

**The National Committee on Vital and Health Statistics (NCVHS)**

Executive Subcommittee special hearing on 'meaningful use' as proposed in the  
American Reinvestment and Recovery Act 2009

**Panel 2: Meaningful Use capacity/functionality in EHRs**

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**Panelist:** Blackford Middleton, MD, MPH, MSc, FACP, FACMI, FHIMSS  
Director, Clinical Informatics Research & Development  
Chairman, Center for Information Technology Leadership  
Partners HealthCare System, Boston, MA

**Introduction:**

Good morning. My name is Dr. Blackford Middleton. I am the Corporate Director for Clinical Informatics Research and Development, and of the Center for Information Technology Leadership, both at Partners Healthcare System, Boston, Massachusetts. I am also a member of the National Committee for Vital and Health Statistics, but today I am speaking in my capacity as someone who has been involved with electronic medical record use, design, implementation, and evaluation, in academic and industrial settings, for over 20 years.

It is an honor and a privilege for me to be with you today to discuss this critically important issue of 'meaningful use' of healthcare information technology (HIT) for US healthcare which I believe is essential as a prelude to healthcare reform, and transformation of our healthcare delivery systems into the information age, at last.

**Framing the discussion of 'meaningful use' of HIT**

Briefly, allow me to describe several issues which motivate and frame my discussion of the meaningful use of HIT, which then will guide the discussion of essential functionality and capacities required of HIT which should warrant incentive payments.

The motivation for HIT is clear: in our current fractured, and unwired healthcare system, evidence suggests that physicians routinely practice in a state of incomplete information, and with an incomplete knowledge base required to effectively apply best evidence where it exists for clinical decision-making. With the knowledge-base in medicine continuing to explode, especially in light of the revolution in personalized care it is likely that the information needs problem for providers, and our patients, will only escalate.

When considering assessment and measurement of 'meaningful use' I suggest that we consider how HIT itself may play a role in producing reliable measures. HIT process measures could be a by-product of the use of the HIT itself, for example the per provider percentage of prescriptions written with an e-prescribing system.

Measurement of meaningful use will require a strong ‘signal’ – something which can be measured reliably – and one that can discriminate between what is judged as meaningful use or not, and does so without bias, and cannot be used fraudulently to misrepresent use of the technology. Importantly, the measures should be independent of the particular technology per se, and apply whether a comprehensive thick client EMR, or a lightweight web-based system is being used.

While we consider our goals for transforming health care with the application of HIT, we must be wary of setting our sights too low, or settling for only an intermediate goal state in the journey toward robust HIT adoption. At the Center for Information Technology Leadership, for example, we find in our analyses that potentially many billions of dollars may be saved with the broad application of HIT. Our findings suggest that the two most important factors associated with the maximum value potential of HIT are seamless interoperability of healthcare data, and advanced clinical decision support. It is incumbent upon us to keep this long-range goal in mind even as we begin the journey with small steps.

Let us turn now to the goals of HIT adoption. Our first goal is improved care delivery: lower costs, improved quality, but I hope also we design a system that can enhance individual and community wellness, and research on what works and what does not. It is not about healthcare technology itself, of course, but rather what outcomes and redesign of our delivery system we can achieve with it. I suggest that defining clinical goals only is insufficient, and will not lead to a future state of coordinated and seamless care across different locations of care, healthcare organizations, and different technology solutions. Such systematic goals require us to think about requirements of the system itself to work efficiently; things like the ability to correctly identify the patient in any technology system, the seamless exchange and portability of data and information across systems, the availability of the best knowledge at the point of care in clinical decision support within any technology, and more. While these goals may not relate to one or another specific clinical goal, more importantly, they are relevant to helping us redesign our healthcare delivery system, as HIT is the enabler, and prelude, to other dimensions of healthcare reform to come. To achieve this vision, we will need a phased approach to incremental technology adoption that incrementally and inexorably moves us toward our combined goals.

Let me know now turn to the questions at hand regarding EHR functionality.

### **Questions:**

1. What **EHR capacities/functionalties** are absolutely required to enable a safe, patient-centric, high-quality health care system that optimizes patient outcomes?

Several excellent descriptions of EHR capacities and functionalities exist currently. These include the 2003 Institute of Medicine Letter Report describing the EHR,

HL7's EHR Standard Functional Specification, as well as the certification criteria for ambulatory medical records 2008, and inpatient criteria in development from the Certification Commission for Healthcare Information Technology. Time will not allow reviewing each of these now, but common to all of these functional descriptions of EHR are the following core capabilities:

**Data Access:** aggregate all the relevant patient care data for review by the provider. This may include organizing the data in a variety of presentations, and numerically and semantically normalizing data from disparate data sources.

**Knowledge Access:** provide access to knowledge-based tools and services in the context of the clinical workflow. Readily provide an answer to the clinical question at hand, 'one click away'.

**Workflow and Clinical Decision Support:** provide support for the clinical workflow both for the individual care provider, and care teams. In addition, provide clinical decision-support in the context of the clinical workflow, such as alerts, reminders, documentation assistance tools, care plans and guidelines, and diagnostic and therapeutic decision support as appropriate to both providers and patients.

**Healthcare Information Exchange:** facilitate information exchange between disparate sources for the purposes of data review for each and every clinical encounter. This should include all essential data elements such as current medications, allergies, problems and past medical history, laboratory and diagnostic test results, and patient demographics for example.

Let us now turn to the specific technologies that should be in use in 2011.

