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The Dinosaur in the Office: A Consideration of the Technical and Ethical Issues Surrounding the Adoption of Digital Medical Data and the Extinction of the Paper Record

*Introduction by Kristin E. Schleiter**

I. INTRODUCTION

In this age of electronics, paper records of healthcare data are beginning to go the way of the dinosaur. Addressing the Sixth Annual Health Law and Policy Colloquium at Loyola University Chicago School of Law, Arthur Derse, M.D., J.D., and Michelle L. Dougherty, R.H.I.A., C.H.P., spoke from their unique perspectives, describing the ethical and technical issues that inevitably arise from the digitization of medical data.

Dr. Arthur R. Derse is Director of Medical and Legal Affairs, Associate Director of the Center for the Study of Bioethics, and Clinical Professor of Bioethics and Emergency Medicine at the Medical College of Wisconsin. He serves as President of the American Society for Bioethics and Humanities (ASBH), Chair of the Veterans Health Administration's National Ethics Committee, and a member of the Ethics Committee of the American College of Emergency Physicians, of which he is former Chair.

Dr. Derse is also Senior Consultant for Academic Affairs at the American Medical Association's Institute for Ethics. He contributed to the development of the Robert Wood Johnson Foundation-funded Education for Physicians on End of Life Care (EPEC) Project and serves as a member of its national faculty. He serves as Ethics Committee Chair at Froedtert Hospital (the Medical College of Wisconsin's adult university hospital), Co-Chair of the Ethics Committee at the Milwaukee Veterans Affairs Hospital, and Ethics Consultant at Children's Hospital of Wisconsin.

Michelle Dougherty is a Director in Practice Leadership for the American Health Information Management Association (AHIMA). In her

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role as Director, Ms. Dougherty provides professional expertise to AHIMA members and outside organizations. She also advises industry initiatives on health information practice issues, electronic health records (EHRs), and information exchange initiatives. Additionally, Ms. Dougherty serves as coordinator and project manager for a number of taskforces, including e-HIM®, Long-Term Care, and the Legal Health Record. She represents AHIMA and the HIM (Health Information Management) profession at HL7 (Health Level Seven) and is on the EHR Technical Committee. Furthermore, Dougherty is a frequent speaker and an award-winning author.

Addressing the audience at this year's Health Law and Policy Colloquium, Dr. Derse discussed the issues in diagnosing medical data, focusing on five ethical issues: (1) the effects of patient factors with patient case effects and physician societal response to that; (2) confidentiality, not just in HIPAA (Health Insurance Portability and Accountability Act); but also in doctor-patient relationships and the communications therein; (3) informed consent; (4) patient refusal of treatment; and (5) potential use in litigation.¹ Ms. Dougherty, in turn, spoke from the perspective of a record manager, addressing data quality and data issues such as performance and quality measurement.²

II. BACKGROUND OF HEALTH INFORMATION TECHNOLOGY

The American Medical Association defines health information technology (HIT) as "the software and infrastructure used in the clinical practice of medicine to support the collection, storage and exchange of patient data."³ Examples of HIT include e-Prescribing Systems (eRx), Computerized Physician Order Entry (CPOE), Electronic Medical Records (EMRs), Picture Archiving and Communication Systems (PACS), Personal Health Records (PHR), and Practice Management Systems (PMS).⁴

HIT provides for widespread management of medical information, as well as its exchange between healthcare providers and consumers.⁵

1. Arthur Derse, Senior Consultant for Academic Affairs, American Med. Ass'n Inst. for Ethics, *Diagnosing the Data: Ethical Issues*, Address at the Loyola University Chicago School of Law Beazley Institute for Health Law and Policy's Sixth Annual Health Law and Policy Colloquium (Dec. 5, 2006) (at PowerPoint Presentation slide 2).

2. Michelle Dougherty, Director in Practice Leadership, American Health Information Management Association, Address at the Loyola University Chicago School of Law Beazley Institute for Health Law and Policy's Sixth Annual Health Law and Policy Colloquium (Dec. 5, 2006).

3. American Medical Association, *What is Health Information Technology?*, <http://www.ama-assn.org/ama/pub/category/16684.html> (last visited Jan. 26, 2007).

4. *Id.*

5. U.S. Department of Health and Human Services, Health Information Technology Home Page, <http://hhs.gov/healthit/> (last visited Jan. 26, 2007).

