Why Healthcare Needs Electronic Records - Now

The winds of change have not resulted in a smooth adoption of electronic medical records. Indeed, there have been many challenges from cost, difficulty in selecting the “right” system, and real questions about the interoperability of competitive EMR and EHR systems. There is also a learning curve in the transition to going electronic and a real potential that errors will occur that could harm patients.

As much as there may be those who delight in pointing to the challenges of EMR and EHR adoption, there are also those who realize the profound benefits that may flow from well-designed and well-implemented electronic medical record and health information systems. While there may be flaws, process redesign can overcome such hurdles.

This is the 21st century. The healthcare field is awash in technology and a burgeoning array of pharmaceuticals, biologics, and cellular and genetic therapy products. With a public health policy premised on integration in the delivery of services, EMR and EHR will be critical linchpins in revamping patient care.

Those who think the “old” way of documenting patient information is superior might want to reconsider their positions. As seen in a case from the Supreme Court of Alabama, many of the EMRs in place today may have helped to avert an adverse outcome involving a premature baby.
The Alabama Case.

In April 2003, at 23 weeks gestation, A.B. was born at a teaching hospital in Alabama. The child weighed 12.87 ounces. The child was admitted to the hospital’s neonatal intensive care unit (“NICU”).

Because of her prematurity, the child was at risk for a number of serious health risks, including a well-known condition called retinopathy of prematurity or “ROP.” Since this ocular condition occurs at some point after birth, premature children require early and frequent checks for onset of ROP. An early diagnosis of the condition permits successful treatment.

A.B. was put on a list of premature babies for regular screening by Dr. L.R., a consulting, board-certified ophthalmologist.

Dr. L.R. followed a process in the way in which he retrieved information about patient’s requiring an ROP exam and how he documented the results. First, the doctor would take the NICU’s bound book for eye examinations with him as he made rounds in the unit. The bound book listed the names of children requiring ROP examinations on a specified day. After completing the ROP examination, Dr. L.R. would note his findings on an eye form that he would leave at the patient’s bedside to be inserted in the medical record. The doctor would keep a copy for his office records. The doctor would also transpose his diagnosis and follow-up care for the patient from the eye form into the NICU’s bound book. The latter included dates, a list of the names of the patients in the unit who required ROP exams, and whether further exams were necessary.

Dr. L.R. also used a system of symbols in the NICU’s bound book and on the eye forms. One symbol, “two dashes with circles around them,” indicated that the baby did not have ROP and that there was no need for a follow-up ROP exam. After completing ROP exams in the unit, Dr. L.R. would return the bound book to the ward clerk. The physician was the only care provider to include diagnosis and treatment information in the bound book. Indeed according the ophthalmologist:

“…since 1981 he had been writing notations on the eye form and then simultaneously taking that information regarding the diagnosis and any follow-up treatment and writing it in the eye-exam book. Thereafter, the ward clerk would open the eye-exam book to Dr. [L.R.s] entries and would schedule patients for follow-up ROP examinations as indicated.” [Emphasis added]
In the A.B. case, this documentation process proved important. On May 22, 2003, the ophthalmologist completed an ROP examine on A.B., noting on the eye form that she should have a follow-up examination in two weeks. He entered the same details in the NICU bound book next to the patient’s name. Then, on June 2, 2003, the ophthalmologist followed the same process, indicating that the baby should have another ROP examination in two weeks. The doctor entered his findings on the eye form and also in the NICU bound book. Using the information in the book, the ward clerk placed A.B. on the list of patients for an ROP examination in two weeks.7

On June 16, 2003, A.B. underwent another examination by the ophthalmologist. On this occasion, the doctor wrote on the eye form “tube, 2 wk.”8 The notation meant that the baby was still on a ventilator and that she should have another ROP examination in two weeks.9

