

December 21, 2007

Mark Leavitt, MD, PhD
Chairman
Certification Commission for Healthcare Information Technology
(CCHIT)
233 N. Michigan Avenue, 21st Floor
Chicago, IL 60601



Comments:
2008 Certification Development Cycle, First Draft Criteria

Dear Dr. Leavitt:

The American Society of Health-System Pharmacists (ASHP) is pleased to respond to the Certification Commission for Healthcare Information Technology (CCHIT)'s Proposed Certification Criteria for 2008. ASHP is the 30,000-member national professional and scientific association that represents pharmacists who practice in hospitals, health maintenance organizations, long-term care facilities, home care agencies, and other components of health systems. ASHP has a long history of policy development with respect to the medication use system, appropriate use of technology, and the importance of interoperability throughout the inpatient, outpatient, and other continuum of care settings.

ASHP established a membership section for pharmacists involved in informatics and automation in 2006. The Section of Pharmacy Informatics and Technology (the Section) is quickly increasing its membership.. The Section formed a standing committee (a list of participants can be found on page 5 of the Executive Summary of our comments) to address the many concerns of pharmacists relating to standards development for health information technology. In our comments ASHP, with significant input from the Section, provides specific suggestions on a number of criteria, as well as general comments including several suggested additions.

As CCHIT finalizes its work, ASHP offers its expertise and welcomes further opportunities to provide additional information regarding our comments. I can be reached by telephone (301-664-8723) or email (kgumpper@ashp.org).

Sincerely,



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Director, Section of Pharmacy Informatics & Technology

Executive Summary

ASHP Comments on 2008 Certification Criteria (Ambulatory, Cardiovascular, Child Health, Emergency Department, Inpatient and Network)

The American Society of Health-System Pharmacists (ASHP) is pleased to respond to the Certification Commission for Healthcare Information Technology (CCHIT)'s Proposed Criteria for Inpatient Interoperability and Supplement to Roadmap. ASHP is the 30,000-member national professional and scientific association that represents pharmacists who practice in hospitals and other organized health systems. We commend CCHIT for its outstanding work in developing criteria for ambulatory, inpatient and interoperability certification criteria. The scope of this work is enormous, but so is its importance. We appreciate efforts to capture the functionality across a broad range of needs.

ASHP convened a group of its informatics pharmacist members from around the country to respond to the latest criteria for certification. This task force, the ASHP Section of Pharmacy Informatics and Technology Task Force on Standards and Regulations, represents some of the best pharmacy informaticians in the country and is comprised of members who have practical experience working with dozens of information systems, both self developed and from leading IT vendors. The task force provided significant input into ASHP's response to the criteria, emphasizing medication management aspects in each section. Furthermore, our perspective lends itself to functionality that supports not only the pharmacist, but all health professionals in the medication use process to improve patient care.

ASHP appreciates this opportunity to present its comments, and encourages CCHIT to contact us for additional details, in particular to further refine the criteria dealing with medication management, as the proposal is finalized. We believe additional pharmacists' involvement will benefit the Commission's work, and ASHP is interested in working with CCHIT throughout the process. We also acknowledge Sandra Mitchell and Douglas Smith for their knowledge and guidance in making these responses to the Commission.

The following points represent a high level view of the attached comments.

- Pharmacist verification functionality – Pharmacist verification functionality was the largest gap of functionality in the 2007 criteria, and the commission has started to address this aspect of pharmacist workflow. It is our strong belief that this topic should be expanded in a separate section. JCAHO has reaffirmed the role of the pharmacist in reviewing medication orders for accuracy and completeness, thus ensuring that during this process, which is critical to patient safety and care, there is functionality to give the pharmacist all needed information.
- Support of Standards – We support all of the standardization efforts to make interoperability a reality. A standard codified drug nomenclature will be needed

to accomplish most of the interoperability goals. Support for RxNorm in this regard is critical.

- CPOE and Medication Management Certification – While we support the goal of facilitating seamless communication during the ordering, verification, dispensing and administering of medications, we also recognize that there are disparate systems that can work together to accomplish these goals. In this regard, we are concerned that the current certification structure favors large integrated vendors at the peril of niche pharmacy systems. We encourage CCHIT to adopt a process to recognize systems and facilities where business issues would prevent joint certification.

Our detailed comments for each section of the inpatient and interoperability criteria are also provided to expand on the ground work done by CCHIT.