Extensive use of HIT has the potential to “[i]mprove healthcare quality; [p]revent medical errors; [r]educe healthcare costs; [i]ncrease administrative efficiencies; [d]ecrease paperwork; and [e]xpand access to affordable care.”⁶ The adoption of interoperable health technology will both improve patient care and bring about substantial health benefits, such as the early detection of infectious disease outbreaks, enhanced monitoring of chronic disease management, and evaluation of health care via price and quality information.⁷

The term most often linked with HIT is electronic medical record (EMR),⁸ a “secure, real-time, point-of-care, patient-centric information resource for clinicians.”⁹ The EMR can aid clinicians’ decision-making processes by providing access to patients’ health information wherever and whenever the clinician needs it, while also “incorporating evidence-based decision support.”¹⁰ The EMR can also streamline the clinician’s workflow, “closing loops in communication and response that result in delays or gaps in care.”¹¹ While improving patient safety, the EMR also helps to prevent waste by stopping doctors from re-ordering tests they previously requested.¹² In addition, the EMR supports secondary uses of medical data, such as outcomes reporting, billing, resource planning, quality management, and public health disease surveillance and reporting.¹³

Given the potential for HIT to completely overhaul the healthcare industry, it is not surprising that important issues and hurdles accompany the push to digitize medical data. This brief introduction will touch on two facets of the issues that arise in regard to HIT: the ethical issues surrounding the digitization of medical data and the technical issues in the adoption of such data.

6. *Id.*

7. *Id.*

8. U.S. Department of Health and Human Services, *supra* note 5.

9. ELECTRONIC HEALTH RECORD COMMITTEE, HEALTHCARE INFORMATION AND MANAGEMENT SYSTEMS, ELECTRONIC HEALTH RECORD DEFINITIONAL MODEL VERSION 1.0, at 2 (2003), <http://www.himss.org/content/files/EHRAAttributes.pdf>.

10. *Id.*

11. *Id.*

12. Kristen Gerencher, *Hospitals Talk Up Electronic Records, But Few Buy In*, THOMSON FINANCIAL NEWS, Mar. 18, 2005.

13. ELECTRONIC HEALTH RECORD COMMITTEE, *supra* note 9.

III. ETHICAL ISSUES IN DIGITIZING MEDICAL DATA

A. Effect of HIT on Informed Consent and the Doctor-Patient Relationship

Many ethical issues surround the topic of HIT; these dilemmas involve confidentiality, communication, informed consent, patient refusal of treatment, and potential use in litigation. One concern that arises is how such technology will affect the personal bond between doctor and patient.¹⁴ HIT has the potential to make health care more patient-centered by providing patients access to clinical knowledge and resources through online support groups and understandable web sites.¹⁵ Internet-based communication can provide a wide array of possibilities for interacting with physicians.¹⁶ Historically, the doctor-patient relationship has been characterized by a natural disparity in power.¹⁷ The use of technology to educate patients could bring doctors and patients closer to being equals by allowing them to more effectively communicate and giving the patient more influence in the decision-making process.¹⁸

Conversely, HIT may tend to suppress essential human interaction in such areas as informed consent.¹⁹ The transmission of data is only one part of informed consent in the doctor-patient relationship.²⁰ Face to face contact also plays an integral role.²¹ While a doctor, in person, explains to a patient a procedure and its risks and alternatives, observation of “[t]he physician’s apparent grasp of information is an important measure by which the patient can assess the doctor’s level of expertise and personal views regarding the proposed treatment, especially its pros and cons.”²² Even the best online programs may not assure a patient that her physician is fully knowledgeable and comfortable with the proposed course of treatment that she will undergo.²³ Further, informed consent allows doctors to understand

14. Arnold J. Rosoff, *Informed Consent in the Electronic Age*, 25 AM. J.L. & MED. 367, 384 (1999).

15. Nicolas P. Terry, *An eHealth Diptych: The Impact of Privacy Regulation on Medical Error and Malpractice Litigation*, 27 AM. J.L. & MED. 361, 376 (2001).

16. *Id.*

17. Rosoff, *supra* note 14, at 384.

18. *Id.*

19. *Id.* at 384, *passim*.

20. *Id.* at 384.

