cocitnews

The Council on Clinical Information Technology

Volume 4, Number 1, Spring 2006

From the Chairperson

By Mark M. Simonian, MD, FAAP
Chairperson, Council on Clinical Information Technology

Inside this issue

Where We Came From; Where Are We Going?

I find it fascinating to look at our old newsletters and compare how the Council on Clinical Information Technology (COCIT) has grown from the Section on Computers and Other Technologies (SCOT) since December 1993.

There were 288 members in 1993 and we have doubled in size in 2006. We love this increase in membership numbers. With more members, we may see better leverage in our quest to share how technology can improve many parts of a pediatric practice.

The educational mission of COCIT has evolved too, with new programs and new ways to share that information. Original programs attracted rave reviews, like the Computer Lab, which demonstrated technology to American Academy of Pediatrics (AAP) members in the exhibit hall at the National Conference & Exhibition (NCE). It was run by Don Lighter, MD, then hosting tutorials for wandering AAP members on the floor of the exhibit hall at the National Conference and Exhibit (NCE). According to the newsletter, 10 to 15 people an hour passed through the booth to hear the demonstrations. That method to share information at the NCE had remained the same until 2005. Now Lewis Wasserman, MD, at the new Technology Learning Center (TLC) hosts a room full of people either sitting at workstations getting instruction or surfing the Web. In another part of the new larger room, 75 to 100 people are watching a PowerPoint presentation or observing the live Pediatric Documentation Challenge™ with 10 different vendors trying to prove that they can provide clinical documentation for the pediatric patient.

In 1993, visitors sometimes had to compete for attention with neighboring booths and the din of a convention floor's large hall. With the remarkable growth of the TLC and the success at the 2005 NCE, there are expectations of 2 separate adjoining rooms. My only regret is this experience can't be better shared with those AAP members who can't travel to the NCE each year. With the expanding features offered through our Web site (www.aapcocit.org), we will create more online tools and applications, where members can see technology information and demonstrations.

An example of one new feature is the electronic medical record (EMR) review Web site (www.aapcocit.org/emr), where EMR users share their experiences, and potential buyers can compare features they

wish to have in their future EMR. This was a good first effort, yet we hope to improve it by listening to suggestions of users and combine resources from the American Academy of Family Physicians (AAFP) or Healthcare Information and Management Systems Society (HIMSS).

In those 12-year-old newsletters, there was little talk of all the partnerships that members of COCIT have been involved with in 2005 and 2006. This has dominated the volunteer time of your expanded Executive Committee. Council on Clinical Information Technology members participate in outside associations and committees besides their own responsibilities at their practices, hospitals, or communities. I expect you will read about many of those efforts in the pages of this issue.

In 1993, Jerold Aronson, MD, provided a draft of a 5-Year Strategic Plan for SCOT. In the spring of 2005, the current Executive Committee also spent time developing a 2-Year Strategic Plan, which we will share through our Web site and e-mail. Jerry lists so many of the same goals we have been working on continuously today. I am happy to say we have surpassed most of those, like increased membership, representation at many technology-related professional organizations, articles in the *AAP News*, abstract presentation development, and even the evolution of the newsletter, which is now available electronically and expanded in size with more articles and contributors. He even mentioned a name change that has finally evolved to Council on Clinical Information Technology – Jerry wanted Section on Information Management.

Many things have changed since 1993. The Council on Clinical Information Technology is not satisfied though. Expect new things coming your way in 2006. I think even Jerry Aronson would be happy with the progress and services members are getting for their $25 a year.

Where do you see us heading? I would be happy to hear your ideas and suggestions. You can reach me at msimonian@aap.net or 559/325-6850.

Editor's Column

By David C. Stockwell, MD
Editor, cocitnews

One of the frequent debates (at least in my mind) about our newsletter is how deep to dive into technical informatics issues with each edition—ankle-deep, knee-deep, or submerged. As our Chairperson, Mark Simonian, MD, recently wrote on the Council on Clinical Information Technology (COCIT) e-mail list, we need to stay current on technical issues as well. In response to a query about how much time COCIT should spend discussing informatics (specifically standards), he responded, "In order for EMRs (electronic medical records) to talk to different health systems and software, and provide a recognized type of health information, the work needs to be done to set standards. For all systems to be truly useful, they must share information beyond the individual practice or work environment. Long-term usability will only be achieved with the kind of high-level work done by many of the members of COCIT."

Like any large group, we are a diverse group. We have the academically trained pediatric informaticians with an interest and great involvement in our efforts. Also, there are COCIT members who are general pediatricians without any informatics training looking for recommendations on evaluating, implementing, and maintaining an EMR or other electronic solution to daily practice. This newsletter can offer a great service by giving information on how pediatricians have endured implementation of an EMR or other tales from the battlefield.

It has been my approach to try and give a bit of both educational informatics articles as well as experience articles to help those who are considering implementation of a vendor's EMR product. Any thoughts on this are welcome, and please consider e-mailing me if you would like (**dstockwe@cnmc.org**). I hope that you enjoy this edition, as I think there are excellent examples of both **technical and experience** articles. Thank you to all of the authors.

Content Submission

Would you like to contribute to this newsletter? Articles should be approximately 500 to 1,000 words in length. Submit articles to David C. Stockwell, MD, newsletter editor, at dstockwe@cnmc.org.

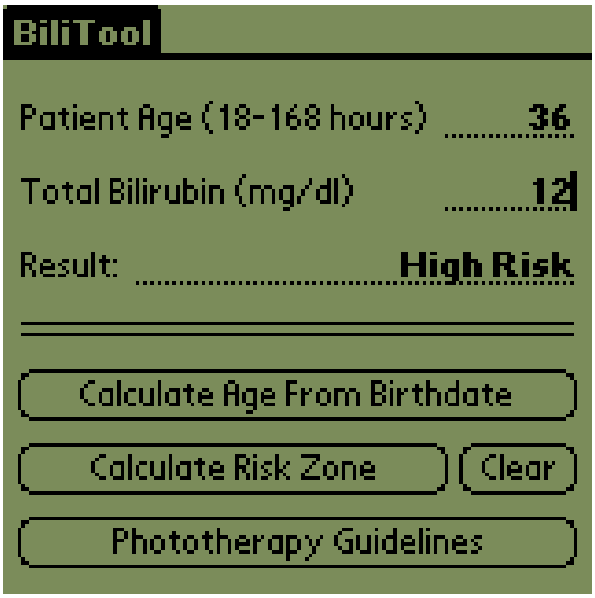
Watch the Council on Clinical information Technology (COCIT) Web site at www.aapcocot.org for information on submission deadlines for the Fall 2006 issue.

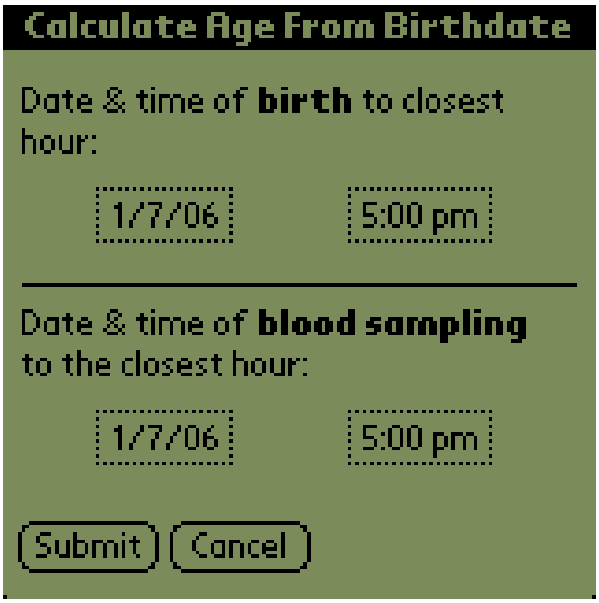
BiliTool – A Web-based Bilirubin Management Guide


By Chris Longhurst, MD, FAAP, and COCIT Member (left);
Stuart Turner, DVM, MS; and
Tony Burgos, MD, MPH (right)

As a follow-up to our previous release of BiliTool, a Web-based bilirubin management guide mentioned in *cocitnews* (Volume 3, No 2, Fall 2005), we are now happy to announce a version based on the highly used Palm Operating System (OS).

This Palm OS version of BiliTool employs the same functionality that was available on the Web version, but allows for handheld portability. BiliTool is an electronic version of the hour-specific nomograms for both hyperbilirubinemia risk stratification and the phototherapy guidelines for the management of hyperbilirubinemia in the newborn at 35 or more weeks of gestation. Based on the time of blood draw in relation to the hour of life, BiliTool will stratify the results into a risk zone and (AAP) phototherapy recommendation. This new Palm-based version is available for free download at http://www.bilitool.org.





Designate Your Friends of Children Fund Contribution for COCIT Activities!

Did you know that you can designate your tax-deductible Friends of Children Fund contribution to specific programs or even a Section or Council? You can donate online at https://www.aap.org/sforms/fcfform.htm. Toward the bottom of the form, where it says, "Please apply my gift to:" select "a program of my choice" and type "COCIT" in the text box. Donations received in this manner will supplement your COCIT dues and allow COCIT to continue ongoing programs or launch new programs. We appreciate your support!

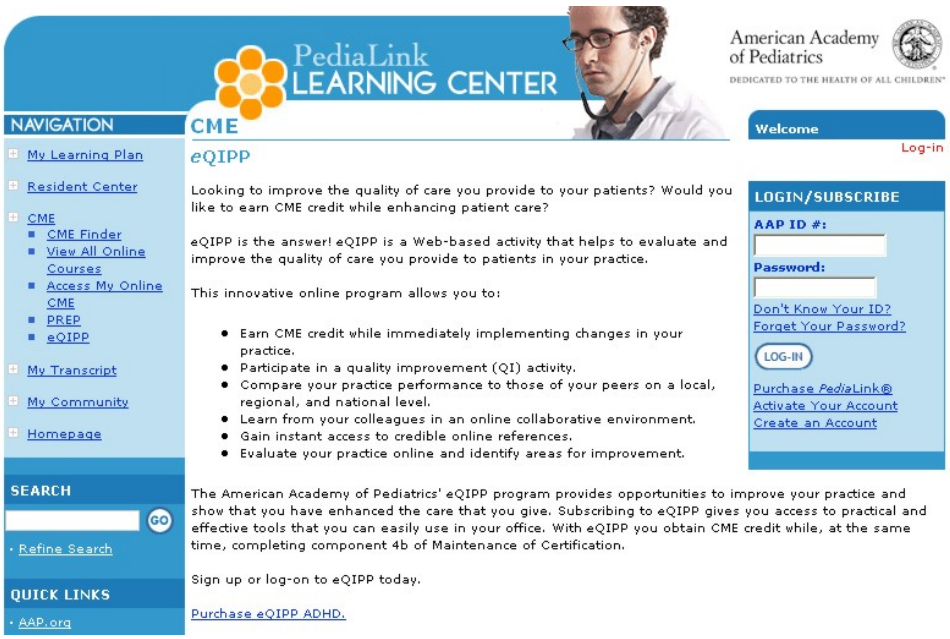
*e*QIPP Moves Forward to Develop Subspecialty Modules

By Thaddeus Anderson,
Manager, Quality Improvement Programs,
AAP Division of E-Learning

With the release of its next module, the American Academy of Pediatrics (AAP) Education in Quality Improvement for Pediatric Practice™, also known as "*e*QIPP," will launch a new infrastructure, which will allow pediatric subspecialties to participate in a program that meets the American Board of Pediatrics (ABP) Program for Maintenance of Certification in Pediatric Subspecialties® (PMCP-S®).

Constructing this new infrastructure will allow educational tracks to occur under one larger clinical topic area. *e*QIPP's initial activity to use this functionality will be a module on nutritional assessment based on the healthy and chronically ill child. In this new version, participants would declare their subspecialty at the point of registration. From there, the *e*QIPP system will seamlessly place the learner into an educational track, germane to his or her subspecialty. Each participant will be provided with general clinical content information, subspecialty case-based exercises, along with useful resources. The new design will also allow subspecialty pediatricians to measure their current practice, identify any existing gaps, and implement quality improvement tools and strategies to help narrow practice gaps. Finally, participants will be able to remeasure their practice to demonstrate and document improvements in care.