Unlike the previous pattern of documentation, there was a change following the examination on June 16, 2003. The ophthalmologist wrote in the NICU bound-book next to A.B.’s name that she was negative for ROP and that further examinations were not needed. As a result, the patient was not placed on the two-week repeat ROP examination schedule.10

Nurse practitioners observing A.B. in the NICU wrote notes on July 4, 6, and 9, 2003 that the baby was due for follow-up ROP examinations. The nurse practitioners took this approach because it had been about two weeks since the last ROP examination. Because the ophthalmologist did not have all the ROP examinations scheduled exactly two weeks apart, the nurse practitioners would note that a follow-up examination was due.11

On August 12, 2003 one of the NICU nurse practitioners identified a discrepancy between the notation on the patient’s eye form completed by the ophthalmologist and his notation in the NICU bound book regarding the need for a follow-up ROP examination. The nurse practitioner showed the discrepancy to Dr. E., the NICU medical director. He asked that A.B. undergo another ROP examination. The evaluation was completed that evening by the ophthalmologist. He found that since her previous examination completed on June 16, A.B. had developed stage III to stage IV ROP in both her eyes.12

With the diagnosis of ROP, A.B. was transferred to a children’s hospital where she underwent several procedures and surgeries. However, the ROP had progressed to the point that the retina in the right eye was
detached completely and the retina in the left eye was only 10% attached. The outcome was that the baby was left completely blind.¹³

In December 2007, a lawsuit was filed against the ophthalmologist, Dr. L.R., his partnership group, the NICU medical director, the hospital and the academic medical center’s foundation. A motion for summary judgment was granted to the hospital because, as a state academic medical center it enjoyed sovereign immunity. The trial court initially denied partial summary judgment motions made by the ophthalmologist and his partnership. However, the trial court did so in January 2010. The trial court agreed that the deposition of the plaintiff’s expert witness did not establish that

“[Dr. L.R’s] negligence proximately and probably caused the lapse in [A.B.’s] ROP examinations and treatment.”¹⁴

Within a few days of the trial court ruling, the plaintiff reached a settlement with the NICU medical director and the academic medical center’s foundation. She then filed a motion to vacate the trial court’s grant of summary judgment to Dr. L.R. and his partnership.¹⁵ When the trial court denied her request, she appealed.¹⁶

There were two issues presented on appeal. First, whether the plaintiff had provided “substantial evidence” that the ophthalmologist breached the required standard of care that was the proximate cause of A.B.’s injury. Second, if this was the case, then “whether evidence of combined and concurring negligence of more than one defendant for a single injury”¹⁷ diminished the liability of the ophthalmologist.¹⁸

Looking at the evidence in a light most favorable to the plaintiff - the process used in reviewing the grant of summary judgment to the defense - the court decided to reverse and remand the trial court ruling.

On the first issue, the court reasoned that the plaintiff had presented substantial evidence that Dr. L.R. had breached the applicable standard of care. Further, there was sufficient evidence to preclude a grant of summary judgment to the defense on the issue of proximate cause. Here the delay in diagnosing the presence of ROP and then treating the condition could be considered the proximate and probable cause of the infant’s blindness.¹⁹

On the second appellate issue, the court recognized that while other care providers may have also acted negligently in treating the infant, their actions did not exculpate Dr. L.R.’s own breach of the standard of care. Thus the case was remanded to the trial court.²⁰
Observations on the Alabama Decision.

Documentation lapses, non-adherence to policy, and work-arounds are sometimes seen in medical malpractice cases. The Alabama ruling is no exception. Some of the admissions of the NICU medical director highlighted a possible flaw in a documentation process that was used for communicating necessary surveillance examinations for ROP:

“...the NICU has used the eye-exam book as the source for scheduling ROP examination for at least 15 years because the eye form is not always available. The eye-exam book stays in the NICU and cannot be misplaced, whereas the eye forms do not immediately appear in a patient's chart and charts are "thinned out" on a regular basis, possibly removing the eye form from the patient's chart and placing the culled reports in a different place in the NICU."\textsuperscript{21}

