only would be liable, with such liability stemming from professional negligence principles. In other words, since there was no defect, the manufacturer has no liability. However, the manufacturer could still be found to be negligent if this was indeed the case.

Even though the hospital and physician can insure against their own negligence, the imposition of liability may actually serve as a deterrent to future negligent behavior. To hold the manufacturer liable here without fault would serve no similar purpose, however. Under this proposal, the price of the equipment itself would not rise, and hopefully, the cost to the patient would likewise remain unchanged. In this case, the injured patient would recover under the normal medical malpractice community standard.

4. *Type IV: No-Fault Injuries*

A Type IV injury occurs as a result of both the limitations technology and the inexactness of medicine. When a patient suffers this type of injury, the computer functions exactly as expected, and the hospital and physicians act in a reasonable fashion. In other words, injury in these instances cannot reasonably be prevented. This type of injury is clearly defined by the following fact situation.

Assume that a patient undergoes a treadmill test to detect heart circulation abnormalities. During this testing, the computer acts as expected, yet still does not detect abnormalities because a false-negative result (caused by the imperfect nature of the test) may have occurred. Assume further that this test was part of a routine physical, and that the patient had not complained of chest pain or other symptoms which should have aroused the physician's suspicion. Consequently, the treating physician is not negligent in relying upon the test results. If the patient subsequently dies of a heart attack, it cannot be attributable to a defect in the computer program or the negligence of the health care provider.

With this type of injury, there would be no "victim" for purposes of recovery. As far as negligence law is concerned, recovery is dependant upon the presence of a perpetrator and/or action which causes the victim's predicament. In the example described above, no such actor or ac-

tion exists. Everyone involved has acted in a reasonable manner, yet the "patient" still suffers. This can be analogized to a natural catastrophe situation, in which the patient or his family must rely on medical and life insurance for compensation.

Holding providers or manufacturers liable for a Type IV injury would provide the wrong incentives. Doing so would inevitably lead to a misallocation of dangerously scarce health care resources. Although there is a lower rate of recovery for these injuries, society is better served by resulting lower costs, and better quality health care.

V. CONCLUSION

Assessing liability for computer-related injuries is still an unsettled area of the law. The major area of indecision will be in deciding whether or not the courts should apply strict liability to health care providers as a *seller* of computer products. This proposal has met with some support.

Another alternative would be to consider the computer program as incidental to the provision of health care services. Under such a treatment tort law principles, such as negligence, would be applied. This Note suggests that both of these treatments err in that they do not consider the differing degrees of injury that can result from advanced computer technology.

This Note proposes that the most effective way to achieve the goals of both the law and health care is to consider differing levels of injury when assessing liability. The treatment of the four levels of computer-caused injury suggested here illustrate how liability can be distributed between manufacturers and health care providers. Other alternatives, such as providing tax incentives to hospitals that employ the technology (in the event that they are to be held strictly liable), or working with the insurance industry to create lower premiums and a greater range of coverage to hospitals and manufacturers, should receive a great deal of consideration, even though such alternatives fall beyond the scope of this Note.

Due to the complexity of computer technology and the unique needs and functioning of the health care system, it is clear that a new set of legal liability rules must be forged. To ensure that our population receives the best possible health care, the law must provide the correct incentives to manufacturers and health care providers. These proper incentives will result in the most efficient level of technology being employed and, in turn, will lead to more effective, lower-cost health care for us all.

James N. Godes