The *e*QIPP Planning Group and staff are very excited about the next version of *e*QIPP. The *e*QIPP nutritional assessment module is planned for launch in fall of 2006. For more information on the ABP PMCP-S, log on to www.abp.org. For more information on *e*QIPP, log on to www.eqipp.org or contact one of the *e*QIPP staff members



Do We Know How to Find You?

To ensure that your contact information is kept up-to-date (so your colleagues can find you), please take the time to visit the AAP Member Center Web site at www.aap.org/moc. After logging in with your AAP ID number and password, click on "Update My Personal Profile" on the right-hand side of the screen. If you prefer to contact us by phone, you can do this by calling 866/THE-AAP1 and providing one of the AAP customer service representatives with your updated address information.

Which "Standards" Are We Discussing?

By Willa H. Drummond, MD, MS, FAAP
Executive Committee Member, Council on Clinical Information Technology
Professor of Pediatrics and Physiology, University of Florida College of Medicine

Introduction

Recent government mandates to improve clinical health care by using information technology stimulated interest in rapid adoption of computerized technologies. The envisioned end-to-end integrated clinical functionality requires that health care computer systems adhere to "standards." Standards can mean software formats for computer-to-computer communication, computerized semantic maps of medical terminology, organized health care data element templates, or generic management quality. Conceptual confusion and communication failures across the involved professions, often unrecognized, are nearly universal. Each of the professionals (electrical engineers, computer scientists, programmers, physicians, nurses, health administrators, government and funding bureaucrats, quality assurance specialists, and lawyers) uses "technical jargon" words that reference specific and unique concepts and mental models of reality. The word "standards" exists in each profession's technical vocabulary. But the generic word "standards" means something very different to the different experts.

Unfortunately, nearly everybody involved in the computerization effort struggles with semantic confusion caused by the use of the word "standards" to convey many different meanings across the technical jargons and professional vocabularies of the involved disciplines. What are standards?

The Merriam-Webster Online Dictionary has many definitions for "standard." Noncomputer people generally think standards are *"**3 :** something established by authority, custom, or general consent as a model or example : and; **4 :** something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality."*[1] These definitions relate poorly to the technical meanings of standards across the various professionals' mental concept maps. For example, when a physician and a computer scientist discuss health care standards, the physician often thinks of standards as a quality indicator, as in "standard of practice," while the computer scientist knows that standards are precise sets of nationally or internationally agreed-upon software programming structures that enable different computer systems to communicate with each other for data exchange. In a different scenario, an electrical engineering contractor, discussing networking standards with a nurse-charting system's implementation administrator, is probably referring to the Institute of Electrical and Electronics Engineers (IEEE) Computer Society "stack" of "protocols," which defines electrons' flow across wires and through switches, and organizes how the Web works.[2] Simultaneously, the nurse administrator may be thinking the conversation concerns the Health Insurance Portability and Accountability Act of 1996 (HIPAA) security issues.[3,4]

Backgrounding the Situation

An "information system" is some type of system that manages some form of information. "Clinical information systems" are information systems that provide access to, and methods for, recording and managing clinical data. Examples include paper and electronic flow sheets, physician and nurse daily notes, orders, prescriptions, radiology and laboratory orders and results, history and physical reports, and summaries. Computerized health information systems must be linked for full clinical utility. Commercial and locally built order entry, note generating and imaging systems, and local and national laboratory and pharmacy systems, etc, must also archive clinical data in the enterprise's central information system. Ensuring accurate communication between different types and ages of computer systems is challenging. Are standard codes used in one system the same as in a different vendor's system? Do the data have a standard structure? What standards are needed to integrate all the information? Which standards protect privacy and security? Success of health care data integration ultimately depends on the global of standards.

Intercommunication Standards and HIPAA

The Health Insurance Portability and Accountability Act of 1996 (PL 104-191, Title II, Subtitle F) is the largest piece of health care legislation in history. HIPAA, as passed, had stated goals: (1) to improve access to health insurance; (2) to reduce fraud and abuse; and (3) to increase the efficiency and effectiveness of the health care system.[5]

The Administrative Simplifications section of HIPAA mandated use of open "computer communication standards" for accessing, transmitting, and storing electronic medical data. These mandates were coupled with federal laws designed to ensure the privacy and security of personally identifiable patient information that is processed by computers ("security standards").

The HIPAA legislation mandated that specific clinical vocabulary code sets and computer communication

strategies, both called "standards," be decided at a national level and implemented by specific dates, now all past. The technical work for completing health care computer communication standards is still in progress. No 1 standard was, or is, completely finished. Voluntary, underfunded, standards-setting groups meet regularly. New computerized clinical systems will be required to be HIPAA compliant. All aspects of HIPAA compliance rules are an enormous work in progress at the time of this writing (winter 2006).

HIPAA Mandates: Codes and Standards

Before HIPAA, more than 400 different formats for electronic transactions existed for computer communications between providers and health plans.[6,7] HIPAA reduced the number to electronic transaction/ computer communication standards for health care administrative, and financial communications and 8 clinical code sets. Open Standards in HIPAA means a computer communication standard. The ASC_X12N and HL7 (Health Level 7) computer communication standards[8,9] provide uniform programming structures to organize different vendors' clinical, laboratory, or hospital information systems software for meaningful medical, administrative, and financial information exchange. These "computer communication standards" are software templates that have a specific place assignment where programmers insert needed information, such as a patient identifier, whether they are writing a laboratory system, a clinical system, or an administrative system.

A "standard code set" is an organized, agreed-upon system of codes for listing data elements, such terms, medical diagnosis codes and medical procedure codes. "Standard" HIPAA-defined codes include hundreds of thousands of items using precisely formatted numbers and letters that match some clinical concept, such as a diagnosis, medication, or treatment.[10,11] Code sets now defined as standard (nontechnical use of word) under the HIPAA legislation are

1. *ICD-9-CM (International Classification of Diseases, 9th or 10th Edition, Clinical Modification),* used for diagnoses and hospital patient services codes.

2. *HCPCS (Health Care Financing Administration Common Procedural Coding Systems),* used for physician and institutional services to report supplies, devices, durable medical equipment, and generic drugs under Medicare plans.[10,11]

3. *CPT (Current Procedural Terminology),* used to code physician services.

4. *CDT (Current Dental Terminology),* used to code dental services.

5. *NDC (National Drug Code),* used only for medications and drug systems for retail pharmacies.[10,11]

Computer communication "standards" defined under HIPAA are:

1. ASC_X12N, Version 4010 (Accredited Standards Committee, 2005) for health claims, attachments and encounters, payment and remittance advice, claim status, eligibility, referrals, health care enrollment, health plan premium payments, and first report of injury.[8]

2. HL7 (Health Level 7) is named for the level of the conceptual "IEEE Stack,"[2] where a software application's structure is defined. The HL7 "standard" defines a specific computer reading structure (similar to a blank paper template) where programmers insert a "coded" patient identifier, laboratory order, laboratory result, unit of measure, local name and standard name of laboratory request, etc.[12]

Problems quickly arose with attempts to apply administrative "code sets" (*CPT* and *ICD*-9) to clinical computerized medical records, because the approved administrative code sets are inadequate for full clinical documentation, especially in pediatrics and neonatology. Administrative classification systems, such as *ICD-9* and *CPT*, lose more than half the underlying, detailed clinical information because they were developed for billing, not for managing detailed clinical data in patient care venues.[13]

HIPAA-mandated clinical code sets (or "standard" vocabularies) in use, or nearly ready for release, are

1. LOINC (Logical Identifier Names and Codes) is used for very precise laboratory and clinical messages, like "fasting whole blood glucose" or "sitting systolic blood pressure, upper extremity."[12]

2. SNOMED (Systematized Nomenclature of Medicine), is used for very specific diagnostic messaging, such as "ruptured appendix with peritonitis."[14]

3. NIC (Nursing Intervention Classification), NOC (Nursing Outcome Classification), and NANDA (North America Nursing Diagnosis Association) are used for nursing diagnoses, treatments, and outcomes recording. The code sets have conceptual redundancy and problems with older computer software architecture. A large group of nursing informaticists is working in the "Vocabulary Unification Summit" to unify and modernize the code sets into a single, well-designed code set for computerizing nursing processes.[15] In late 2005, this effort is incomplete and being unified within SNOMED.[14]

In early 2006, the "incomplete" situation is being addressed as rapidly as possible by standards-setting groups that are working to finalize "standard" clinical vocabularies (LOINC, SNOMED), nursing code sets,[14,15] medical document formats, and data element coordination.[12,14,16] So many standards development efforts are underway, by so many different organizations, that a national Office of the National Coordinator for Health Information Technology (ONCHIT)[17] was established in late 2004.[18,19]

Non-HIPAA Standards

Several de facto standards used in the following health care were not defined under HIPAA. These include the following:

1. Open Database Connectivity (ODBC) is a standardized API (Application Programming Interface) that

is a set of programs based on the SQL (structured query language) Access Group's (SAG) function set for retrieving data from a SQL database system. ODBC provides very useful access to data in nearly all modern database management systems. ODBC is the most widely supported portable database access method available. But, while its name begins with "open," implying that it is not tied to a single vendor, in fact, ODBC is controlled by Microsoft. Currently, ODBC is the de facto standard for managing health care database queries, and is generally considered to be a database management standard.

2. Digital Image Communication (DICOM) is an international information technology computer communication standard that was developed by radiologists in 1993 for electronic transfer of radiologic image files. The DICOM standard is copyrighted to the National Electrical Manufacturers Association, and maintained by the DICOM standards working group.[20] DICOM is also an International Standards Organization (ISO) standard. The DICOM committee actively works with the HL7 standard group, and uses relevant parts of other standards, such as LOINC, SNOMED, TCP/IP (internet protocol),[2] and JPEG.

3. Extensible Markup Language (XML) is a structured computer format created to store and send communications, independent of operating systems and hardware. Thus, XML is an important tool for transferring data across different computer systems. The standard is maintained by the World Wide Web Consortium (W3C),[21] and is especially useful for moving and archiving text-based information across computer systems.[22] The HL7 standard group and the W3C actively work together.

HIPAA Mandates: Privacy Standards

Before HIPAA, legal protection of patients' privacy and confidentiality was fragmented across state, federal, and commercial insurance systems, leaving many gaps in patient privacy.[23,24] Evolving, implementing, and testing patient privacy rules under HIPAA law is an ongoing process. Appreciation of unintended consequences and the law are also evolving; early court cases have pointed out unresolved issues, inconsistencies, and oversights in the original law.[25]

HIPAA Mandates: Security Standards

Security regulations ("standards") under HIPAA refer to technical protection of computerized personal health information (PHI) that is transmitted electronically by provider and payer organizations. Security standards have 3 categories: (1 administrative security, eg, access controls, audit logs, and employee training; (2 network or technical security mechanisms eg, authenticating users and monitoring user's actions; and (3 physical security, which addresses the actual computer equipment and buildings that house the hardware.[4]

For clinical users, the HIPAA law and its mandated standards have created a very tenuous balance between security and usability.[3] In practice, legitimate clinical users experience time-consuming problems with passwords, frustrating limitations on the retrieval of records, timeout frustrations with computer terminals, and long access delays caused by need for security logs that are poorly integrated and slow health care enterprise information systems. The new standard security policies and procedures can limit information-sharing capabilities in ways that may adversely impact patient care when applied rigorously by hospital IT departments not focused on clinical usability. Hence, discussion of this set of standards is often legally and practically quite contentious, especially when patients call lawyers and/or IT administrators attempt to sanction clinical care providers for usability-based "workarounds."

Think about which standards apply when, for example, laboratory report access is closed at patient discharge, handicapping caregivers who must call parents about late-coming important results (eg, positive cultures, state screen results, bilirubin). If there is no parallel paper system, the clinician may never see critical results. The clinician also may be unable to access the parents' (or patient's) contact information; names have changed. Risk for errors of oversight, omission, and lack of timely communication with parents/patients can be drastically increased when security standards are applied too stringently.