For his part, Dr. L.R. tried to place responsibility on the NICU. He suggested that the unit had violated its own policy in not having the ward clerk use the eye form to record in the bound book which patients needed follow-up ROP examinations and then scheduling such appointments with his office. This assertion was challenged by the plaintiff's expert witness who suggested that it appeared that it was Dr. L.R. who had taken it upon himself to modify hospital protocol by “writing the results of his eye exams in the eye exam [bound book] as noted on the eye form.”\textsuperscript{22}

As the plaintiff’s expert suggested, if Dr. L.R. thought that the NICU documentation protocol was deficient, he had an obligation to tell the academic medical center.\textsuperscript{23} Instead, as the expert witness testified, the defendant ophthalmologist:

“..failed to make any drawings, notations, or clear documentation regarding presence or absence of ROP or the zone of retinal vascular maturity, which is exceedingly important in determining risk and an appropriate follow-up interval. The terminology used in the Eye Form that 'Blank = normal' is inadequate.”\textsuperscript{24}

Would an electronic record system made a difference? As the NICU medical director testified:

“...the progress notes made by the NICU nurse practitioners do not ‘trigger’ exams; instead, the eye-exam book is the trigger for scheduling ROP examinations.”\textsuperscript{25}
An electronic medical record with a built-in scheduler or reminder tool may have prevented the tragic lack of necessary ROP examinations. Instead of a process being modified by one care provider, there would be a unified system that incorporated notes, observations, graphic displays, and care plans. There would be no need for, or risk of, a “culled” eye exam form not being incorporated into the patient record.

It can be challenging to maintain a consistent level of quality care in a NICU. Systems, processes, communication methods and documentation need to be designed for efficiency and effectiveness. Rather than duplicative processes that serve as a safety net, a coherent approach may help avert the type of result seen in the Alabama case.

The documentation system notwithstanding, there is another troubling aspect to the case. This was a NICU. This was a 23-week gestation infant who weighed just a little more than 12 ounces. These factors place the neonate at risk for ROP. That being said, what happened to situational awareness and critical thinking? Instead of simply recording three times in a matter of a few days that the ROP examination was overdue, why was it that the nurse practitioners did not speak up? A hard copy record does not have the inherent ability to set off an alarm, trigger tool or warning as does a well-designed electronic medical record. Further, the electronic systems work as well as the people who design them and use them.

The Alabama case serves as a reminder that efficient and effective electronic record systems can help avoid patients slipping through necessary steps in the care-giving process. It also reinforces the need to encourage care providers to use these tools not only for the delivery of clinical services, but as advocates for patient care.

**Practical Strategies for Enhancing Electronic Record Communication:**

There are a number of practical considerations for transforming a staid electronic medical or health record into a communicator of information for quality care. These include the following:

1. **Ask the End Users to Set Expectations for System Use.**
   Go to front line personnel for their input in the design of electronic medical and health record systems. Recognizing that healthcare facilities need to achieve internal consistency, set reasonable expectations about unit-specific screens or trigger tools that will facilitate quality care.
2. **Work with Vendors to Make Electronic Records a Patient Safety Net in Provider Communication.**
   Develop a collaborative relationship with medical and health record vendors, making certain that the build-out of the system meets the needs of the organization and high-risk departments or units, such as the NICU. Reinforce the needs of clinical personnel to use the electronic record as a patient safety net in provider communication.

3. **Pilot Electronic Record Designs in Realistic Situations.**
   Make effective use of resources allocated in the design of an EMR or EHR. Along the way, stress test key components to determine if the design matches realistic situations that will be encountered in the facility. Refine components that do not meet expectation.

4. **Use Simulation Training to Achieve End User Competence with Electronic Record Systems.**
   Provide all clinical care providers and administrative personnel with simulation training as part of the roll out of the EMR or EHR. Consider use of triggers, warnings, and alarms in simulation training. Think about demonstrated competencies evaluation, and identifying through the simulation areas in which there is need to refine the electronic records or do more didactic training.

