HITPC Clinical Documentation Hearing
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Panel 1: Role of Clinical Documentation for Clinicians
Implementation & Optimization Challenges in Electronic Documentation

Peter D. Stetson, MD, MA
Associate Professor of Clinical Medicine and Clinical Biomedical Informatics, Columbia University
CMO & CMIO, ColumbiaDoctors, New York, NY

Thank you for opportunity to discuss challenges with electronic documentation, and methods to address them. Our team agrees with the inclusion of electronic notes as a measure in Stage 2 and Stage 3 of Meaningful Use. The use of electronic documentation is associated with improved healthcare processes and outcomes, and can be accomplished on a broad scale. However, operational and quality challenges do exist in electronic documentation. These challenges are also opportunities for innovation and research, as will be discussed by other members of the Panel. I will be speaking about some lessons we have learned at our institution, and opportunities for improvement.

1. How do you define clinical documentation?

Our team defines clinical documentation as two general forms of clinical communication: notes and reports. Notes are authored about a patient in order to communicate to the care team the patient's status, the plan of care for the patient, and the provider's rationale to support these assessments. We distinguish these from reports, which communicate interpretations of diagnostic and/or therapeutic interventions. There are many other important secondary uses of clinical documentation data which drive some of the implementation considerations (e.g. research, pay-for-performance), but the primary purpose is to support clinical communication and care coordination.

2. Identify challenges related to clinical documentation? What solutions or approaches do you recommend to address these challenges?

In our experience, clinical documentation is one of the hardest modules within EHRs to bring live, and as such is often one of the last modules deployed in EHRs. This is particularly true among provider groups with a predominance of sub-specialists, like ColumbiaDoctors. This is because sub-specialists have a) unique sub-languages, b) unique workflows, and c) unique secondary use requirements (e.g. only transplant providers need data back out of the EHR to report to UNOS – the United Network for Organ Sharing). Out of the box, EHRs often don't have usable "clinical content" for all specialties, and as such there is a large up-front customization process needed in order to get provider engagement.

Another challenge to adoption is that of preserving "professionalism" of note outputs. Many providers, particularly those that do a lot of consultations, build their practice business up by ensuring high-quality communication with their referring providers. These providers often complain that boiler-plate outputs tend to decrease the level of personalization and readability on which many specialists pride themselves.

The second largest challenge after adoption is maintenance and optimization of the templates once they're live, and operational efficiency in making any needed updates.

We have used several successful strategies for adoption, maintenance, and optimization. To put this in context, 82% of our providers achieved Stage 1 MU, having begun our EHR implementation 4 years ago. Looking ahead to Stage 2, 78% of our 850,000 annual ambulatory visits are now documented with

electronic notes. Of these, 75% are entered using semi-structured templates. We have specialized content for 1000 physicians in 150 specialties, maintaining over 600 active templates, and 1400 reusable NoteForms (sub-sections that can be reused across specialties and templates; for example our "Breast Cancer History NoteForm" which has many structured fields for staging, receptor status, pharmacogenetic and multi-gene profile scores, and chemo toxicity scores). Despite these apparent successes, it is important to note that we have learned many hard lessons as well, emerging only now that we have 4 years of hindsight. We initially did insufficient QA of outputs, and lost early credibility with misspellings and rendering errors (introduced by us and by the vendor). We tried to build too much custom content too early, before users fully understood their new workflows. Because we did not sufficiently emphasize in early training the electronic faxing and carbon copy functions (for referral/consult coordination), we interfered with communication and the users' sense of professionalism with their key colleagues. We still work through many of these issues today.

As to the challenge of adoption, we recommend deploying clinical documentation modules at the beginning of an EHR deployment along with CPOE, flowsheets, eRx and billing modules. More advanced EHRs allow "cross-talk" of note-writing workflow with CPOE, flowsheets, eRx, and billing (e.g. renew an eRx while in your note-writing workflow, and make it count in both your note and for ordering), and thus these features can promote each other's adoption. Second, identify knowledgeable and engaging physician champions and engage them in a governance process predicated on physician leadership, and it should report up through your quality structure. Third, stick to a timeline for customization of clinical content (we spent 12 weeks for each rolling go-live of approximately 100 providers), and make sure that the physician champion signs off on all relevant note outputs. Fourth, we recommend a structured narrative approach with early release valves. Our group has previously published on finding the sweet spot between structure and narrative – this varies by practice and by the extent to which that specialty wants data back for research. Use release valves liberally early on (e.g. allowing reverting to paper and scanning in the first few weeks after go-live when they fall behind during office hours).

For maintenance and optimization, start with a set of "canonical templates" which cannot be altered except by enterprise consensus (e.g. initial, follow-up, consult, event, no show, procedure, phonecall, etc). Then rename at the specialty level and add the specialty-specific NoteForms as reusable sub-sections. Second, ensure a standard naming convention for note and report titles. As prior work by Thomas Payne has indicated, a common shared record with lots of notes necessitates enabling "search" of at least the titles to find what you need without opening each note. We recommend using existing standards for this like the HL7/LOINC document ontology attributes – for example "MEDICINE Pulmonary Transplant Initial Visit". Finally, groom and retain deep knowledge and field experience on your content development team – inadequate staffing and experience on this can lead to 6-12 month delays in responding to user optimization requests.

3. What policies have you implemented to streamline the clinical documentation process? Are they working?

I described our policies and procedures for build and design, and our recommended approaches to support adoption. This has led to the successful adoption of electronic documentation at ColumbiaDoctors, as we detailed earlier.