So, which standards are we talking about now?[26] Confusing? You bet.

Necessary? Well, is the automobile necessary? Gas stations? Who "standardized" the tire, the gas hose nozzle, and the road size? THINK.

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Helpful Web Sites

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2005 Technology Learning Center

The Technology Learning Center (TLC) at the 2005 American Academy of Pediatrics National Conference & Exhibition was a tremendous success, with more than 550 attendees throughout the event!

The Council on Clinical Information Technology gratefully acknowledges support for the 2005 TLC as follows:

An unrestricted educational grant from **NextGen Healthcare Information Systems.**

In-kind donations of demonstration equipment:
Bose Corporation
JMJ
Kodak
NextGen
Up To Date
WelchAllyn
WiredRed Software
Virtual Training Co USA

COCIT Chairperson Mark M. Simonian, MD, FAAP, presents the 2005 Byron Oberst Award to S. Andrew Spooner, MD, MS, FAAP.

COCIT Education Chairperson Christoph U. Lehmann, MD, FAAP, presents the 2005 Best Paper Award to David H. Rich, MD, FAAP.

EXECUTIVE SUMMARY
COUNCIL ON CLINICAL INFORMATION TECHNOLOGY
EXECUTIVE COMMITTEE

Conference Call
September 20, 2005 and
Grand Hyatt–Washington, DC
October 10, 2005

The Council on Clinical Information Technology (COCIT) Executive Committee met via conference call on September 20, 2005, and in Washington, DC, on October 10, 2005. The Executive Committee discussed the following items:

- The COCIT core and non-core budgets were reviewed.
- COCIT membership was discussed, and it was noted that membership has grown 15% to 20% in recent years. Future recruitment efforts will be aimed at young physicians and potential affiliate members.
- The recommendations and resolutions from the 2005 Annual Leadership Forum were discussed. Staff will work with the Executive Committee to submit responses where requested.
- Open Executive Committee positions for the 2006 election were discussed. A Nominations Committee will be appointed to select candidates.
- The Executive Committee was reminded of the change in the URL of the COCIT Web site to www.aapcocit.org.
- The report from the Policy Committee noted progress toward revising the statement on electronic health records (EHRs) and the development of a new policy statement and technical report on e-prescribing.
- The report from the Education Committee included plans for the 2006 Council Program for Council Members (H Program), the scientific abstract session, and the Technology Learning Center. Some changes will be made to the process of selecting the Best Paper Award winner.
- The Pediatric Documentation Challenge™ was discussed, as well as the potential for developing an "EHR Boot Camp" as an add-on to the existing Coding Workshops.
- Progress toward the Speaker's Kit and Toolkit on Electronic Health Records was discussed.
- Some suggestions were made for improving the COCIT Web site and aligning it more closely with the American Academy of Pediatrics (AAP) Web site.
- A discussion was held on collaborating with the American Academy of Family Physicians on the electronic medical record (EMR) Review Web site.

A report was provided on the work of the Pediatric Steering Group, which includes the AAP, the American Board of Pediatrics, the National Association of Children's

Hospitals and Related Institutions, and the Child Health Corporation of America.

- The Executive Committee heard reports from liaisons to the
  - HL7 Pediatric Data Standards Special Interest Group
  - Continuity of Care Record
  - eHealth Initiative
  - Certification Commission on Health Information Technology
  - Physicians Electronic Health Record Coalition
  - American Academy of Pediatrics Section on Residents
  - American Academy of Family Physicians
- A report was provided on recent efforts to reach out to AAP Chapter Presidents.

The following recommendation was made:

RECOMMENDATION: That the AAP establish a formal process for obtaining AAP member input into the redesign of the AAP Member Center and that usability testing be conducted with AAP members before the redesigned site is launched.

The COCIT Executive Committee will next meet in Spring 2006 (dates and location to be determined).

For a complete set of minutes or further information on specific items, please contact Rebecca Marshall, Health Policy Analyst, at 800/433-9016, ext 4089, or bmarshall@aap.org.

Health Information Technology Legislative Update

By the American Academy of Pediatrics Division of Pediatric Practice

A plethora of health information technology (HIT) legislation was proposed in Congress in 2005. Many of the bills contained similar provisions, and some were eventually combined. To date, none of these bills have passed. However, the legislative process is generally very lengthy, and it can often take months, if not years, for a bill to become law. Both the House and Senate have held hearings and seen multiple bills introduced in the past year, and the Senate has passed a major package, S 1418, the Wired for Health Care Quality Act, sponsored by Senator Mike Enzi (R-WY).

In addition, David Brailer, MD, PhD, national coordinator for Health Information Technology, testified before a Congressional committee earlier in 2005 and urged the committee not to rush to pass legislation, because he feared it might actually interfere with a lot of the progress that was happening already. For example, standards development and other HIT organizations already making progress might delay or postpone additional work until Congress takes action on a particular issue. Instead, Dr Brailer has urged Congress to provide adequate funding for his office to continue to support and encourage these efforts. (S1814 includes a provision that establishes, in statute, the Office of the National Coordinator for Health Information Technology [ONCHIT], which currently exists by fiat of the Secretary of Health and Human Services and Executive Order of the President.)

The Health Information and Management Systems Society (HIMSS) has set up a Web page with information on the various bills proposed in Congress in 2005, with comparisons of the bills' components. The page can be found at http://www.himss.org/content/files/legislation_crosswalk_109th_congress.doc.

The American Academy of Pediatrics (AAP) Department of Federal Affairs monitors ongoing HIT legislation. In 2005, the Council on Clinical Information Technology worked with staff in the AAP Washington, DC, office to develop a letter outlining the AAP priorities for HIT in pediatrics. The letter, which is sent to all sponsors of such legislation, urges support for the following provisions:

- Financial incentives, including increased reimbursement (through both Medicare and Medicaid equally) and low-interest loans for adoption of HIT, and grants for the development and implementation of regional health information organizations (RHIOs)
- Bonuses and incentives for physicians that adopt HIT, as opposed to penalties for those who do not adopt HIT
- Rapid adoption of pediatric-friendly national standards that support interoperability of clinical information technology
- Loosening of restrictions imposed by the Stark and Anti-Kickback laws to encourage the development of local health networks and Regional Health Information Organizations.

Course Review: BioMedical Informatics Fellowship

By Aniruddha S. Vidwans, MD, DCH, FAAP
Member, Council on Clinical Information Technology

Course: This past fall, I attended the BioMedical Informatics (BMI) fellowship, sponsored by the National Library of Medicine (NLM) and the Marine Biological Laboratory (MBL). This week-long course is conducted twice a year at the picturesque setting of the MBL campus in Cape Cod, MA, where 30 candidates are selected from hundreds of applicants to attend the course. The main selection criterion is the perceived ability of a candidate to become the "agent of change" at his or her institution; that is, his or her ability to steer the course of BMI in a positive direction. Fellowship covers all expenses, including travel expenses and room and board. Application process involves writing a short essay about your interests related to BMI and how you think this course will help you in furthering your contribution to BMI in your institution. Details of the program and application process can be found at the following address: http://courses.mbl.edu/mi/index.html.

Location: Applicants are provided with dorm-style rooms in Swope Center with double occupancy. Three meals a day are provided free of charge, and the warning (given to us by James Cimino, MD, the course director) that you will gain 5 pounds in 1 week should be taken seriously since the food is delicious, plentiful, and served

in a cafeteria with a beautiful view of the Eel pond. The conference venue is a converted yacht club on the shore of the Great Harbor with breathtaking view of Martha's Vineyard and Nantucket. Each participant is assigned a laptop computer with Internet connection, and all course material is downloaded from the MBL Web site. In fact, many of the presenters were putting finishing touches to their slides minutes before presentation.

Attendees: The course I attended had 30 participants from diverse disciplines, with the largest numbers from librarians and physicians (8, including 3 pediatricians). Participants also came from diverse occupational settings (university, government, industry), giving us an opportunity to interact across multiple dimensions. The wide range of computer skills among the participants (surprisingly) wasn't a hindrance since the staff from the NLM and MBL were extremely helpful and technically savvy.

Teachers: The course director was Dr Cimino from Columbia University, who did a tremendous job as a coordinator and as a teacher. Faculties for the course mostly derived from Columbia and Vanderbilt universities and are nationally known figures, some of whom have seen and participated in the birth and development of the field of BMI. All the presenters were easily approachable and more than willing to answer questions.

Course content: The course schedule of the session I attended is available at http://courses.mbl.edu/mi/2005/schedule_fall.html. Through a combination of lectures and hands-on computer exercises, we were introduced to the conceptual and technical components of medical informatics. The former included principles of database design, human-computer interfaces, medical vocabularies and coding systems, medical decision-analysis methods, evaluation methods in medical informatics, and strategies for designing and managing clinical information systems. The technical components included use of the Internet for biomedical applications, current and emerging wide area network technologies, use of literature and molecular sequence databases, enterprise-wide clinical data systems, and systems for telemedicine. While this may sound like a daunting curriculum for a 6-day course, lectures and hands-on activities were cleverly planned so that we didn't feel bogged down by information overload.

In the very first lecture of the course we tried to answer the question, "what is biomedical informatics?" At the end of an hour, it was evident that each of us had been exposed to only a portion of what really comprises BMI, a case of "elephant and the blind men." The rest of the course gave us a taste of different disciplines of BMI and exceeded all my expectations. Although this was a survey course ("big picture"), there was something to be learned from each talk.

My main interest was effective integration of electronic medical record in a large hospital system and this topic was covered in detail. The lecture by Jim Jirjis, MD, "Vanderbilt Informatics Implementation Overview and Lessons Learned," was especially useful since he spoke about practical issues that arise during implementation of an electronic medical record (EMR). He spoke in detail about technical as well as human factors that hinder efficient use of an informatics system. Another interesting topic was decision support. Edward Shortliffe, MD, elaborated on statistics and probability as the backbone of decision making, which was followed by a lecture by Trent Rosenbloom, MD, which dealt with inserting such a decision support into clinical systems. There was also a fascinating talk by Peter Yellowlees, MD, who started using telemedicine in his practice in a remote part Australia and has since further perfected the system in his practice in California.

"lectures and hands-on activities were cleverly planned so that we didn't feel bogged down"

Having Internet access on our laptops was especially useful during hands-on sessions, since we could navigate Web sites in parallel with the instructor. For example, in the lecture, "PubMed, LinkOut, Gateway, and more…," by Ms Annette Nahin of NLM, we could follow along with her while she highlighted lesser-known features and databases available via NLM Web site. Three evenings were spent doing practical activities such as creating a database, Web page, and building a Web interface for a database. Although we were really exhausted after 10 hours of lectures during the day, these classes were thoroughly enjoyable mainly due to the wonderful teaching style of David Remsen, resident researcher at MBL. The MBL faculty also gave us a tour of the library and the MBL facility. Friday evening was kept free for touristy activities. Some of the fellows visited Martha's Vineyard while others took long walks along shores of the Great Harbor.

In summary, I wholeheartedly recommend this conference to all members of the Council on Clinical Information Technology. I assure you that you will have an enjoyable and instructive experience.

Electronic Medical Record Systems: A Pediatrician/Computer Geek's View

By Vinay N. Reddy, MD, FAAP
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This article is a look at several different electronic medical record (EMR) systems currently on the market. Some of the systems I discuss were on display at the 2005 American Academy of Pediatrics National Conference & Exhibition (NCE). I also have drawn on vendor literature and on comments posted on the Council on Clinical Information Technology (COCIT) Web site by users rating the systems they use, and, in one case, on my experience as a user of the system.

My perspective is different from most pediatricians. I am also an engineer and experienced programmer who has taught computer science. The computer science courses I taught all involved writing interactive software –mostly (small models of) large database managers, which is what an EMR is. We graded students on how well their programs worked, and how easy they were to use *for a user who is not a geek*. Ease of use is as important as function – as long as the computer does what we want and need, most of us pediatricians don't really care how it's done. Human-factor specialists advocate human-centered design, which has 3 goals: to enhance human abilities, overcome human limitations, and foster user acceptance.[1] These are easiest to accomplish if users are involved in the design from the outset, and much harder if the end user is ignored during design. Most systems programmers are not pediatricians and have no idea what it's like to see 40+ patients, some screaming, in a 7-8-hour working day; conversely, most pediatricians are not programmers and do not know what is and is not possible for a computer to do.