5. **Use Performance Improvement Methods to Identify Non-Adherence.**
   Utilize the inherent performance improvement analytic ability of EMR and EHR software to identify non-adherent use of the system. Recognize that non-adherence may stem from providers not understanding the system, human factors or behavioral issues. [See Sample Tool]

6. **Address Non-Adherent Use of the Electronic Record System.**
   Address non-adherence with appropriate individuals. Enlist the assistance of clinical leadership to help rectify non-compliant behaviors, stressing the importance of eliminating variance to maintain effective communication through the electronic record.

7. **Emphasize the Need to Use Critical Thinking and Situational Awareness Skills.**
   Throughout the process of end user engagement in design, and in simulation training, stress the importance of front line care providers exercising critical thinking and situation awareness. Reinforce that it is not enough to document a missing evaluation or test. Rather, encourage care providers to use the electronic record information as a springboard to address gaps in continuity of care or questionable service delivery.
Conclusion.

The Alabama case provides a good illustration of why healthcare needs to implement practical yet effective electronic medical and health record systems. Eliminating reliance on care providers and ward clerks to schedule on-going surveillance testing of at-risk patients may not seem like an important reason to move to electronic records. However, the Alabama case may change such attitudes.

Healthcare facilities are becoming more complex. The Alabama case exemplifies that point. Ten or fifteen years ago a 23-week gestation neonate may not have survived. With the technology and pharmaceuticals at the disposal of highly motivated and well-trained care providers, the envelope of possibility will continue to expand. To achieve future success it is important to develop the electronic record and communication tools for this purpose. Reinforced with good training and the confidence to exert critical thinking and situational awareness, there may be less opportunity for the type of outcome found in the Alabama ruling.
Sample Tool
Identifying Electronic Record Performance Improvement Opportunities

There are a number of indicators that may be used to help identify non-adherence in the use of an electronic medical or health record. The following are sample indicators that may be used for this purpose. The intent is not to find fault, but rather, to identify ways in which policy and procedure adherence can be achieved by learning from utilization patterns. Once performance opportunities are noted, prompt follow-up is warranted. The follow-up might include mandatory in-service, further simulation training, or redesign of a component of the EHR or EMR.

- Patient demographic information incomplete
- Present on admission clinical data not recorded
- Present on admission clinical data not signed by physician
- Falls risk profile not entered
- Elopement risk not entered
- Psycho-social profile incomplete
- Patient visitation request not recorded
- Consent not entered
- Consent incomplete
- Advance directive not entered
- H&P not complete
- H&P not completed within timeframe threshold
- Infection prevention measures not documented for identified patient
- Inaccurate entries
- Inconsistent entry information
- Late entries
- Consistent out-of-sequence entries
- Tests not ordered
- Tests ordered but not scheduled
- Tests not completed
- Tests completed beyond time threshold
- Required fields not completed
- Use of "cut and paste" rather than individualized entries
- Incorrect entry not corrected consistent with policy and procedure
- Absence of electronic signature
- Lack of individualized entry
- Diet/nutrition orders incomplete
- Medication order entry incomplete
- Medication order not checked against allergy/sensitivity list
- Medication order not checked against drug/drug list
- Medication order not checked against food/drug list
- Vaccination history incomplete
- Discharge plan incomplete
- Discharge process not documented
References

1. A. B. v. L. R., 9 So.3d 803 (Ala. 2011).
2. Id., at 804.
3. Id.
4. Id. at 805.
5. Id.
6. Id.
7. Id.
8. Id.
9. Id.
10. Id.
11. Id. at 806.
12. Id.
13. Id.
14. Id at 812.
15. Id.
16. Id.
17. Id. at 813.
18. Id.
19. Id., at 821-822.
20. Id. at 827.
21. Id at 823.
22. Id., at 823.
23. Id.
24. Id., at 809.
25. Id. at 806.