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Index

AF 02.01 to AF 02.05 Manage patient demographics	9
AF 03.01 to AF 3.11 Manage problem list	10
AF 04.01 – 04.17 Manage medication list.....	10
AF 05.01 to 05.08.01 Manage allergy and adverse reaction list.....	12
AF 11.01 to 11.33.01 Order medication	14
AF 14.01 to 14.11 Manage results	14
AF 17.01 to 17.03 Support for standard care plans, guidelines, protocols	15
AF 19.01 to 19.13.01 Support for drug interaction.....	15
AF 20.01 to 20.06 Support for medication or immunization administration or supply....	20
AF 22.01 to 22.11 Present alerts for disease management, preventive services and wellness.....	20
AF 26.01 to 26.05 Pharmacy communications.....	21
AF 29.01 to 29.08 Report generations	22
AF 35.01 to 35.02 Clinical decision support system guidelines updates.....	22
Certification of CPOE/CDS and Medication Management as One	6
CH.1 to CH.27b Child Health Criteria.....	24
CV.1 to CV.34 Cardiovascular	23
ED.1 to ED. 130 Emergency Department Criteria 2008	25
FN.1 to FN.59 Foundation Criteria.....	26
Lack of Criteria on Pharmacist Verification	5
Members of the ASHP Section of Pharmacy Informatics and Technology	3
New Criteria.....	26
Other Comments	9
Time to respond	5
Value of Standardized drug nomenclature and Data Elements	6

General Comments to CCHIT

Time to respond

The difficult task of developing these criteria for CCHIT is greatly appreciated by the provider community and should result in a safer system of patient care. Given the scope of the subject matter, ASHP convened a team of informatics pharmacists from our Section's Task Force on Standards and Regulations to respond in the best way possible. We found the comment period brief and our ability to respond with additional criteria was, to some extent, hampered by the concise time frame. The team involved was very committed to the effort and stands ready to review future drafts or proposed criteria.

Lack of Criteria on Pharmacist Verification

The lack of a specific requirement for pharmacist prospective review and verification of medication orders was a significant void. This review is critical for safe ordering of medications and is required by the Joint Commission of Accreditation of Healthcare Organizations (JCAHO) (Standard MM 4.10). Significant clinical systems exist to ensure this is done in a high quality manner. Below is a brief example of functional criteria we feel is essential to developing the 2008 standard.

- The system shall provide the ability to enable a pharmacist to review and approve every medication order.
- The system will display the physician order as it was entered.
- The system will allow the pharmacist the ability to view all alerts generated at the time of order entry.
- The system will allow the pharmacist to view all clinical decision support overrides and the reasons given.
- The system shall record user and date/time stamp for order verification related events, including order date/time, renewal date/time, and discontinuation date/time.
- The problem, diagnosis, reason or indication will be transmitted with the medication order.
- Any change the pharmacist makes to the dose, frequency, route, drug product, instructions or comment needs to go back to the CPOE system for physician co-signature. The system shall allow the institution to determine criteria for activation of modified orders without physician co-signature (i.e., which orders require physician co-signature prior to activation).

- The system shall accommodate therapeutic substitution without physician co-signature where institutionally specified. The system shall allow customization that recognizes the difference between therapeutic substitution and medication order changes that require physician co-signature.

Priority should be HIGH for Providers. Availability and compliance should be set for 2009.

Certification of CPOE/CDS and Medication Management as One

It is well understood that the process of medication management and CPOE is highly connected. The re-entering of orders from an ordering system to a pharmacy system is not an acceptable practice in the hospital or ambulatory environment. We wish to bring to the attention of CCHIT that there are many examples of pharmacy system vendors working well with CPOE systems that have the integration required for certification.

An important issue in the method chosen by CCHIT to certify these products provides an unfair advantage to the large, multi-module vendors such as Cerner, Epic, Eclipsys, etc. The certification methodology requires the standalone, best-of-breed vendors, to negotiate with these larger competitors to gain certification. The issue is that the larger vendors have competing products. Therefore, there is no incentive for them to work with the smaller pharmacy vendors. It is common for larger vendors not to aggressively pursue an interface with stand alone pharmacy vendors. A common response is "If you want that functionality then use our product," even though quite often the needed functionality is not there with their product.

'Best-of-breed' vendors often are the primary source for cutting edge innovation due to their need to survive. For this reason, we ask that CCHIT reconsider including a provision for a 'best of breed' environment of pharmacy and CPOE systems certification. Certification should take into consideration the functionality of the software and its ability to communicate with other systems. It should not be predicated on whether other vendors are willing to "receive" the information. That should be left to the clients to negotiate.

Certification should also *require* vendors to communicate through standardized methodologies and nomenclature.