2. What are the critical EHR functionalities (*e.g.*, e-prescribing, decision support, problem list management) of which **providers should be required to demonstrate use in order to be earn an incentive as a "meaningful user"** of certified EHR technology in 2011? Should the functionalities or other specific requirements to meet the statutory "meaningful use" criteria be different or specific to provider type (*i.e.*, eligible professionals, hospitals)?

The language in HITECH within ARRA describes three broad areas; I concur with these capabilities being the areas of focus for 2011. In each case, in the written testimony I provide pointers to illustrative capabilities as defined in CCHIT certification criteria (these lists are not comprehensive).

- **e-Prescribing:** defined as electronically prescribing, and managing a medication list, with patient specific medication decision support (drug-drug, drug-lab, drug-allergy), medication history, allergies, including inpatient medication reconciliation, and medication administration

- *For example, the functions described in CCHIT Ambulatory 2008 Criteria sets in AM04, AM05, AM11, AM19, and FN05, FN06, FN07, FN08, FN12, FN13;*
- *and Inpatient Criteria IP05 and FN05, IP06 and FN06, IP10, FN07, FN12, IP11, IP12, FN08, IP14, FN16, IP16)*
- **Healthcare Information Exchange:** defined as the ability to aggregate, collate, and display in appropriate views all relevant patient care data from ancillary systems (for example, laboratories, radiology reports, patient demographic and administrative data, etc.). In addition, provide the ability to produce a Visit Summary (CCD), and exchange select data across and between healthcare organizations.
  - *For example, CCHIT 2008 AM09, AM14, IO-AM11, or HITSP ISO3/C32 specification with SNOMED-CT and Level 3 RxNORM*
  - *And Inpatient Criteria IO IP-04 (Discharge), and IO IP-05 (Cross enterprise document sharing)*
- **Quality Data Reporting :** defined as the ability to submit a standard quality data set to the appropriate authoritative agencies reflecting care quality, patient safety, and compliance with select standard quality measures
  - *CCHIT Ambulatory 2008 AM29, IO AM-14,*
  - *For example, NQF HITEP-2 quality data set (QDS)*

**Should a distinction be allowed between provider types?** With respect to the functionality described above, this observer would suggest that distinctions not be allowed between provider types. The above functionality should be in place and used by the relevant accountable providers for each and every clinical encounter or hospitalization.

4. What additional functionalities would be most important to require providers use by 2014 or 2015?

As the country moves toward universal adoption of electronic health records, the depth of functionality and interoperability to fully achieve the value potential of healthcare information technology must match the breath of adoption. By 2015, in addition to the above, the following functionalities should also be widely adopted to warrant incentive payments.

- **Demonstrate the ability to reliably submit without tampering or fraud predefined measures of HIT use, and quality data reports**
  - This is critical to allow meaningful use to be assessed as a by-product of use
- **Enhanced Structured and Coded Documentation**
  - Problem List, Medication List, Advanced Directives, Blood type, Adverse Events (never events), Family History, Medical History,

Surgical/Procedure History, Social History, Chief Complaint, Healthcare Maintenance and Screening, for example.

- To improve the data we collect and input to clinical decision support and quality data reporting systems progressive standardization of documentation templates and controlled medical terminology
- **Effective Workflow and Clinical Decision Support**
  - Team-based care coordination, healthcare maintenance and screening reminders, preventive care services, chronic care management, acute care management, triage, remote consultation and care collaboration
  - Based upon the evidence, define minimal standard clinical decision support for 2014 (and possibly beyond)
- **Knowledge Management Services**
  - Given the depth and breadth of clinical content and knowledge artifacts required to support effective workflow and clinical decision support, healthcare information technology solutions should have access to a national knowledge repository, and knowledge management services, to facilitate keeping all systems up to date with current best evidence and best practices
- **Seamless and secure information exchange and interoperability**
  - Progressive standardization of essential clinical data sets to support healthcare information exchange and interoperability
- **Personal Health Records**
  - A patient-controlled Personal Health Record provided either as an adjunct to provider-based systems, or through independent solutions, to support patient engagement and facilitate information exchange

3. Are these functionalities supported in current certified EHR products? If not, what are the gaps?

Time will not allow a comprehensive review of whether the functionalities described above are supported in current certified EHR products or not. The more advanced functionalities do not yet have certification criteria, and by the same token the certification process should not quell innovation in the marketplace to bring advanced technologies to life. Several core issues underlie this entire discussion on EHR functionalities, however, that if addressed from a national perspective could help facilitate obtaining both widespread adoption of HIT, and impact health care costs, and quality.

- **National Patient Identifier**

We have had a long debate in this country about the merits of a national patient identifier. This observer would suggest that the benefits far outweigh the risks and that we should move forward in developing and implementing this identifier with all appropriate policies and protections in place to ensure its safe and effective use.

- **Standardized clinical data model and clinical terminology**

While we have made dramatic progress in recent years thanks largely to the efforts of leading standards development organizations such as HL7, Integrating the Healthcare Enterprise, and the Healthcare Information Technology Standards Panel's efforts on harmonization, we do not have a universally accepted and complete clinical data model, nor do we have standardized clinical terminology, for all essential clinical data elements. Every effort should be made to advance our progress in these areas as they undergird the successful design, implementation, and use of all healthcare information technologies.

- **Standardized User Interface**

We now recognize that the human computer interface of healthcare information technology itself may impact clinical workflow and outcomes. There is a growing literature on the unintended and untoward consequences of HIT use. This observer would suggest that a critical element for the successful design, implementation, and use of HIT is to standardize the user interface so that providers using any system can use it appropriately. This will, of course, also decrease training costs, and assist providers who provide care in more than one setting.

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**Thank You!**