**APSO notes: Improving the Readability of EHRs**

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### The Big Challenges in Electronic Health Records and Meaningful Use

With the Federal Stimulus funding of the HITECH act, over $18 billion is allocated to the national adoption of Electronic Health Records (EHRs). Much of this funding will go toward payments to eligible providers and hospitals who not only adopt EHRs but also meet the 20 Meaningful Use criteria beginning in 2011 (see attachment). Eligible providers may qualify for up to $15k in 2011 and a total of $44k over 5 years. Ultimately, providers not adopting EHRs by 2015 may see a decrease in Medicare reimbursement in following years. In addition to Meaningful Use, physicians also struggle with using computers in exam rooms and the readability of EHR notes.

### Using Computers in Exam Rooms

Over the past decade, and increasing number of physicians have adopted the use of computers in front of patients. There are certainly challenges: loss of eye contact, cognitive load (too many demands on attention), poor room layout, slow computers, physicians who don’t type. There are also benefits: patients who perceive their doctor as modern, having all information at the fingertips, the reduction of errors from translation, and illegibility, and electronic cross-checking and alerts. The Permanente Journal published in 2004 a nice summary of techniques to improve patient-physician interaction, using computers in the exam room (attachment), techniques supported by later research.

### APSO notes: inverting the SOAP note

Physician’s progress notes have many customers: billing clerks, coders, compliance officers, regulators, lawyers, patients, nurses, and other physicians. Unfortunately, physicians are often the least satisfied with the output of their own notes. What in years past might have been a single sentence describing the care of the patient, can now run on to a dozen pages of carefully worded regulatory-speak. The physician-to-physician communication is frequently lost.

Paragraphs of regulatory documentation are interspersed with patient’s History and Physical Exam findings: fall-risk assessments, detailed smoking status, statements about patient’s learning style, detailed documentation of medication reconciliation, description of the time spent counseling and arranging care, description of the communication and coordination of care with other specialties, a specific number of findings on Review of Systems.

### Why SOAP notes are “so last century”

At University of Colorado Hospital, perhaps the worst example of such EHR documentation is the typical Emergency Department note, built to capture the detail of complex and rapid care in the ED. Although it works well for ED
physicians, the final output of this note to our Legal Medical Record is nearly indecipherable. The completed document is 15 screens long (about 8 printed pages), the History is not on screen 1, but somewhere between screen 2 and 3. The physical exam is tucked between nursing history and medication dispensing documentation, and the Assessment and Plan is several screens away from the bottom of the note, which is populated with vital signs and date/time and electronic signatures.

In order to combat “note bloat” and reclaim some usefulness and readability for physician-to-physician documentation, we propose the APSO format for Progress notes, History/Physicals and Consultation notes.

APSO note format (inverse of SOAP)

- Assessment
- Plan
- Subjective (history)
- Objective (exam)
- -billing, compliance, regulatory items are listed last

In this way, the most valuable screen real estate (the first screen seen when a note is selected) is filled with the most valuable information: the conclusion of that physicians’ thinking, the assessment and plan. This is immediately followed by the patient’s History of Present Illness. By making this single change, even if the other requirements for do not change, and notes continue to be 15 screens long, the physician can QUICKLY understand, and STOP reading after the first section.

Importantly, physicians can continue to think and document their note in the traditional SOAP sequence, beginning with the History and Exam sections. Only at the end of their documentation would they return to the top of the note to complete the Assessment and Plan.

There are already examples of such an APSO order. At the University, echocardiogram reports have been delivered in this format for nearly 10 years. Consultation letters received from community specialists are increasingly written in APSO format. Children’s Hospital inpatient teams are increasingly documenting in APSO format, as are some inpatient teams at the VA.

APSO intervention at UCH

In the summer of 2010, I received a Primary Care Strategic Initiative Grant for 12 months, that funded 40% of a quality improvement / research assistant nurse to introduce APSO documentation to Primary Care Physicians (PCPs), and if time allowed, to convert as much of the rest of the organization to APSO notes. Over the past 6 months, 70% of PCPs are now documenting in APSO format in the current EHR (Touchworks) and 100% of the PCP clinics are committed to APSO for our upcoming EHR (Epic) in February 2011. Additionally, physician directors of 23 out of 40 specialties at UCH have agreed to move to APSO documentation at their respective EHR go lives in 2011 and 2012.

Aside from complaints about Cut and Paste, the medical literature is as yet silent on the topic of readability.

Over the course of this quality initiative, we anticipate measuring the following items: the tracking of behavior change among primary care and specialty clinicians as they “opt in” to the APSO method in our current EHR. Additionally, we anticipate measuring satisfaction of using APSO. Also, we will conduct a timing study to see if APSO notes might be faster than SOAP notes in finding salient events and management changes described in physician progress notes. Finally, we have constructed an Electronic Readability Index (ERI) so that independent audits might measure and motivate improvement in Readability. Stay tuned for an update in 2011.