Aspects of EMR systems that I look at closely include the following:

- An easy-to-use and easy-to-learn interface, which should be as much like any other computer application as possible. This makes learning the system much easier for users. Most EMRs I have seen use Windows-based interfaces, with lots of check boxes and point-and-click item selection. Physician notes are almost always based on templates—EMR vendors supply predefined templates, but most also allow you to construct your own templates for special purposes. Some of these systems even ensure that your notes come out grammatically correct. (An example of how *not* to interface is the note editor in Allscripts Touch Works EMR, which my practice uses. In every text editor on the market, from Windows Notepad to Word, Control-left/right arrow takes you to the next/previous word in your text. In Touch Works, Control-arrow takes you out of the text you're editing and completely out of the editor window. This is a potential training nightmare; as an academic pediatrician who spends more time in the editor window on attending notes than anywhere else in an EMR, I find this intolerable.)
- The ability to customize. This is especially important for us, since health maintenance functions such as growth charts, immunization tracking, and weight-based drug dosing, may not be part of a system designed for other specialties. Some of these features can be added to EMRs that do not already have them, but retrofitting is hard and doesn't always work as smoothly as having the features included in the initial design. Most available EMRs now have these functions available, but you should check to see how well they work.
- Standard terminology, such as the MEDCIN® database. Lack of standard terms for clinical findings is a major obstacle to EMR use; you know what you are saying in a patient, but other pediatricians may not. Databases such as MEDCIN® help you use standard terms and can also help you with decision making by suggestions and alerts based on your findings. Many EMR systems use MEDCIN® or similar databases.
- HIPAA (Health Insurance Portability and Accountability Act of 1996)-compliant security, including access and audit trails; secure and unalterable electronic document "signature;" and secured links to insurers, office workstations, including wireless computers, and your home. (Access to records on call is a major benefit of an EMR, but it has to be safe.) A pediatric EMR should also allow selective shielding of confidential data, such as keeping adolescent health data away from patients' parents. The maximum penalty for violating HIPAA's privacy and security provisions is $250,000 and/or 10 years. Need I say more?
- Backups. Your records will live on a server (a computer with lots of disk space) either in your office, at your EMR company or its affiliate, or both. Backups are required by HIPAA, and by common sense—if the server goes down in the middle of an office day, you have a problem until it is fixed, and a server crash should *not* destroy all of your records. No matter which EMR you choose, you must back up your data at least daily, in your office or at your vendor's server. If you and your staff need to do the backups, they should be easy to do.
- Data sharing. Not just with hospitals and laboratories, but also with such entities as state immunization registries. Most EMRs on display at the NCE have immunization trackers; I did not see one that would actually share that

data with a state registry "out of the box." Of course, the problem is not just with EMR vendors; state registries are supposed to share data using the HL7 standard, but early state registries did not use HL7 the same way, making data sharing more difficult. This is being fixed, according to the National Immunization Program. Note that almost every EMR on the market uses the HL7 standard. Sharing data with your practice's billing system is also useful. Most EMRs do so, resulting in improved billing and reimbursement for their users.

With my biases stated, here are my comments on a few currently available EMR systems and features particular to them, based on admittedly brief inspections at NCE and on the vendors' Web sites.

NextGEN EMR (http://www.nextgen.com/pro_emr.asp). Has an easy-to-use check box interface, and uses note templates that you can change, replace, or add to easily; allows users to define their own data graphs. Weight-based dosing is not yet included in the system.

GE Logician/Centricity (http://www.medicalogic.com/products/logician/). Also appears to be very versatile, with checkbox-driven interface and customizable templates. GE provides thorough information on equipment requirements for a Logician installation on its Web site—most useful to geeks, yes, but you'll probably need at least one geek when installing any EMR.

WebMD Intergy (http://www.webmdps.com/). Also easy to customize with predefined and user-definable templates. Although not in the current version (shown at the NCE), the next version will include growth charts for special populations (such as patients with Down syndrome).

e-MDs Chart (http://www.e-mds.com/). Designed for use with wireless workstations; provides color artwork that you can edit and use to illustrate notes, letters, and patient education materials. Note template processing generate(s) grammatically correct sentence structure.

Medi-EMR (http://www.mediemr.com/). Allows you to store images and audio clips in patient records; scans fingerprints ("allows your patient to check in with just a fingerprint"). It does not currently use standard databases such as MEDCIN®. The company is a latecomer to the EMR business, having previously developed custom business software.

Office Practicum (http://www.officepracticum.com/). An EMR designed specifically for pediatricians, with a large library of predefined note templates. The system prints NCHS-based growth charts, and can generate school and camp forms customizable for your local schools, complete with the patient's picture. Office Practicum took first honors in the 2005 COCIT Pediatric Documentation Challenge™.

Allscripts TouchWorks (http://www.allscripts.com/prdTWEMR.aspx). Easily constructed note templates and some ability to store images. As I noted above, I find the user interface annoying. A comment on the COCIT Web site notes that, to prescribe, you must know how a drug is listed—by brand or by generic name. There is no cross-reference, so if you do not know the name the drug is filed under, you can't write the prescription.

Cottage Med (http://mtdata.com/~drred/cottagemed/about.htm). This is an *open-source* EMR; the program is available for free (although the full version requires a commercial database engine called FileMaker), and, if you are willing to do a little programming, you can customize Cottage Med to your heart's content. An open-source EMR can be more versatile then a commercial system; but, you or someone on your staff have to have the time and skills to customize it. Users of the full version can share customizations they develop. The out-of-the-box version offers many features included in commercial EMRs, including image filing and growth chart generation, and comes in a single-user version, which does not require the commercial database engine.

Again, these are my (biased) opinions. In conclusion, I will state one more—the best way to find your ideal EMR is to try a few out yourself and see which one you find easiest to use and has the features you and your practice want and need.

[1]Rouse WB. *Design for Success: A Human-Centered Approach to Designing Successful Products and Systems*. New York, NY: Wiley-Interscience; 1991

Do We Know How to Find You?

To ensure that your contact information is kept up-to-date (so your colleagues can find you), please take the time to visit the AAP Member Center Web site at www.aap.org/moc. After logging in with your AAP ID number and password, click on "Update My Personal Profile" on the right-hand side of the screen. If you prefer to contact us by phone, you can do this by calling 866/THE-AAP1 and providing one of the AAP customer service representatives with your updated address information.

News From e-Learning Conference 2005

By Beverly Wood, MD, FAAP
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Games: A theory of fun
Raph Koster

Games have been considered fun, but, increasingly, they deal with violence, sexism, and bullying. The market for games, however, is huge, amounting to $7.5 trillion last year. Electronic games are played by 75% of heads of households, and the average gamer is over 30 years old, with the fastest growing demographic group being women over 35 years. The huge attraction of games makes them an obvious teaching tool. Ways in which games are successful learning tools are for storytelling, reflecting one of our chief teaching tools, working out exercises mentally, figuring out challenges and routinizing tasks, and breaking the pattern of boredom that is part of digesting knowledge. This method of learning presents algorithmic understanding. Games that are iterative require collaboration and fair division of work. Part of the strength of games is the lack of consequences. Games are characterized by the "Magic Circle," an environment that is fun and without pressure or evaluation, and from which the real world is separated. Since games create skill, social interaction, and a fun atmosphere for learning and creating, they are ideal vehicles for learning.

Sustainable e-Learning
Marc Rosenberg

E-learning takes the form of a course, simulation or game, or a virtual classroom. Rosenberg lists the following requirements for success in e-Learning:

1. Get beyond e-Training. (Don't confuse e-Learning and e-Teaching.)
2. Don't confuse technology with strategy.
3. Take your information technology specialist to lunch.
4. Count the right things.
5. Reinvent your organization.
6. Get the culture on your side.
7. Set up governance early.

An important concept: Knowledge management is getting information from those who have it to those who need it. The process is instructional design.

Games and Simulations in Learning
Bjorn Billhardt

He differentiates the kinds of simulations for learning.

1. Device simulations. Environment to practice the tools being learned; learning by doing. These are tailored to a single procedure
2. Branching simulations. Different outcomes occur depending on where you are in a process. Use with a tutorial so learners know what to do; be as directive as possible while seeming as free flowing as possible.
3. Interactive case studies. Case study is used to learn how to solve a problem. The tutorial content is embedded in the simulation. Problem solving can be used for complex learning objectives. Critical thinking and analysis skills are learned this way. If possible, a mentor or assisting peer should be provided. Cases have desirable challenges, with motivation driven by the narrative, plot, and story line. Cases can be humorous or fun.
4. Allocation games. The learner has to complete a position and is evaluated. The learners accept the parameters of activity initially, before play starts. Progression of action is part of the story. Data provided by team members are quantitative and qualitative. If the learner reaches a point of no return, learning from a mistake occurs. It is important to provide the right level of feedback throughout. The debriefing and feedback are the most important feature of allocation games. Feedback cycles the player with opportunities to improve.
5. Team-based simulations. These simulations relate to leadership, communication, advanced critical thinking, and team building. During play, the players must consider and be concerned about their own and the organization's reputation. These games aim to achieve a behavior or attitude change.

The Council on Clinical Information Technology Electronic Medical Record Resource:
www.aapcocit.org/emr

The Council on Clinical Information Technology (COCIT) officially launched the Electronic Medical Record (EMR) Review Web site in July 2005. Please help us make this a valuable tool for all American Academy of Pediatrics (AAP) members by rating your EMR today!

Still looking for an EMR? We have more than 50 reviews posted! See your colleagues' rankings and review comments based on their experiences.

Pediatric Information Technology Profile: The Johns Hopkins Children's Center, Baltimore, MD


By Christoph U. Lehmann, MD, FAAP
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and George R. Kim, MD, FAAP
Abstracts Chairperson, Council on Clinical Information Technology

The Johns Hopkins Children's Center (JHCC) is a 170-bed, multi-specialty, academic pediatric referral center that provides general and specialized comprehensive care in a number of medical and surgical subspecialties (including oncology) to children in the Baltimore area and from around the world. As part of the Johns Hopkins Medical Institutions (JHMI), it hosts a number of pediatric training programs (residency and fellowship) and participates in child health research programs. In 2004, the JHCC had 7,500 inpatient and 76,000 outpatient visits.

The JHMI's history in developing health information technology (HIT) has included a "homegrown" secure Web-accessible Electronic Patient Record (EPR),[1] in continuous use since 1990. An institutionally developed order entry system (OrderNet),[2] used in the Department of Medicine for 10 years, was recently retired as part of a hospital-wide transition to the Eclipsys Sunrise Clinical Manager (SCM). An innovative oncology clinical information system (OCIS[3]) has been in continuous use since the 1970s.

The JHCC has used EPR to create summaries of outpatient and inpatient (including critical) care visits. Specialty notes are available via secure and audited network connections to affiliated hospitals and community health centers. Critical care data, including nursing notes, administrative data, and laboratory results, are managed with the Eclipsys Sunrise Critical Care Manager (SCC) within the Neonatal Intensive Care Unit (NICU) and Pediatric Intensive Care Unit (PICU). Order entry in the rest of the JHCC is currently paper-based, with a pediatrician-led changeover to the Eclipsys SCM in process.

Recent JHCC efforts in HIT have been driven by leadership initiative in patient safety. As part of the process, weekly patient safety rounds by pediatric and information technology (IT) experts identify potential problems, using "tribal knowledge" of staff directly involved in patient care processes. With this approach, a number of successful IT pilot projects have demonstrated reductions in process errors.