Value of Standardized drug nomenclature and Data Elements

CCHIT may wish to consider an approach where standardized data elements and their attributes must be clearly defined. Consideration for this standardization to be mandated for use by vendors has some important reasons. Here are three:

- 1) Mandated EHR data standards will allow development of interoperability to progress at maximum speed, both within and between vendor systems. We understand that interface development and maintenance is expensive, and have witnessed first hand the problems associated with data elements existing on only one side of an interface. Even when a data element exists on both sides, there are problems if the attributes are different. This can have unintended consequences in system function and can also interfere with effective communication between nurses, pharmacists, and other clinicians.

Example: In a pharmacy information system and point-of-care (POC) system that are both from the same major HIT vendor:

- The pharmacy system supports PRN as a separate data element, but the POC system does not. Thus in the interface we concatenate the frequency (e.g. q4h) to PRN so the POC system sees q4hPRN.
 - The POC bar coding system was designed with the assumption that all IV infusions come from the pharmacy. The work around for floor stock IV solution is to enter all floor stock IVs as PRN orders in the system. The vendor refuses to see the legal implication of this work around. As a result we have elected not to use their IV software for POC bar-coding. And of course we can not use any other vendor's software for IV POC bar-coding as the data elements are completely incompatible, and useless to our POC documentation system.
- 2) Mandated EHR data standards will help preserve a HIT free market. Failure to mandate EHR data elements maintains the status quo of the high costs of HIT interfaces for years to come. Eventually, one vendor may emerge as the de facto standard, and will have a monopoly. Mandating the EHR data standards now will preserve free market competition and all of its benefits. To be sure, the cost of this mandate will be high; but if the mandate is delayed the eventual cost will be much higher.

Example: A large integrated health system recently changed EHR software vendors. The data structures of the old and new systems are different. They have about two decades of electronic medical records that are lost to the new EHR and will be required to print and store all of these rich electronic health records. If EHR data standard had been mandated 20 years ago, all of this data would still be available for daily clinical use and research. The longer we wait to mandate data standards the more data will be lost to legacy databases.

Some existing systems are not structurally well-designed for reports or statistical analysis. Therefore, now is the time to change the structure of the systems to ensure that the data will be available for five years for use in retrospective studies.

Examples:

Certain data types greatly enhance the capability to perform statistics. Use of free text almost precludes the data from analysis. Restating the same data as choices allows for it to be recorded as drop down lists or radio buttons and analyzed as categorical data. Thus, the likelihood of having statistically significant differences is increased and misclassification due to misspelling is minimized. To this end, storage as continuous numeric variables is best if appropriate for the data.

Variables to be used in analysis need to be placed in separate fields. For example, if information is requested on all PRN medication, the SIG, such as q4h prn, needs to be stored in two fields.

A data dictionary is essential. Standardized variable names and formats are necessary to access information which increases interoperability. Versioning of the data dictionary is important because changes in definition may affect the outcome of a report or query. This also gets to the heart of the Arden Syntax curly braces issue (need for a standard query format) that the HL7 CDS committee has been struggling with.

Data standards for medication orders and documentation of medication administration must be developed by an appropriate standards organization (NCPDP, or HL7) and compliance with the standard must be mandated by an appropriate organization (JCAHO, or HHS).

Every year we delay compounds this problem since healthcare data continues to be stored in legacy systems.

RxNorm must be part of this mandate as the industry greatly needs a standardized and nonproprietary drug products database. As such, we fully support the National Committee on Vital and Health Statistics: Second Set of Recommendations on E-Prescribing Standards that applies to both inpatient and ambulatory environments (below). We believe that CCHIT should require the RxNorm nomenclature for 2008.

- 3) HHS should take immediate steps to accelerate the promulgation and implementation of FDA's Drug Listing Rule in order to make the inclusion of RxNorm in the 2006 pilot tests as comprehensive as possible. Delayed promulgation may jeopardize the success of the 2006 pilot tests. This is also necessary to achieve the patient safety objectives of MMA.

Discrete data elements must be codified using a standard vocabulary so it is available for computerized clinical decision support (CCDS). The Institute of Medicine report identifies CCDS a high priority for patient safety and quality care.¹

Other Comments

- Report Functionality – While the new criteria has addressed some of the complexities of report generation, there needs to be a greater ability to create customized reports to address the complexities of the medication use process. Having the ability to generate a report is not necessarily the same as creating or exporting a report for analysis.
- Health Professions Work Flow Analysis –The criteria do not always take into consideration the disruption to work flow that new technologies may impart. We encourage CCHIT to evaluate the complexities of workflow in patient care specifically as they relate to the medication use process in further refinement of the certification criteria.
- Quality and Outcomes – We encourage CCHIT to pay close attention to quality and regulatory agencies when determining the criteria and the implementation for certification. Many institutions are struggling with providing the necessary quality indicators to CMS, The Joint Commission, and other groups. By including metric requirements and standard formats for reporting these indicators by the vendors, all would be able to report specific trends and demonstrate their outcomes.

