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CLINICAL COMMENTARY

Provider Diagnosis Selection in the Era of Electronic Health Records

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Summary: The electronic health record (EHR) is changing the practice of medicine in many ways. One important way is how providers select diagnoses to document clinical care. Before the arrival of EHRs, many health providers selected diagnoses on paper superbills. With an EHR, providers select diagnoses using the electronic superbill equivalent. We will review some of the ways that an EHR can facilitate diagnosis selection for physicians.

Superbill: The Centers of Medicare and Medicaid (CMS) Meaningful Use incentive program has stimulated many health organizations to implement EHRs. As a result, many processes are transitioning from paper-based systems to electronic systems. One major process undergoing transition is provider selection of billing diagnoses.

In a paper-based system, providers generally selected diagnoses on a form called a superbill. The superbill goes by other names, such as charge ticket or charge document, and functions as a paper-based communication tool for billing and coordination. It organizes the information relevant for billing of patient services, such as date of service, patient demographics, payor type, CPT (service) codes, and ICD-9 (diagnosis) codes. It can also serve as a care coordination tool by allowing providers to specify follow-up instructions and referral information[1].

Practices have streamlined the superbill to meet the needs of local groups of providers. Diagnoses relevant to the practice will be listed on the superbill, allowing providers to choose from up to 100-200 diagnoses. This inherent constraint of a paper-based system creates a filtering effect on the diagnoses, which will be significantly magnified when transitioning to ICD-10[2]. Providers can still select less common diagnoses, typically through an alternate method such as writing a diagnosis, symptom, or code on a blank field on the superbill. Often, the provider does not write the associated ICD-9 code leaving it open to interpretation.

The superbill plays a passive *and* active role in provider diagnosis selection. The pre-printed diagnoses passively prompt the provider through convenience and an implicit assumption that they are correct. A barrier is erected in selecting diagnoses not listed on the superbill as the provider must proactively write in an alternate diagnosis.

Electronic Health Records and the Electronic Superbill: The EHR could be viewed as having an electronic superbill function. Similarly, the electronic superbill creates an active-passive dynamic in provider diagnosis selection. There are several ways that an EHR can passively prompt the provider during diagnosis selection. First, many EHRs can be configured to have defaults based on the user's login profile demographics. For example, the EHR may be configured to display a predetermined user interface based on the user's clinical specialty. Therefore, an orthopedist could have a customized user interface that preferentially displays orthopedic diagnoses. Users could then select items from this predetermined diagnosis list instead of using a search box.

Second, many EHRs utilize ordersets with predetermined diagnosis options. Ordersets are predefined templates used in patient care for specific clinical situations, for example the evaluation and management of a chronic cough. While ordersets existed in the in paper-based systems, their general prevalence surged with implementation of EHRs[3] with a new presence in the ambulatory setting. Ordersets commonly prompt the user to select diagnoses from a short list germane to the clinical scenario. For example, a cough orderset may offer community acquired pneumonia, gastroesophageal reflux disease, acute bronchitis among others as default diagnosis options. Users could then select diagnoses from the orderset list instead of using a search tool.

Third, EHRs can filter the output when the provider does a search for diagnoses. EHRs utilize different search logic algorithms much like an internet search engines. Typically, an EHR uses a "best match" methodology in response to the provider's entry in a diagnosis search tool. Some EHRs may attempt to aid the provider in making the correct diagnosis based on clinical and lab data (Bayesian reasoning)[4]. EHRs can also tag or highlight the diagnosis search

results in various ways. For example, EHR search results may display the ICD-9 code or CMS's Hierarchical Condition Category (HCC) code.

There are also a number of ways that a provider and the EHR can actively manage the diagnosis selection process. First, the provider may preferentially opt to use the diagnosis search tool when selecting diagnoses. By doing so, the provider bypasses the three passive prompts mentioned earlier, i.e., default user interfaces, default orderset diagnoses and search tool filtering/tagging.

Second, some EHRs possess a functionality that allows a provider to create his/her own personal diagnosis lists. This functionality enables the provider to make his/her own shortcuts instead of repetitively using the search tool. Both the generalist and specialist physician alike may find that a personal diagnosis list is a time saver. For example, a primary care physician may create a broad list of common outpatient diagnoses, such as wellness exam, cough, and high blood pressure. Conversely, a specialist may create a narrow list of diagnoses relevant to a specific niche. In either case, the provider is proactively making a personal diagnosis list.

Third, many EHRs have some type of alerting or warning function. These alerts are typically configured to fire when a specific condition is met. For example, the alert may fire if a provider orders a medication that exceeds the safety limit for the patient's renal function. By displaying the alert or warning, the provider may be reminded about the renal insufficiency and thus opt to add it as a diagnosis. Therefore an EHR's alerting function can implicitly prompt the provider to select a diagnosis.

In summary, EHRs are changing the way that providers select diagnoses. An EHR can prompt the provider in diagnosis selection through configuring the user interface, ordersets, search engine logic, and alerts. Similarly, the provider can manage the diagnosis options by personalizing the user interface and searching as he/she sees fit to find the desired diagnosis. In all scenarios, the provider now has more control over which diagnoses to select, and is not limited to what is printed on the superbill.

REFERENCES

1. AAPC. Superbills: ICD-9 vs. ICD-10 [Internet]. 2013. Available from: http://www.aapc.com/icd-10/superbills.aspx
2. **Carl Natale**. ICD-10 Superbill: Will superbills survive ICD-10 implementation? [Internet]. 08/16/2011. Available from: http://www.govhealthit.com/blog/icd-10-superbill-will-superbills-survive-icd-10-implemetation
3. **Cowden D, Barbacioru, C, Kahwash E, Saltz J**. Order sets utilization in clinical order entry system. AMIA Annu Symp Proc. 2003:819. PubMed PMID: 14728324; PubMed Central PMCID: PMC1479990.
4. **Shortliffe E, Cimino J**. Biomedical Informatics: Computer Applications in Health Care and Biomedicine. 3rd ed. Springer; 2006. P. 702-3.

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