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**Testimony to the
HIT Policy Committee Information Exchange Work Group
on
ePrescribing and Meaningful Use**

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Good morning and thank you to the Work Group members for the opportunity to testify regarding ePrescribing and meaningful use. My name is J. Marc Overhage, MD, PhD and I am the Director of Medical Informatics at the Regenstrief Institute and President and CEO of the Indiana Health Information Exchange. The Institute has been developing and studying clinician order entry and electronic transmission of orders for decades.

The NPRM entitled Medicare and Medicaid Programs; Electronic Health Record Incentive Program proposes a definition of meaningful use to implement the provisions of the American Recovery and Reinvestment Act of 2009 (ARRA) (Pub. L. 111-5) that provide incentive payments to eligible professionals (EPs) and eligible hospitals participating in Medicare and Medicaid programs that adopt and meaningfully use certified electronic health record (EHR) technology. The NPRM proposes that 'CPOE' be defined as the provider's use of "computer assistance to directly enter medical orders (for example, medications, consultations with other providers, laboratory services, imaging studies, and other auxiliary services) from a computer or mobile device. The order is also documented or captured in a digital, structured, and computable format for use in improving safety and organization." Authorized provider is later clarified with a parenthetical list that includes MD, DO, RN, PA, and NP. In addition the provider must maintain an active medication list, maintain active medication allergy list, and implement drug-drug, drug-allergy and drug-formulary checks. In defining CPOE, the NPRM proposes that "For Stage 1 criteria, we propose that it will not include the electronic transmittal of that order to the pharmacy, laboratory, or diagnostic imaging center".

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ePrescribing is clearly the most evolved component of our nation's health information technology infrastructure and use is steadily increasing, growing 240% and 60% in 2008 and 2009 respectively in Indianapolis for example, though from a modest initial level of adoption. Unfortunately, disadvantaged populations may not benefit to the same degree as others since payors and pharmacies that provide care for indigent populations are less likely to provide medication histories, formularies or to accept electronic prescriptions.

There are still a number of operational impediments to ePrescribing reaching its full potential for meaningful use:

Coding systems The standards that have been adopted by ONC in its IFR include UNII for medication allergies and RxNORM for medications. UNII has many potential limitations as an allergy coding system including its granularity and the current limitations in mappings between UNII and RxNORM which rely on exact string matches. RxNORM

Eligibility Inquiry While improving, eligibility data continues to be missing or incorrect in terms of the appropriate formulary to apply.

Medication History Medication histories are one of the most valuable aspects of ePrescribing. Unfortunately, many ePrescribing systems require the provider to perform extra steps to take advantage of this valuable information and so the number of visits in which a medication history is retrieved is much smaller than the number in which e-prescriptions are written and patients do not get the benefit. Even when a medication history is requested, errors in data sources mean that results are frequently not returned when they should be. Once source, for example will not return a medication history if there are more than 50 dispensing events which, given that they are representing a 13 month period, means that any patient on more than four or maybe even 3 chronic medications won't have a medication history available.

Medication histories are less valuable than they might be to the provider because most current ePrescribing systems present the data in a relatively raw format as dispensing events requiring the provider to

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perform extensive mental work with its attendant chance of error, to convert these data into usable information about the patient's medication history to support their prescribing decisions. The mismatch between the level of granularity at which the provider makes these decisions and at which a pharmacist dispenses medications contributes to this problem. Pharmacists have to dispense medications as specific products at a specific strength, packaged in specific ways typically identified using NDC codes while providers typically conceptualize medications at the level of an active ingredient and a dose that they want the patient to receive. With current systems, both the pharmacist and the provider have to make conversions between these two models adding work and potential for mistakes.

Formulary data Formularies are one of the most problematic aspects of the ePrescribing chain today. First, there are too many. As a Surescripts certified ePrescribing provider, the Regenstrief Institute downloads and manage almost 3,000 formularies, with tens of millions of NDC codes and approximately 150,000 unique NDC codes. These NDC codes are typically characterized as representative NDC codes which creates difficulties in identifying whether a medication prescribed as an RxNORM code is covered and at what benefit level. There are numerous issues including synchronization of updates to the various components of the formulary, content that should be structured that is free text (age limits for example), and the amount of processing required to make the formularies usable for our ePrescribing system.

Electronic transmission Electronic transmission of prescriptions works reasonably well but the current limitations on transmission of controlled substances create additional workflow challenges requiring an alternate mechanism for dealing with controlled substances. The other area in which electronic transmission could be improved is in the end-to-end confirmation of prescriptions transmission.

Workflow Workflow is one of the most challenging aspects of ePrescribing. The NPRM requires that the provider enter the prescription which will require workflow changes in many practices that rely on non-clinical personnel to enter them currently. Another common problem that arises is when providers who are not members of the same practice cross-cover for each other which is common in smaller practices that constitute

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the majority of practices in the country. Patient demographics are not available in the cross-covering provider's system and have to be obtained and entered. One last example of workflow challenges is related to refill requests. Most refill requests from pharmacies do not include enough patient demographic data to unambiguously identify the patient. When some pharmacies started providing the provider's prescription order number along with the refill requests when available, they partially addressed this issue though prescriptions written by providers who are not ePrescribing continue to represent a significant difficulty.

Medication Allergies Medication allergies are rarely coded today and require sophisticated strategies for coding them. Since many providers review and validate allergies with patients this may not represent as big a limitation as it might first seem.

Decision Support The NPRM identifies drug-drug interaction checking as key element of clinical decision support. A vast majority of providers who use ePrescribing turn off drug-drug interaction checks because the false positive rate is far too high to be usable. The organizations such as the Veteran's Administration, Partners Healthcare and the Regenstreif Institute that have pioneered CPOE and clinical decisions support have all implemented a much more targeted set of drug-drug interactions rules numbering in the low hundreds rather than the many thousands found in most commercial drug knowledge bases. Concern for liability is one of the major barriers to more refined drug-drug interaction lists. The FDA's Daily Med knowledgebase is an additional evolving source of drug knowledge but limitations on which structured content the Agency releases and for which medications limit its value.