In addition, before we went live with the first specialty, we developed a "Scan" policy for old records, and defined minima from old paper charts that had to get into the new EHR vs. what could be sent to

storage or shredded. We were quite emphatic about the departments employing this during the "pre-golive" phase, and it helped adoption. Each canonical template was developed in concert with our Compliance team to ensure we struck the right balance of "copy forward" and "previous history" utilization – forms of what we have called "Electronic Documentation Support Tools" in our research. We ended up using it very sparingly or not advertising the less desirable functions we couldn't turn off. I will return to this in the next question regarding future development.

We developed and maintained a "content library" – a mapping of all content elements like templates, and their sections, sub-sections, and attached NoteForms that were deployed in each specialty. We returned to this routinely to update it, and used it design our preliminary warehouse reports to extract both usage and instance data and are now successfully using this structure to extract structured data from our stored notes. I will return to this also as a difficult challenge that merits further development in the next question for our panel.

We conducted parallel research on the attributes of document quality, from which emerged our Physician Document Quality Instrument. The 9 items across 4 underlying factors detected through this research guided our assessments of note output quality during design of our templates. It also formed the foundation of our "eDocumentation Guideline". This guideline has now been baked in to our annual compliance training for billing attendings. Some of our departments have elected to take this one step further, and require all billing attendings to sign the eDocumentation Guideline as part of their reappointment every 2 years. Biannual sampling is used to ensure adherence across all departments.

To handle sensitive specialty domains, we created security groupings that ensconce certain documents behind additional access requirements. Examples of this include behavioral health, pediatric endocrine (e.g. transgendered and short stature patients), family planning, and child abuse documentation. Each domain has specific security requirements driven by federal and state regulations. These efforts were critical to building trust with these specialty providers so that they were able to adopt electronic documentation.

More recent policy and procedure efforts that have promoted adoption include new enterprise templates and guidance for how to leverage scribes and other non-physician medical staff. For the former, we developed a novel, enterprise template that we have now deployed called Note/Letter. One note-writing event spawns two outputs – a note for the chart, and a letter that routes back to a referring provider. We also introduced standard ways of documenting contact with patients – the patient communication template. Instead of handling it in insecure email, we embed these as notes in the EHR. This is one of our most commonly used templates at this point. Finally, we defined a scope of practice policy that clearly articulates what scribes can and cannot do to support providers in documentation, as well as "incident-to" documentation requirements for physician assistants. Without this guidance to practices, they were reluctant to fully adopt, or were struggling with other aspects of meaningful use compliance while also trying to do electronic documentation.

4. How has/can technology evolve to streamline the documentation process?

Though perhaps an inapt metaphor, we believe inappropriate use of copy/paste/cloning is a symptom of an underlying disease – the disease being inefficient workflow and cognitive support for providers when documenting in EHRs. Thus, like any other chronic disease, it is desirable to focus on primary prevention techniques to avoid secondary consequences. My colleagues will speak in more detail about innovations needed in clinical documentation in this panel, but below we describe some primary prevention strategies that could inform those innovations.

On the primary prevention side, research is needed to identify next-generation documentation strategies that reduce cognitive burden on providers, and which promote synthesis, planning, and care coordination. As it stands today, EHRs tuck key information away from a note-writer, forcing them to overload working memory or fall back on crutches like copy/paste/cloning. Heads-up displays of key data wrapped around a note-authoring space with easy access for review and citation, with behavior logging behind the scenes to support billing and compliance requirements, are needed. Routing pertinent updates from within note-writing workflow to care team members is often hard to do, and not even as advanced as many basic email applications. Vendors could consider employing valid instruments for assessing note output quality on their products as a quality control step prior to releasing to clients. Vendors should consider providing ways to turn off "copy forward" functions under certain circumstances.

Semi-structured templates are an opportunity to execute a novel form of decision support – "electronic documentation decision support". This could support clinical trial patient recruitment, or suggest important follow-ups or communication to other team members. It could assist avoiding missed diagnoses, delayed or missed results review, and care planning opportunities. One could consider perhaps focusing initially on medical students and graduate medical trainees to avoid "internal conflicts" (e.g. citing in a glucose of 200, but failing to mention a diagnosis of diabetes or a plan to assess it) modeled on work by Eric Holmboe. Our research suggests that even a document quality instrument like the PDQI does not detect redundancy. One might consider decision support during note-writing that detects inappropriate redundancy, though work would need to be done to avoid inhibiting "good" redundancy.

Natural language processing of narrative combined with more structured components like the NoteForms we use – a full "structured narrative" approach our team has proposed - holds promise for faster documentation without losing the ability to extract secondary data.

Clients that want to promote adoption by customizing content for their specialties need content management tools from vendors. Keeping track of which templates are used, and which sub-sections within them are used, are critical to ensuring meaningful use of electronic documentation templates.

5. **How do we change clinical documentation so that the elements can be captured as discrete data and yet maintain the narrative format that physicians have been trained to use for years?**

We described the structured narrative approach above as a possible solution. In this the idea is to allow lots of narrative – actually encourage it – in pertinent sections like the History of the Present Illness and Assessment or Discussion sections. From this narrative, extract structured data with natural language processing. This would then be combined with reusable, structured sub-sections of notes. The key here for the structured data, and the encoded data from NLP, is ensuring that vendor solutions are utilizing standard nomenclatures, such as SNOMED, behind the scenes when the data is stored. It is this mapping to standard nomenclature which is necessary to make this a scalable solution. It enables both the content management solutions we called for above, but also is critical in order to be able to execute decision support against that data, and to achieve the next step - ***Meaningful Health.***