- An online calculator that provides decision support and order entry designed for the NICU, total parenteral nutrition (TPN) has reduced errors and time needed to create time-dependent orders, and has been extended to the entire JHCC.[4]
- An online calculator that provides decision support and order entry in the writing of continuous intravenous infusions has reduced critical errors, and has also been extended to the entire JHCC[5]
- A Failure Modes and Effects Analysis (FMEA) of the complex pediatric chemotherapy process has been used to guide the design of an chemotherapy order entry system to ensure completion of important steps within the process, demonstrating measurable improvements in many parameters.[6]
- A Web-based arrest medication calculator provides correct weight-based dose calculation, legibility, and reduced stress to clinicians in clinical arrest situations.[7]

Projects currently in development include the following:

- An online system to track approval and proper use of high-risk antibiotics to reduce inappropriate and overuse (to reduce drug resistance).
- An online system that alerts nursing to patients with known methicillin-resistant *S Aureus* (MRSA) and vancomycin-resistant *enterococci* (VRE) prior to floor admission.
- An online (paperless) narcotics prescription writing system that provides decision support and monitoring.
- A laboratory alerting system that proactively notifies physicians of abnormal results dependent on expected values based on previous and related test results.
- A reminder system that facilitates enforcement of room-cleaning schedules (determined by hospital policy) for long-term patients.
- An alert system that notifies the JHCC patient safety team of readmissions to the PICU that occur within 24 hours of discharge. (Such readmissions are used as a high-priority quality marker.)

Project development includes HIPAA (Health Insurance Portability and Accountability Act of 1996)[8] conformance and selection of appropriate process and outcome measures to guide implementation and deployment. As HIT is increasingly deployed in pediatric care environments,[9] appropriate and valid evaluation methodologies will be vital to their acceptance and successful incorporation into pediatric medical care.

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Computer Technology for the Aging Pediatrician

By Rick Voakes, MD, FAAP
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Switching to EMRs (electronic medical records) is a major step and, for us older practitioners, may not be humanly possible! It often involves excessive expense and hours of learning time. During the 3-month break-in time, studies show that physician productivity drops by 30%. Some software might continue to compromise our charting by either leaving out information that we usually record, or by "snowing" us with excessive data requirements that obscure the important information that we use routinely.

When I started up a solo practice in the mid-1980s, I wanted to have superior charting, but with maximum efficiency. After trying a costly and time-consuming process of dictating my charts, I decided to start typing my own charts on a newfangled word processor. I was amazed that I could do my charting more accurately and in a fraction of the time it took to dictate them. When I started, I did not even know how to type. I rapidly increased my speed with daily use, but even now I have to look at the keys. Obviously, you don't have to be a secretarial whiz to be able to chart on a computer.

Here's how I did it!

Computers can rapidly expand a concept into a complete sentence or paragraph, allowing us to think in terms of concepts, while letting the computer fill in the details. For example, the average physical examination is a tedious list of negatives that may have to be repeated dozens of times every day. This takes lots of time to recite (if you are dictating), and it fosters boredom, which can contribute to physician burnout.

With a computer, I can indicate a concept, such as a normal physical examination, by inputting a symbol, like "W4" (my abbreviation for the average well-child visit for a 4-month-old), and the computer will type out the details in a fraction of a second. I can quickly jump to any section of the examination to make corrections (using the mouse) and overwrite whatever needs to be changed or added. The whole process takes only seconds, allowing me to do my charting immediately after each patient.

The computer also reminds me what needs to be done at each checkup, and what shots need to be given. All my notes are in the form of SOAP charting, so they are very consistent and easy to follow. For example, if you set the computer to have left-hanging margins (click on "format" then "style"), the S, O, A, and P will hang out to the left, giving a neat appearance and easy readability.

Other "instantly expandable" concepts might include the findings and treatment for an average case of strep throat or dozens of other common conditions. These expanded concepts are referred to as "macros" or as "AutoText" in Microsoft Word. They are incredibly easy to set up. Any time you type up something and you think, "This would have been much easier if it were automatic," just highlight it, hit the AutoText button, and make up an abbreviation for it. Make the abbreviation short (to save time) and logical to you (so you will easily remember it next time). The next time you need to use it, type the abbreviation, hit the F3 key, and you are done.

Abbreviations become words!

Another great time-saver in Microsoft Word is called "AutoCorrect." The intent is to correct commonly misspelled words. "Teh" is automatically changed to "the". I took the concept a step further, and used it to expand commonly used abbreviations. Thus "r" becomes "right", "l"

becomes “left”, “ge” is “gastroenteritis”.

You also can abbreviate entire phrases using the same function. “Fer” becomes “Fer-in-sol drops 0.6 mL bid x 1 month, then recheck hemoglobin in 6-8 weeks”. I’d hate to have to type **that** 10 times a day!

Whenever you find yourself wanting to abbreviate something, hit the “tools” tab, and go to “AutoCorrect options”. Type in the abbreviation and what you want it to become. Hit “OK” and you are all set. Of course, you don’t want to use abbreviations that are already real words, since they will always change to the assigned replacement.

Note: It’s OK to use real words for AutoText, since this is not an automatic replacement. It only replaces when you hit the F3 key.

Do I use paper charts?

Of course! But my charts are compact and well-organized. I keep a running page for each weekday on my computer, and leave one space between patients. All entries are headed by the patient’s name, then my name, which counts as my “electronic signature,” and the date, both via AutoText, of course. Each morning I open the file for that weekday, erase it, and start a new page. That way, my computer is not cluttered, but the last week is readily available if I need to look up a recent patient visit. At the end of each day, I print up the visits for that day on sticky paper, and put them in the charts.

Tip: Label the days of the week as files called “1 Monday”, “2 Tuesday”, etc, so the days of the week will be at the very top of your “open file” box and in proper order, easy to find each morning.

Patient Database: the key to organized charts!

The reason my charts are compact and well-organized is a device I learned my first year in practice, the Patient Database (Figure 1). Use white paper the same weight as regular paper but twice the size so it can fold in half and make a folder. It stays at the front of your regular manila-folder chart and it contains **only** the SOAP office visits, applied in chronologic order to blank sheets of paper. I can get an average of 10 visits on 2 sides of a page. Even my “frequent flyers” rarely amass more than 5 pages of charting, and most patients have only a few pages. All the extra pages that clutter up your charts stay at the back of the chart, so they are handy, but never have to be seen.

The front cover of the Patient Database is printed with a grid of all the most important data about the patient. (A detailed explanation is found in Figure 2.) This grid will evolve with your practice habits and you will want to update it every 3 or 4 years. By reviewing the data on the Patient Database at the beginning of each visit, you will greatly improve the continuity of care, ensure that shots are up-to-date, and you will be providing a stable medical home for each of your patients.

Outside audits of my vaccination rates show 99% to 100% compliance. I owe it all to the Patient Database, since I do not send out any reminders to patients, and have no other tracking system for shots other than the Patient Database. I expect the Patient Database to perform just as well with its other functions.

Recently, the EMR experts have come up with a similar concept called CCR (Continuity of Care Record). This is used in a paperless system, and may be transmitted via the Internet to other medical care providers. For us dinosaurs who are committed to maintaining paper charts, a quick scan of the Patient Database (or fax) can work just as well to transmit this vital data to other providers. This will satisfy CCR requirements for some time, I suspect, even if proposed legislation takes effect.

FIGURE 1

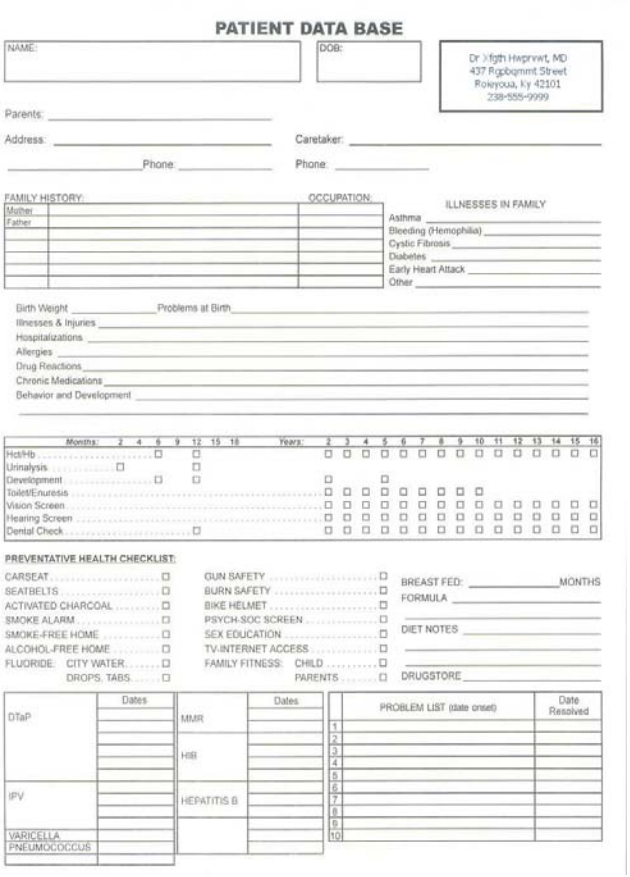

FIGURE 2

Elements of the Patient Database

1. **Patient Identifier:** Name and birth date, plus any numbers that you may assign to identify your charts.

2. **Physician Identifier:** Your name and address (very important!!).

3. **Demographic Info:** Patient contact info. I added a line for “caretaker” to include the foster parents, custodial grandmother, full-time nanny, etc.

4. **Family History:** Important familial conditions.

FIGURE 2 (continued)

5. **Medical History:** A "work in progress," which I keep updated as I continue to follow the child. Hospitalizations include the diagnosis and year or age, and I keep the allergy list up-to-date. I always include the symptoms for any allergies to rule out pseudo-allergies. Under Behavior and Development, I will include some normal milestones, or list any pathology such as ADHD, etc.

6. **Jog Sheet:** A grid to "jog" your memory at well visits, to make sure you don't forget any screening tests. For special cases I will add in extras; for example, yearly thyroid, diabetes, and celiac testing for a child with Down syndrome.

7. **Preventive Health Checklist:** If I ask about a topic and get a negative answer, I put a minus sign next to the box, to remind me to ask again next visit. I always include hot water heater temperature and first aid for burns with Burn Safety. If you need a good psych-social screen, I have one on my Web page (www.health-bytes.com) that you are welcome to use. I developed it with NASP (National Association of School Psychologists) President William Pfohl.

8. **Nutrition Information**: I usually make some type of entry at well visits, and try to get all girls over 10 to start a multivitamin for life. I think I will add that to the Jog Sheet in the next revision.

9. **Problem List**: Unlike your History and Physical problem list, this one is for the "big picture," so just include chronic or important problems, and include date of onset.

10. **Other ideas?** I'm sure you have many, but remember to keep the entire database on one page, otherwise you lose its most important advantage—it hits you in the face every time you open the chart!

FIGURE 3

A tip for all the EMR people out there: You could actually go paperless using these same principles, and achieve a more manageable system than using templates, with the huge advantage of extremely fast input and accessibility. Plus, I have had patients comment that they had bad experiences with other doctors who used an EMR, because they spent the whole visit clicking away at their electronic notepads, had little eye contact, and seemed not to be "caring doctors." Imagine your doctor playing with a Gameboy™ the whole time during your doctor visit! That is probably what EMR looks like to many patients. I'm sure this perception could be overcome with some effort, but I don't have to worry about it with my system since I have both hands and both eyes devoted to the patient.

FIGURE 4

About Rick Voakes, MD

Dr Voakes is a solo private practice pediatrician in Bowling Green, KY. His practice emphasizes prevention and fitness. He is on the volunteer faculty of University of Kentucky, University of Louisville, and Vanderbilt medical schools. He also writes Web pages, including www.health-bytes.com and www.healthyweightkids.org. He designed the first Web page for the American Academy of Pediatrics Kentucky Chapter. He is also a world-class athlete, and recently won the 2005 Disc Golf World Championship for grandmaster division.

Literature Review

By S. Andrew Spooner, MD, MS, FAAP
Immediate Past Chairperson, Council on Clinical Information Technology

Pediatrics. 2005;116:1506-1512

Unexpected increased mortality after implementation of a commercially sold computerized physician order entry system.

Han YY, Carcillo JA, Venkataraman ST, Clark RS, Watson RS, Nguyen TC, Bayir H, Orr RA.