21. *Id.*

22. *Id.*

23. Rosoff, *supra* note 14, at 384.

their patients and their patients' values.²⁴ A physician learns about her patient as she develops a treatment plan with her, discusses the pros and cons of the proposed treatment, and comes to an agreement with her patient about whether and how to implement the plan.²⁵

In addition to the transfer of information between doctor and patient, invaluable bonding occurs when doctor and patient talk to one another.²⁶ Physicians who sacrifice this bond in the pursuit of efficiency or literal satisfaction of the law's informed consent requirements lose something very valuable, both philosophically and practically.²⁷ To the extent that human interaction is replaced by electronic data systems, the Internet, or other technological forms, something invaluable is given up.²⁸

Fully involving patients in clinical decisions is a challenging task for physicians.²⁹ The modern patient possesses, or at least knows how to secure, greater medical knowledge than has been the norm in the past.³⁰ Standards of disclosure will have to adapt to accommodate that fact.³¹ Doctors who fail to take into consideration their patient's increasing knowledge base may find themselves more susceptible to informed consent litigation based on their failure to discuss treatment with such patients "at more advanced levels of materiality."³² In the interest of patient autonomy, doctors and patients will be best assisted by working together to utilize the wealth "of medical information unleashed by modern technology."³³

B. The Effect of HIT on Medical Malpractice Litigation

The rise of HIT also has the potential to dramatically change the face of medical malpractice litigation, in which the written medical record is an essential resource.³⁴ Written medical records are the "'script' of the case, delineating the timeline and parties involved in patient care."³⁵ They dictate many of the resulting discovery demands.³⁶ However, the written record lacks integrity; conventional medical records are not always complete and

24. *Id.*

25. *Id.*

26. *Id.* at 385.

27. *Id.*

28. *Id.*

29. Terry, *supra* note 15, at 400.

30. *Id.* at 399.

31. *Id.*

32. *Id.*

33. *Id.* at 400.

34. *Id.* at 412.

35. Terry, *supra* note 15, at 412.

36. *Id.*

are often unreadable.³⁷ A modern EMR is comprehensive and complete, and it “will record and time-stamp all interactions with the patient, and log the identity of involved careproviders and the information they had available . . . at an exact point in time.”³⁸ For litigators, therefore, the EMR is extremely advantageous compared to its paper ancestor.³⁹

The rise of HIT also has the potential to reduce malpractice litigation as quality improves. As discussed in detail below, studies have shown that the introduction of e-prescribing systems can dramatically decrease the amount of medical errors, thereby decreasing the risks of litigation due to errors and complications that might otherwise result. However, the cost to physicians still remains unknown. Only time will tell what impact HIT has on malpractice litigation, as well as on disclosure of medical errors and physician credentialing.

IV. TECHNICAL ISSUES IN DIGITIZING MEDICAL DATA

Ethical issues aside, and speaking from the perspective of a record manager, Michelle Dougherty explained that technical hurdles to the adoption of HIT systems still remain. Ms. Dougherty identified two key issues in the adoption of HIT: standardization of quality performance and measurement data, and maintaining the trustworthiness of electronic health record data.⁴⁰

EMR use relates to several practice characteristics, including but not limited to the number of physicians in a practice, the scope of services provided, the percentage of practice revenue from Medicaid, the number of managed care contracts, and ownership.⁴¹ Disparity in EMR use also relates to geography and demographics—physicians in the Midwest (26.9%) and West (33.4%) are more likely to use EMRs than those in the Northeast (14.4%), while physicians in metropolitan areas (24.8%) are more likely to use EMRs than those in non-metropolitan areas (16.9%).⁴²

The size and complexity of the health organization has an effect as well; adoption rates of EMRs among physicians have been slightly higher among doctors in medium and large practice groups than physicians in small practices.⁴³ According to the Center for Disease Control, between 2001 and

37. *Id.*

38. *Id.* at 412-13.

39. *Id.* at 412.

40. Dougherty, *supra* note 2 (at PowerPoint Presentation slide 3).

41. CATHARINE W. BURT ET AL., NATIONAL CENTER FOR HEALTH STATISTICS, ELECTRONIC MEDICAL RECORD USE BY OFFICE-BASED PHYSICIANS: UNITED STATES (2005), <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/electronic/electronic.htm>.

42. *Id.*

43. American Medical Association, *What's Preventing Widespread Adoption?*,

2003, about 31% of hospital emergency departments, 29% of outpatient departments, and 17% of doctors' offices used EMRs to aid in the care of their patients.⁴⁴ Overall, almost a quarter of physicians reported using some level of EMRs in their practices in 2005.⁴⁵

Investment in HIT has been driven primarily by billing and payment issues, rather than clinical needs.⁴⁶ While electronic billing is used in three out of four doctors' practices, only 8% chose to order diagnostic tests and drugs electronically.⁴⁷ Barriers to physician adoption of HIT also include uncertain return on investment, workflow changes, and significant capital investment estimated to be approximately \$30,000 per physician.⁴⁸

The fact that most hospital systems "provide little or no clinical decision support to providers" contributes to low adoption rates among physicians.⁴⁹ Given the vast array of information and knowledge that providers must handle, asking providers to deliver complex care without assistance is "like asking a pilot to fly with no instruments."⁵⁰ More than a few hours is necessary to learn to navigate electronic healthcare programs. For example, at Evanston Northwestern Healthcare, a minimum of sixteen hours of practice time was required before physicians could go live on their new system.⁵¹

As Ms. Dougherty demonstrated, the lack of a standard infrastructure for information exchange has also hindered widespread adoption of HIT systems.⁵² Today's reality is that a hybrid of records and data collection exists.⁵³ Hospitals would like to devote resources for the establishment of EMRs and other HIT, but concerns about investing in an expensive system that may not accept upgrades or easily network with other systems create pause.⁵⁴ "Information systems are highly complex and provide an uncertain return on investment."⁵⁵ Due to this complexity, the trend has been for healthcare organizations to develop a long-term relationship with a small

<http://www.ama-assn.org/ama/pub/category/16686.html> (last visited Jan. 26, 2007).

44. Gerencher, *supra* note 12.

45. Burt et al., *supra* note 41.

46. David W. Bates, *The Quality Case for Information Technology in Healthcare*, 2 BMC MED. INFORMATICS & DECISION MAKING (2002), available at <http://www.biomedcentral.com/1472-6947/2/7>.

47. Gerencher, *supra* note 12.

48. American Medical Association, *supra* note 43.

49. Bates, *supra* note 46.

50. *Id.*

51. *Id.*

52. Dougherty, *supra* note 2; American Medical Association, *supra* note 43.

53. Dougherty, *supra* note 2.

54. Gerencher, *supra* note 12.

55. Bates, *supra* note 46.

number of vendors who, in turn, provide the healthcare organizations with non-standard software in order to hold tightly to their client base.⁵⁶ In addition, the lack of standards makes a transition from one vendor to another difficult.⁵⁷ The result is that each provider's record stands alone and can only be shared with "providers in the same office or on the same information network."⁵⁸ Data exchange is thereby limited as "patients utilize providers across specialties, health systems, and geography."⁵⁹

There is currently a major movement for government and private programs that could push the nation's costly and inefficient healthcare systems into the computer age.⁶⁰ At the moment, the United States government is leading the movement toward the widespread adoption of interoperable HIT.⁶¹ Federal departments and agencies that purchase and deliver healthcare services are committed to the use of HIT.⁶² On the recommendation of the American Health Information Community (AHIC), the Department of Health and Human Services (HHS) has adopted three sets of "Interoperability Specifications," to help harmonize the hundreds of diverse HIT systems in existence.⁶³ HHS has also accepted the AHIC's recommendation for federal healthcare delivery systems in order to develop an adoption plan to integrate these three standards into federal software systems.⁶⁴ As the following success stories demonstrate, the movement toward the widespread adoption of interoperable HIT is well worth the effort.

V. BENEFITS: SUCCESS STORIES

A. *Evanston Northwestern Healthcare*

Though the barriers to implementation of substantial HIT systems are great, Evanston Northwestern Healthcare has found that the benefits make the challenge well worth the effort. At the end of a three-year project, each of Northwestern's three hospitals and fifty affiliated doctors' offices went

56. *Id.*

57. *Id.*

58. American Medical Association, *supra* note 43.

59. *Id.*

60. U.S. DEP'T OF HEALTH AND HUMAN SERVICES, HEALTH INFORMATION TECHNOLOGY INITIATIVE, MAJOR ACCOMPLISHMENTS 2004-2006, at 3 (2007), available at <http://www.hhs.gov/healthit/news/Accomplishments2006.pdf>.

61. *Id.* at 2.

62. *Id.* at 4.