Department of Critical Care Medicine, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, USA. yyhan@med.umich.edu.

OBJECTIVE: In response to the landmark 1999 report by the Institute of Medicine and safety initiatives promoted by the Leapfrog Group, our institution implemented a commercially sold computerized physician order entry (CPOE) system in an effort to reduce medical errors and mortality. We sought to test the hypothesis that CPOE implementation results in reduced mortality among children who are transported for specialized care.

METHODS: Demographic, clinical, and mortality data were collected of all children who were admitted via interfacility transport to our regional, academic, tertiary-care level children's hospital during an 18-month period. A commercially sold CPOE program that operated within the framework of a general, medical-surgical clinical application platform was rapidly implemented hospital-wide over 6 days during this period. Retrospective analyses of pre-CPOE and post-CPOE implementation time periods

(13 months before and 5 months after CPOE implementation) were subsequently performed. RESULTS: Among 1942 children who were referred and admitted for specialized care during the study period, 75 died, accounting for an overall mortality rate of 3.86%. Univariate analysis revealed that mortality rate significantly increased from 2.80% (39 of 1394) before CPOE implementation to 6.57% (36 of 548) after CPOE implementation. Multivariate analysis revealed that CPOE remained independently associated with increased odds of mortality (odds ratio: 3.28; 95% confidence interval: 1.94-5.55) after adjustment for other mortality covariables. CONCLUSIONS: We have observed an unexpected increase in mortality coincident with CPOE implementation. Although CPOE technology holds great promise as a tool to reduce human error during health care delivery, our unanticipated finding suggests that when implementing CPOE systems, institutions should continue to evaluate mortality effects, in addition to medication error rates, for children who are dependent on time-sensitive therapies.

COMMENTARY: The authors describe what happened after their hospital implemented several simultaneous changes, including: (1) removal of bedside medications from the ICU, (2) consolidation of the ICU pharmacy into the main pharmacy, (3) prohibiting the processing of orders until after the patient had arrived and was registered in the system, (4) and a rapid implementation of a non-pediatric, non-ICU order entry program in a pediatric ICU. Looking at the patients who were transferred from other hospitals, the mortality rate went from 2.6% before the changes to 6.6% in the 5 months afterwards (this change in mortality remained even after accounting for severity of disease). It's unclear which of these changes might have been related to the rise in mortality. The authors provide no data on whether any of the deaths were plausibly related to ordering delays, and there was no non-CPOE group for comparison to establish whether delays did, in fact, exist. The take-home point here is that major process changes might lead to poorer outcomes for patients. It will take some more studies to tease out whether computerizing the order entry process is dangerous. Unfortunately, this study has been touted as proof of the latter in the media. COCIT members need to be aware of the details in order to respond in a thoughtful manner to claims that CPOE kills people. We need to keep our minds open to the possibility that CPOE might be dangerous, but we need controlled trials with data collection that demonstrates biologic plausibility before we can conclude this.

JAMA. 293:1197-1203

Role of computerized physician order entry systems in facilitating medication errors.

Koppel R, Metlay JP, Cohen A, et al.

CONTEXT: Hospital computerized physician order entry (CPOE) systems are widely regarded as the technical solution to medication ordering errors, the largest identified source of preventable hospital medical error. Published studies report that CPOE reduces medication errors up to 81%. Few researchers, however, have focused on the existence or types of medication errors facilitated by CPOE.

OBJECTIVE: To identify and quantify the role of CPOE in facilitating prescription error risks. Design, Setting, and Participants: We performed a qualitative and quantitative study of house staff interaction with a CPOE system at a tertiary-care teaching hospital (2002-2004). We surveyed house staff (N = 261; 88% of CPOE users); conducted 5 focus groups and 32 intensive one-on-one interviews with house staff, information technology leaders, pharmacy leaders, attending physicians, and nurses; shadowed house staff and nurses; and observed them using CPOE. Participants included house staff, nurses, and hospital leaders.

MAIN OUTCOME MEASURE: Examples of medication errors caused or exacerbated by the CPOE system.

RESULTS: We found that a widely used CPOE system facilitated 22 types of medication error risks. Examples include fragmented CPOE displays that prevent a coherent view of patients' medications, pharmacy inventory displays mistaken for dosage guidelines, ignored antibiotic renewal notices placed on paper charts rather than in the CPOE system, separation of functions that facilitate double dosing and incompatible orders, and inflexible ordering formats generating wrong orders. Three quarters of the house staff reported observing each of these error risks, indicating that they occur weekly or more often. Use of multiple qualitative and survey methods identified and quantified error risks not previously considered, offering many opportunities for error reduction.

CONCLUSIONS: In this study, we found that a leading CPOE system often facilitated medication error risks, with many reported to occur frequently. As CPOE systems are implemented, clinicians and hospitals must attend to errors that these systems cause in addition to errors that they prevent.

COMMENTARY: People ascribe a lot of problems to the computer system when it is used in health care. There may, in fact, be problems with the use of computer systems in health care. But to find out, we need to compare computer-based activities with similar activities performed

without a computer. This non-pediatric study used interviews, focus groups, and shadowing to develop a questionnaire to ask residents about stress and working conditions. As part of this questionnaire about stress and working conditions, they asked residents to recall how often they encountered eight kinds of errors "associated with" computerized physician order entry. The association with CPOE was part of the premise of the questionnaire; there was no data to indicate that these errors occurred more often with computers. For example, one of the "CPOE errors" was failing to renew antibiotics on time. We have no idea how often this happened in the paper system; common sense suggests this happens a lot in any system, computerized or not. Two of the eight errors described in the questionnaire involved residents interpreting the unit dose of the medication as the recommended dose; for example, if a drug came packaged in a 20 mg vial, residents assumed this was the dose to give the patient. This sounds less like a CPOE error than an educational issue. The results revealed the truly subjective nature of the survey; for example, 22% of respondents said the CPOE system was down at least once *per day*, but 16% said they never experienced down time even once, and another 45% said CPOE was down only once per week. The authors also describe 14 other errors for which no questionnaire data were collected, such as failure to restart orders post-op. But doesn't this happen regularly in the paper-based system? Whether CPOE has a role in facilitating such errors remains unanswered in the absence of data to compare systems. This study might serve as the basis for a future, prospective, comparative study aimed at determining if CPOE truly facilitates errors.

The Electronic Health Record: Will It Make Confidentiality an Irremediably Decrepit Concept?

By Marc B. Perlman, MD
Bioethics Masters Program Student, The Graduate College of Union University;
and Medical Director of Pediatric Inpatient Services,
Central Maine Medical Center

Confidentiality is one of the oldest and most conserved norms of western medical ethics. Normative moral reasoning states that, without confidentiality, patients would not trust doctors and hospitals, and would withhold information vital to their care.[1] However, the translation of the locus of health care from the doctor's office to the complex health services system, and public health policies encouraging the development of electronic patient data systems and a computational future for the healing professions, are changing the norms for the use of patient data.[2] The ethical framework of confidentiality no longer informs or accommodates laws, regulations, and ordinary usage of a radically transforming electronic technology to protect patients and their personal information. Even before the nexus of the Information Age and the health care system, Siegler described (in an article echoed in the above title) confidentiality in the modern hospital as a "decrepit concept," noting the loss of patient's control and a lack of an ethically defined "legitimate need" for access to patient data in the hospitals of the 1980s.[3] The imperative for health systems to acquire increasingly complex and powerful electronic information systems simultaneously creates the promise of better health care and patient control over data, and the threat of the irremediable loss of a functional ethical concept of confidentiality. This dilemma will be explored by examining key features of the technology itself, the current framework of confidentiality, and the issues that make confidentiality dysfunctional in the current social, legal, and technological setting. I will argue that that no purely technological solution will be corrective, and propose a direction for a new and functional ethical framework of confidentiality.

Technology of the Electronic Health Record

The Electronic Health Record (EHR) has been viewed as merely the next new tool of health care, ignoring the EHR's power to alter the most fundamental processes in health care, namely the communication, management, and sharing of patient data and information, and use of such knowledge to treat patients in effective and ethically acceptable ways.[2] Electronic health records are described as "radical innovations that challenge" and alter basic health care work processes by bringing spatially and temporally separate clinical and nonclinical units into a shared information space where confidential patient data may be accessed by hundreds of users, beyond the control or knowledge of the patient.[4] Electronic health records create immortalized longitudinal records of individuals and kindreds, and link multiple medical and nonmedical databases and institutions.[5] Electronic health records also quickly adapt or can be adapted to perform myriad tasks, not all of which are evident or anticipated by patients, clinicians, or system administrators. Data mining manages vast amounts of patient data for an almost limitless number of users, and can detect important patterns that otherwise

would be lost in data silos; the pattern detection applies equally to individuals, families, and social, genetic, or economic groups. Confidential data can be used by people and entities with technically and legally "legitimate" access, who are unknown to the patient, have no significant moral relationship with the patient, and who can use data without disclosure. A "legitimate" user is defined in technical and legal, rather than moral terms, or by a thoughtful examination of user's duties and moral relationships to patients.[2,6] The increasing sophistication of technological protections does not resolve the fundamental issue of ethical acceptable electronic dissemination or use of data.

The Ethical Framework of Confidentiality

Classical and post-Classical Hippocratic oaths conserved the concept of confidentiality as a physician obligation, with divine or social sanctions for oath-breakers.[7] The 1847 American Medical Association Code of Ethics introduced a professional fiduciary ethic of "Medical Deontology" into the doctor-patient relationship.[7] Modern Bioethics recast confidentiality as patient control over personal data, grounded in mutual trust and patient autonomy. Theoretically, patients seek treatment and trust doctors and hospitals because they believe that they retain control over the use of their data within the doctor's office, or anywhere else the data may travel. Such belief was already becoming a "decrepit concept" more than 20 years ago.[3] The powerful technology of the EHR, operating at a network, state, or national scale, can irremediably damage the concept of patient-controlled confidentiality, making vast amounts of personal and family data of thousands of patients available to hundreds of medical and nonmedical users, whose legitimacy of access is defined in technological, but not moral, terms.

Laws and Regulations

Laws governing cyberspace lag far behind the level of technological sophistication of EHRs. The Health Insurance Portability and Accountability Act of 1996 (HIPAA), widely understood to address confidentiality, legally opens access to confidential data to hundreds of thousands of "covered entities" performing regulatory, accreditation, and benefit management functions, raising ethical and legal questions about the interconnection of medical quality, privacy, and liability.

Dysfunction of the Ethical Framework

Translations of the locus of health care to EHR-linked, matrix-like health systems means that ethically acceptable use of data must be determined for more users, data, and complexity of relationships. Making that determination is difficult or impossible in an ethical framework whose epistemology is knowledge sharing within the individual doctor-patient relationship, rather than within a systems-based, unbounded common electronic knowledge space.[4,8] The social and technical changes of EHRs situate patients so they do not have control over subsequent dissemination of their data, and the owners and users of the data systems do not have an explicitly stated moral agency, duty of confidentiality, or a compelling ethical reason to use data for each patient's benefit. Without a moral framework that supports acceptable organizational behavior to protect confidentiality, patients and health systems rely on technological barriers to protect the key underpinning of patient trust. Assuming that the technology that creates the moral dilemma will also fix it is unsupported by experience, and is foolhardy technological hubris.

Accommodative Moral Framework

Attaining the implied goals of EHR-based health care requires a functional moral framework that explicitly informs all the involved moral agents of the ethically acceptable, thoughtful, and decent ways to treat patients and their confidential data in a computational health services system, and accommodates systems-based health care delivery, including strategic investment in the technology itself. Health system's EHRs are simply their technical means of preserving, or breaking, confidentiality. The health services systems that treat patients and manage their data are also moral agents that owe, and are owed, duties and obligations, and must work in ways that are ethically acceptable.[9] In the domain of a computationally based health services system, an ethical framework that conserves the concept of confidentiality would be grounded and developed to include the following key points:

- Health services systems are moral agents, co-fiduciaries, whose moral goal is to benefit their patients.
- Maintaining confidentiality is ethically obligatory for both clinicians and the organizations within which their patients receive treatment.
- The obligation is grounded in duties, virtues, and consequences, and transcends all patient data, including genetic and tissue bank data, and persist even after the death of the patient. The consequences of failure to address the organization's ethics of confidentiality are the loss of the trust fundamental to medical care, and an inability of the health services system to fulfill its role.
- Organizations ought to explicitly inform patients of the roles of EHRs in their treatment.