63. *Id.*

64. *Id.*

live on an electronic system in 2004,⁶⁵ allowing patients to sign up with a doctor, make an appointment, see test results, pay bills, request a prescription refill, and even send an e-mail to their doctors and nurses.⁶⁶ With the traditional paper medical record obsolete, doctors now push wireless carts that contain “a keyboard, monitor, and mouse down hospital halls and into patient rooms.”⁶⁷ Even doctors’ exam rooms include computer terminals.⁶⁸

Since implementation of the electronic system, 40% of medication errors caused by handwriting have been eliminated.⁶⁹ Prescriptions that previously took an average of 180 minutes to be approved and filled are now completed in ninety minutes.⁷⁰ As doctors now type right into the network, the amount of time doctors once spent on dictation has also greatly decreased.⁷¹ Although doctors spend more time entering information on the floors, they receive the benefit of access to extra information at any time, whether at the office, hospital, or home.⁷² Mammogram results are received in one day compared to three weeks before the electronic system was implemented.⁷³ The immense benefits of Northwestern’s electronic health information system is best demonstrated by a recent occurrence; when Vioxx was recalled, the system identified doctors with patients on the drug and notified such patients within hours, as opposed to weeks.⁷⁴

Though the overall cost of implementing and sustaining a system as expansive as Evanston Northwestern’s is high—the total investment at Evanston Northwestern was \$42.5 million, “including \$35 million for the system itself and \$7.5 million for staff training”—such systems produce ongoing benefits via expense reduction, better billing and auditing, and decreased malpractice costs.⁷⁵ The healthcare group at Evanston Northwestern expects to save \$12.5 million annually.⁷⁶

65. Alex Salkever, *A Paperless Health-Care System?*, BUSINESSWEEK, July 7, 2004.

66. Gerencher, *supra* note 12.

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

72. Gerencher, *supra* note 12.

73. Salkever, *supra* note 65.

74. Gerencher, *supra* note 12.

75. *Id.*

76. *Id.*

B. Armand Gonzalzes, M.D., F.A.A.P.

Solo practitioners can also benefit from the utilization of HIT, particularly from the EMR. Armand Gonzalzes, M.D., F.A.A.P. discovered this first-hand in 2000 when he introduced the EMR into his solo pediatric practice.⁷⁷ For Gonzalzes, implementation of EMRs has provided multiple benefits. Over four years, his practice has grown by 77.5%.⁷⁸ The ability to streamline his entire operation resulted in significant growth in revenue from the increased efficiencies in coding and charting.⁷⁹ Drug refill times decreased by 9600%.⁸⁰ Automated billing and a clearinghouse for claims led to faster reimbursements and more efficient operations.⁸¹

The above benefits also had a dramatic effect on the size of Gonzalzes' patient base.⁸² A time savings of more than thirty minutes for patients allowed for shorter wait times, which led to significantly more referrals and new patients coming in each week.⁸³ Says Gonzalzes,

Technology has improved my practice by allowing me more time with my patients, an advantage that they recognize as well. It is an investment, but one well worth the time, money and redesign of the practice operation. When I speak to my colleagues, I encourage them to take this step into technology for their practices. Each operation has unique challenges, but overall, we all have the same objective: to spend more time with patients and less on office administration, while also improving revenue. The electronic medical record has accomplished that for me.⁸⁴

VI. CONCLUSION

Slowly but surely, the traditional paper record of healthcare data is becoming extinct. The Secretary of Health and Human Services, Michael O. Leavitt, recently stated that "the rollout of electronic health records was

77. Physicians Adopting Computer Technology, *Electronic Medical Record Success Story*, http://www.himss.org/content/files/20060130_EMR_Case_Study.pdf (last visited Jan. 26, 2007).

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.*

82. *Id.*

83. Physicians Adopting Computer Technology, *supra* note 77.

84. *Id.*

‘the most important thing happening in health care.’”⁸⁵ HIT has the potential to “reduce medical errors and costs, saving lives and saving dollars.”⁸⁶ Interoperable HIT will not only improve individual patient care, but it will bring many public health benefits.⁸⁷ Though the challenge is considerable, the benefits are great, with the immense potential to change the face of health care forever. In the following transcripts, Arthur Derse and Michelle Dougherty address the many ethical, technical, and financial hurdles that have yet to be cleared. Dr. Derse discusses the ethical issues in diagnosing medical data, including confidentiality, informed consent, patient refusal of treatment, and potential effects in litigation. Ms. Dougherty, in turn, speaks from her perspective as a record manager, addressing data quality and data issues such as performance and quality measurement.

85. Steve Lohr, *Smart Care Via a Mouse, But What Will It Cost?*, N.Y. TIMES, Aug, 20, 2006, at 31.

86. *Id.*

87. U.S. Department of Health and Human Services, *supra* note 5.