The retranslation of confidentiality from the individual clinician-patient relationship to a complex relationship among the patient, clinician, and health care organization and its EHR also requires re-grounding of the ethical framework as a simultaneous or nested duty, both of clinicians and the organization. Attaining a moral framework that is not merely aspirational, but is truly functional and conserves the concept of confidentiality,

requires a dialogue among managers, clinicians, informaticists, and ethicists, and a reevaluation of the moral framework of confidentiality in a computational health system, explicit determination of who benefits from EHRs, and a reevaluation of organizational commitments to ethical actions, accountability, transparency, and moral education.

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2006 AAP Legislative Conference

The American Academy of Pediatrics AAP Committee on Federal Government Affairs and the AAP Committee on State Government Affairs will be holding the 2006 Legislative Conference, April 2-4, in Washington, DC. American Academy of Pediatrics members who attend will learn how to make a difference by acquiring skills and techniques to successfully work with Congress and state legislatures. At the end of the conference, attendees will visit with their members of Congress and their staff to put their new skills to use.

For over 15 years, the AAP has been host to a wide variety of inspiring and motivating guest speakers at the Legislative Conference, including representatives from Congress, the administration, and state governments. Some of those speakers have included Mark McClellan, MD, PhD, Centers for Medicare and Medicaid Services administrator; US Senator Jay Rockefeller; and representatives from the National Governors Association.

Participants receive 20 hours of CME credit for attendance. The cost is $500 for members before February 3, and increases to $550 after the 3rd. The cost for nonmembers is $675 before February 3, and increases to $750 after the 3rd. Space is limited, so register today!

For registration information, please contact Katy Matthews, AAP Department of Federal Affairs at 800/336-5475, ext 3014, or kmatthews@aap.org.

Attracting Girls to Information Technology

Submitted by Beverly Wood, MD, FAAP
Member, Council on Clinical Information Technology

The Information Technology Association of America (ITAA) is concerned about the 19% decline in women in the information technology field in the last 8 years. The ITAA and National Center for Women and Information Technology hope to give students, parents, and teacher's information about careers in technology fields, tips on performance in math, computing and technology, and sample lesson plans for teaching computing to girls. A digital library site is available at www.ncwit.org/cisco.

In addition to the tips and information above, information about local clubs, programs and camps for girls in technology is included. The Web site is part of Cisco's Women in Technology program, which is geared toward young women with Girls in Technology summits in which IT workers give presentations about their careers. The purpose is to show girls that IT skills increase opportunities in any field and help solve problems in communities.

Based on report in *Training.* Dec 2005; Vol 43 No 12, p 11.

A Successful Electronic Medical Record Rollout: Partnerships, Products, and Persistence

By Jeff Zwiener, MD, Medical Director of Pediatric Gastroenterology
'Specially for Children (Austin, Texas)

We all have heard of practices that have spent huge sums of money on a new electronic medical record (EMR) system, just to see them flop due to unwieldy software and medical staff resistance. Despite that, several years ago, a few physicians in our Pediatric Subspecialty Practice decided to implement a system to make the paperless and wireless office a reality. I'd like to share with you 3 reasons why our approach worked at 'Specially for Children: partnership, products and persistence.

First and foremost, we had a small core group of physicians committed to seeing the rollout succeed. They were critical partners with our administration and our vendors. These physicians were dedicated to ensuring the success of the rollout. We demanded that the system help us do our jobs better – not create more hassles. Together, we created realistic information technology goals and chose sensible products. Later, we also would act as "champions" of our EMR, helping model the new system to the other 20 or so physicians on staff.

For any EMR to succeed, physicians must be involved from day 1 in planning, selecting, and designing the system. On top of that, the message must be clear to the entire staff that this is an attempt to make the physician's job easier and quicker, and ultimately improve patient outcomes. Our physicians responded positively to this message and this approach.

This first step is where many administrators fail. Physicians want to know that an EMR will help them do their job of helping patients. Everything else, including saving long-term administrative costs, is secondary. Therefore, if you can establish a common understanding early on, the chance of a having a smooth rollout will improve.

The next step is just as important—finding products that work for your setting. Choosing the right software was at the top of our list. We were looking for a program that all members of our staff could, and would, use. We wanted a company that would help us every step of the way.

We chose ezChart from Businet. We chose this product because it would not require a change in our practice management software (Medical Manager) and had elegant document management components and an excellent script writer. Our physician champions worked closely with company programmers to customize the software to allow features important to a pediatric subspecialty practice, including weight-based dosing and automatic growth charts. We visited several demonstration practices, spoke with physicians and staff using the program, and observed the functionality in real life. There was general satisfaction.

We decided to try another technology: tablet PCs (personal computers). We tested several different products, eventually settling on a tablet PC from Motion Computing coupled with a Cisco wireless network.

Finally, when the elements came together in our rollout in January 2004, we started to see that a logical, streamlined, paperless system was becoming a reality. The front-end partnership and product research paid off. The medical staff soon realized that the small investment of time it took to learn the new system was well worth the extra quality time they gained with their patients.

Physicians view their schedules on the tablets or their desktop PCs. Changing schedules are updated automatically. The arrival of patients and the fact that a

patient is “ready” are indicated on screen.

Our physicians view the patients’ charts, make notes, approve documents, review labs, communicate with nursing, and write and send prescriptions directly to the pharmacy. While on call, our physicians can access patients’ charts via the Internet and document phone calls and weekend visits from home or anywhere Internet access is available.

It wasn’t a cakewalk, and it still isn’t. It took a lot of time and energy from everyone involved. But the near unanimous “buy-in” from our physicians has made us committed to refining and improving the process. That’s where persistence comes in.

We’re working with our Chief Information Officer to review new software offered by Businet, called Intelidox. Also, we’re keeping up with hardware improvements by upgrading to the latest PC tablets. And I know we’re doing the right thing when we see a physician, a parent, and one of our young patients looking at the portable PC screen to see their X-ray, their growth chart, or other information related to their diagnosis or treatment. In fact, our young patients and their parents have voiced their respect and approval of these “cool” new technologies.

Our records are always available. Information is entered by the provider and saved (and backed up) to a secure server. Faxes are never printed; these stay as electronic images stored and indexed to the patient’s chart. Paper documents are scanned to the electronic chart and then shredded. We don’t keep paper.

We no longer have any paper charts. None.

From the COCIT Vice Chairperson

By Joseph H. Schneider, MD, FAAP
Vice Chairperson, Council on Clinical Information Technology

An amazing amount of things have happened since our fall newsletter.

1. The Continuity of Care Record (CCR) Standard has been officially issued by ASTM International and several vendors are actively working on incorporating it into their electronic medical records (EMRs).

2. The Certification Commission on Health Information Technology (CCHIT) is now doing beta testing of a process to certify ambulatory electronic health records (EHRs).

3. Proposed modifications to the Stark rules that would allow hospitals to support referring physician EHRs were released.

4. The Council on Clinical Information Technology (COCIT) sponsored 3 successful Pediatric Documentation Challenge™ programs at the American Academy of Pediatrics (AAP) National Conference & Exhibition (NCE) at the Coding and Documentation Workshop in Newark, and San Antonio, and is doing another at Super CME in Washington, DC, in April.

5. The Technology Learning Center at the NCE was an incredible success. It’s difficult for a day to go by without hearing more evidence of rapid changes.

Perhaps the most dramatic change, however, was the arrival of Hurricane Katrina in New Orleans on August 29. We felt the effects in Dallas and Houston, among other cities, as children arrived without medical records and sometimes without their parents. Unsung heroes helped in many ways, including setting up Web sites, such as www.katrinahealth.org, to share access to medical information in registries and administrative databases.

In early December, Keith Perrin, MD, president of the AAP Louisiana Chapter, invited me to speak to pediatricians in New Orleans as part of a program to restart pediatrics in the city. As usual with such a request, I prepared my standard evangelical talk, including slides on the importance of EHRs.

On the way in from Baton Rouge, I listened as the Chapter executive director told me how poorly pediatrics was faring in the aftermath of the floods. As we approached the city, I noticed that virtually no one was visible and that dust and debris were everywhere.

After several speakers, when it came for me to speak, I looked out at the audience and realized that for the first time in my 3 years of promoting EHRs, I didn’t have to do that. The flood did it for me. All these pediatricians wanted was information on how to get started NOW.

So I skipped the slides regarding why EHRs are important and we launched immediately into a discussion about selection and how to be successful in implementation. I spoke of the need to see systems in other practices and I mentioned simple products that were low cost as a means of getting started. I spoke of the importance of a champion in the office to make it happen. We had discussions about what to do when starting with nothing, which is what several had.

Perhaps the most important message that I hope I left behind is true for any city. That is that I think we need to consolidate our efforts when it comes to EHR selection. We can’t have each office and hospital selecting a different vendor and expect to be successful through sharing data in a regional health information organization (RHIO). By using common systems in a geographic area, we will have more leverage with vendors for system support, etc. More importantly, we will gain the ability to more easily access

these systems for night call, locums coverage, teaching, quality improvement, patient safety, etc.

There are a small number of truly pediatric-friendly vendors. The AAP can't endorse any of them, but, through tools such as the Pediatric Documentation Challenge™ and the EMR evaluation site, we can provide guidance to members. In your own evaluations or discussions, consider finding out what is the most widely used system in pediatrics in your area and see if that works for you. More importantly, consider seeing what your local hospital or independent physician organization (IPO) is doing and consider joining them by sharing a common clinical database with them for your patients. A common database helps with the situation where 2 systems can't exchange data because they lack common data definitions, such as calling a CBC by the many different names it has. The CCR can help in this translation, but actual shared databases are much more valuable. There are legal and technical ways to protect your data in a shared environment.

Katrina has convinced us of the need for EHRs. Now we need to start asking the question: "How we can best use

Technology Committee

Electronic Medical Records: The Talk of the Town

By Kevin B. Johnson, MD, FAAP
Applications/Technology Chairperson

It is becoming increasingly apparent that electronic medical records (EMRs) are as timely a discussion item in the pediatric community as "Who Shot J.R.?" or "Who will be the next American Idol?" in years past! Beginning with the number of hits on the EMR review site (www.aapcocit.org/emr) that has been now up for over 6 months, and continuing with discussions that we have had with national government and private industry leaders, it is apparent that everyone wants to know more about health information technology in pediatrics. There are increasing numbers of tools available for pediatricians to use to think about the issues most important to them, particularly their desire for informed decision making about their purchase of an EMR. Talks sponsored by the American Academy of Pediatrics (AAP) have been well attended by members. SuperCME 2006 has 2 talks, including a "hot topics" talk dedicated to pediatric information technology. There are rumors of books that are being written to further describe the role of information technology in pediatrics and there are numerous AAP chapters asking for specific talks about implementing EMRs. In short, we are the talk of the town!

The AAP technology group has been actively working to complete the speaker's kit, which should be out in the summer or early fall. We have launched the EMR review site (available at www.aapcocit.org/emr). As of now, the number of new reviews has decreased, although the number of features being requested by readers has increased. Look for significant advertising about the review site in the coming months and check it often for new reviews and for new features being described. We also are discussing ways in which we can partner with other professional societies to improve the offerings available for pediatric specialists.

Work is underway in a variety of other fronts that will eventually improve access to information technology in pediatrics. Probably the most exciting is the Partnership for Policy Implementation (PPI) initiative co-chaired by Paul Biondich and Andy Spooner. In addition to that, a national group known as the Pediatric Steering Group, has begun to work closely with the office of David Brailer, MD, PhD, in the Office of the National Coordinator for Health Information Technology (ONCHIT). You should be keeping track of both reports from ONCHIT as well as reports posted on the AAP Web site because a lot of activity is happening that will be of interest, including activity related to Pay for Performance, new Web services to improve pediatric care, and a strong push to improve consumer activation through the use of medication lists, national registries, and regional information networks. We're the talk of the town—that means you have lots of places to go to learn what is happening in EMRs for pediatrics!

"Probably the most exciting is the Partnership for Policy Implementation (PPI) initiative co-chaired by Paul Biondich and Andy Spooner."

The EMR: Which One Is Right for Your Practice?

The Council on Clinical Information Technology (COCIT) is pleased to introduce to you a service where you can research various electronic medical record (EMR) products that are currently being used by pediatricians every day. As part of this service, you can explore where these products are being implemented and for what type of practice, as well as read the experiences of others who are using these EMR products. As of this writing, there are over 50 reviews on 19 different products.

Users of existing EMR systems are invited to log on and post their own experiences, to be shared with others!

What kinds of features can you compare with this service?

- General EMR Overviews
- Growth Parameters, Percentiles, Curves
- Data Pertaining to Birth History
- Adolescent Privacy Features
- Immunization Data Handling, Analysis
- Prescription Generation, Transmission
- Installation, Training, Support Issues
- Lookup Features, Identifying data
- Ease/Methods of Data Entry, Including Pediatric Terminology
- Awareness/Comparison to Age-based Values
- Standard and Flexible Format Reporting
- Tracking Disclosures, Parental Appendices
- Linkages Between Family Members
- Online Patient/Parent Access and Interactions
- Documentation/Assessment of Developmental Milestones
- Practice Management Integration
- Costs, Subjective Value, Return on Investment

In addition to these features, you also have the opportunity to read candid comments relating to overall EMR performance, as well as comments on specific features of a particular EMR. Following are a few examples:

"I had looked at a lot of products and only found a few that were pediatric friendly. Especially liked the fact that this was a PC-based product and that I didn't have to learn an entirely new operating system like Unix and get dependent on outsourcing IT to the selling company." – Kenneth Hirsch, MD, FAAP

"I have been very pleased with the pre-built templates and the preprogrammed advice and handouts that come with the system. They mesh well with the AAP policies and Bright Futures program recommendations. In addition, changes to meet new guidelines or to customize for personal preference are easily programmed." – Alan Grimes, MD, FAAP

"We are using fully integrated … system, including billing, scheduling, and internal e-mail. Using since November 2003, with 2 full updates of software since then. System has been 'down' for 10 minutes since November 2003." – David Arkin, MD, FAAP

Want more information than simple ratings and brief comments? The site's Buddy List feature (coming soon!) provides contact information on pediatricians who've used the software and are willing to answer questions about their implementation.

So, how do you find it? The Council on Clinical Information Technology encourages you to log on to its Web site and read about others' experiences and/or post your own!

Log on today **(http://www.aapcocit.org/emr)!**

COCIT Policy Committee Report

By Robert Gerstle, MD, FAAP
Chairperson

The Council on Clinical Information Technology (COCIT) Policy Committee has focused its energies on 3 main areas as they impact on the pediatrician and "pediatric family": (1) Policy Statement update defining the pediatric functionality of the electronic medical record (EMR); (2) a new Policy Statement and Technical Report on e-prescribing in the pediatric office setting; and (3) Development of a new AAP Statement on the Personal Health Record (PHR). This report will review those activities.

We have just about finalized the Policy Statement update defining the functionality needed within the EMR for it to truly be considered a "pediatric friendly" EMR. To that end, Andy Spooner, who has been a leader on the HL7 Health Level 7 Pediatric Data Standards Special Interest Group, and with the input of the Policy Committee, including Mark Del Beccaro, Eugenia Marcus, Joseph Schneider, Gregg Lund, and me, recently completed edits on what we hope will be the final draft of the paper. The HL7 EMR functionality document reviews particular EMR functionalities that are important to pediatricians and provides clinical examples to stress their pediatric relevance. It builds upon the foundation articulated in the Policy Statement published in 2001, which Andy Spooner and the Task Force on Medical Informatics authored. We hope EMR developers will use this as a reference as they develop EMR products for pediatricians, and that the statement will be used by pediatricians as they begin to analyze the EMR marketplace, looking for office EMR systems.

The Committee's Technical Report and its accompanying Policy Statement addressing the use of e-prescribing in the pediatric setting are almost finalized. My special thanks to Christoph Lehmann, who did Yeoman's work cleaning up the draft, and for his work with me on the Technical Report; and to Alan Zuckerman, who critically reviewed the final draft. The Technical Report should be useful as a reference for pediatricians as they contemplate using e-prescribing in their practice settings. E-prescribing is an area of intense interest to our members, as judged by the recent COCIT e-mail list discussions.

Related to office e-mail, I should mention that Sandy Melzer and I presented 2 sessions at the National Conference & Exhibition (NCE) on non–face-to-face patient care, addressing telephone, e-mail, and telemedicine in pediatrics—and there were a lot of questions about setting up (and charging for) e-mail consultations with patients. I am also involved with the effort to get *Current Procedural Terminology (CPT)* codes developed and approved for non–face-to-face patient care by telephone and e-mail through my involvement with the American Academy of Pediatrics (AAP) Committee on Coding and Nomenclature (COCN) and the American Medical Association (AMA) Resource-Based Relative Value Scale (RBRVS) Update Committee or the Relative Value Scale Update Committee (RUC) (which assigns RVU values to *CPT* codes).

The last of the Committee's major works in progress is the development of an Intent for Statement on the PHR, with Joe Schneider and Alan Zuckerman taking the lead. The PHR is a new area of growing interest to physicians, patients, and the government; however, it means different things to different people or groups. To physicians in general, the PHR raises a lot questions as to the place of the PHR and its interface with the office EMR. From the government's perspective, a PHR can be an important extract of information from multiple sources of professional patient care and could provide for the "seamless" transfer of important medical information between health care providers. But, how will such databases be established and maintained? How will patient privacy be maintained—who will control access to data? This paper should be very interesting to read and debate!

"The PHR is a new area of growing interest to physicians, patients, and the government; however, it means different things to different people or groups. "

The Committee continues to have monthly conference calls to discuss these issues and more. The COCIT e-mail list has been active with discussions relevant to our work. I want to thank all the committee members and those others whom I have mentioned above for their input and work on behalf of the committee. Lastly, I again must personally thank Beki Marshall, our AAP support person, who works tirelessly on our behalf and keeps us all on track.

Update: The American Health Information Community

By Alan E. Zuckerman, MD, FAAP
Member, Council on Clinical Information Technology

The American Health Information Community (AHIC), known as the "Community," is an advisory group chaired by Secretary of Health and Human Services (HHS) Michael Leavitt, with the assistance of David Brailer, MD, PhD, the National Coordinator for Health Information Technology, that will recommend specific actions to achieve a common interoperability framework for health information technology (HIT). It has set an ambitious agenda for 2006, and the Council on Information Technology (COCIT) and American Academy of Pediatrics (AAP) are participating. The Continuity of Care Record (CCR) may play a role in advancing that agenda and the long-awaiting harmonization of standards with the Health Level Seven (HL7) Clinical Document Architecture (CDA) is now in progress.

The Office of the National Coordinator (ONC) has awarded 7 contracts to provide the infrastructure needed to advance access to HIT in 2006. The Health Information Technology Standards Panel (HITSP), organized by American National Standards Institute (ANSI), is a bold experiment in harmonizing and simplifying standards by bringing together standards developers and standards users to achieve harmonization of standards needed to achieve plug and play interoperability. Alan Zuckerman, MD, FAAP, and S. Andrew Spooner, MD, MPH, FAAP, are participating in their work on the Personal Health Record (PHR) Use Case. The Certification Commission for Health Information Technology (CCHIT), organized by the Healthcare Information and Management Systems Society (HIMSS), will begin certification of ambulatory electronic health record (EHR) products this year. Eugenia Marcus, MD, FAAP, Joseph H. Schneider, MD, MBA, FAAP, and Dr Zuckerman have been members of CCHIT working groups. The Health Information Security and Privacy Collaboration (HISPC), operated by Research Triangle Inc, will be awarding contracts in 40 states to help identify state-to-state variations in privacy and security regulations. Important issues regarding adolescent privacy and foster children should be clarified by this work. Four National Health Information Network (NHIN) Prototype contracts were awarded to consortia, led by Accenture, CSC, IBM, and Northrup Gruman, each charged with implementing the same architecture in 3 different health care markets. The future nationwide network will benefit from these experiments and lessons learned about costs and alternative strategies. Future networks may be regional and may also include specialized networks developed or supported by Children's Hospitals or Cancer Hospitals and other affinity groups.

The "Community" selected 3 breakthrough areas for 2006 that are expected to produce real and visible benefits to large numbers of people by the end of the year. The Bio-surveillance Breakthrough will address the short-term goal of same-day de-identified reporting of Emergency Room (ER) and ambulatory utilization and selected laboratory tests. These activities will be nationwide, but limited to practices and hospitals with electronic systems that are already operational. The Consumer Empowerment Breakthrough will lay the foundation for a PHR by starting with a registration summary and medication history that is intended to replace paper clipboards at registration desks with reusable and more accurate electronic information that is pre-populated from existing digital sources such as claims data, pharmacies, and EHR. If one of the target populations includes all hospitalized patients, then almost all newborns will become early users. This enhanced electronic insurance card will be modeled after the Katrina Health project and provide widely available data that will help physicians implement e-prescribing and help consumers better understand their medications. The Electronic Health Records Breakthrough will facilitate sharing of laboratory results because this is an important barrier and added cost for EHR implementation.

The "Community" created 4 workgroups to help move its agenda forward. The Bio-surveillance Workgroup seeks to put in place an infrastructure for early detection of pandemics and bio-terrorist threats. The Consumer Empowerment Workgroup will advance the use of the PHR particularly by leveraging the power of insurance companies and employers who are beginning to offer this service. The Chronic Care Workgroup will focus on connecting physicians to home monitoring of patients with chronic diseases. This work could be extended to include children with asthma and ADHD who could benefit from these technologies as much as adults with congestive heart failure. The Electronic Health Records Workgroup will focus on improving connectivity and access to laboratory data. It is important to remember that CCHIT will begin certification of ambulatory EHR in 2006 and will expand that work and move on to inpatient EHR in 2007 and, finally, certification of interoperability networks in 2008. Dr Marcus has worked hard to include key pediatric EHR functions, such as immunizations and growth charts, in the CCHIT certification process.

The "Community" also will address 2 other priority

areas that do not have work groups this year. Electronic Prescribing is considered a mature technology that has so effectively proven its value that all energies should be directed toward driving and facilitating adoption rather than

Quality Monitoring. Related Pay for Performance (PFP) initiatives are considered an extremely important goal but not yet mature enough to merit a specific short-term goal. Who will pay for all of this is a key question and issue that pervades all of the work of the "Community." Public-private partnership and market-driven return on investment are expected to power the breakthroughs rather than direct government subsidies.

The ASTM CCR is becoming an important part of this "Community"-led agenda. The CCR became an official ANSI standard in January 2006 and is now known as ASTM E2369-05. Work has been underway through a joint project of ASTM and HL7 to develop the Continuity of Care Document (CCD) that will be a CDA implementation of the CCR. This Standards Harmonization Breakthrough is expected to be completed in spring 2006 and be available to HITSP to help support the Consumer Empowerment Breakthrough Use Case. Because of the number of vendors implementing one or the other approach, a translation strategy is being explored as a means of allowing both compatible standards to coexist and exchange information between vendors using either standard. A vendor acceleration taskforce has been working to speed the integration of the CCR into shipping EHR products, and several vendors began shipping CCR-enabled EHR releases in January 2006.

In the "Decade of Health Information Technology," 2006 promises to be the year when we begin to implement real changes on the road to a more perfect vision of using Information Technology to improve health care for children.

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To join COCIT, contact AAP Membership at 800/433-9016 Ask for Membership.
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Susan Conley, MD, FAAP, Membership Chairperson, and Mark Del Beccaro, MD, FAAP, our new Policy Chairperson

Alan Zuckerman, MD, FAAP, COCIT activist and David Kibbe, MD, from the AAFP Center for Health Information Technology