Specific Comments on 2008 Certification Criteria

AF 01.01 to AF 01.08 Identify and maintain a patient record

No Comments

AF 02.01 to AF 02.05 Manage patient demographics

AF 02.01

Criteria: The system shall capture and maintain demographic information as part of the patient record.

Comment: Minimum data set necessary for clinical healthcare maintenance requires that the patient age be available as age in days or age in years; also Weight and Gestation Age are part of minimum data set.

AF 03.01 to AF 3.11 Manage problem list

AF 3.04

Criteria: The system shall provide the ability to record the chronicity (chronic, acute/self-limiting, etc.) of a problem.

Comment: Problem list management should have various types of status capabilities for example "acute" condition versus "chronic" e.g. for Herpes Simplex Infection; "Recent" condition or procedure versus "Past" such as GI bleed. "Uncontrolled" versus "Controlled" condition such as for Heart Failure or Type I Diabetes Mellitus. We cannot expect that the terminology encoding the problem list such as SNOMED-CT will have these important and dynamic qualifier attributes.

AF 03.06

Criteria: The system shall provide the ability to associate orders, medications, and notes with one or more problems.

Comment: Problem linkage to medications really has nothing to do with "visits for a particular problem" as stated in the Discussion/Comments column. This criterion is intended to facilitate documentation on the clinical intention for each medication.

AF 03.07

Criteria: The system shall provide the ability to associate orders, medications and notes with one or more problems; association to be structured, codified data.

Comment: It is not necessary for the "association to be codified and structure". This is more important that the Problems and Medications be coded.

AF 03.08

Criteria: The system shall provide the ability to maintain a coded list of problems.

Comment: Glad to see this in the 2008 criteria. Who will determine which standards will be required? When can we expect the determinations to be made? ICD9CM is part of the HIPAA standard and is the billable code set; ICD10cm (a future version) is an entirely new code structure and is not what we want as the clinical problem list codes. SNOMED-CT needs to be designated here for the problem list along with a mapping to ICD9cm for facilitating billing (created/endorsed by AHIMA group)

AF 04.01 to 04.17 Manage medication list

AF 04.01

Criteria: The system shall provide the ability to create and maintain medication lists.

Comment: Need to have flexible functionality to document variable levels of coded drug abstraction e.g. document NDC codes, as well as Clinical Formulations e.g. lorazepam

1mg oral tablet, as well as Routed Med e.g. topical minoxidil. This mixed pick list will allow more precise documentation. Currently healthcare personnel are forced to create documentation that deviates from the verbal history obtained from the patient or other sources, and thus introduces a new source of error.

AF 04.07

Criteria: The system shall provide the ability to capture, store and display medication history received electronically.

Comment: Is the term "medication history received electronically" referring to external sources such as community pharmacies? It appears that a criterion refers to Medication Reconciliation capabilities- all external sources such as outpatient, retail, PBM, Emergency Department, etc. converging for display purposes onto the Inpatient Medication history. Need clarification for the intent of the criteria.

AF 04.08

Criteria: The system shall provide the ability to enter non-prescription medications, including over the counter and complementary medications such as vitamins, herbs and supplements.

Comment: RXNORM needs to be extended to include more of these non-prescription medications, but legitimate OTCs should already be included. Capturing OTC information is also important from a research and public health perspective. Especially since more prescriptions products are moving to OTC status.

AF 04.11.01

Criteria: The system shall provide the ability to print past medications.

Comment: This functionality can be important for improving historical documentation and determining what therapies have failed in the past. Epilepsy is an example where this criterion would be very helpful therapeutically and an important time saver for clinicians.

AF 04.14

Criteria: The system shall provide the ability to enter uncoded or free text medications when medications are not on the vendor-provided medication database or information is insufficient to completely identify the medication.

Comment: Any critical field of information like Medications that allows "free text" should do so ONLY if there is real-time report function capabilities. (Same for Problem List or Allergies). This would help promote a real time effort to retrospectively encode this content so it is available for decision support functionality.

AF 04.15

Criteria: The system shall provide the ability to alert the user at the time a new medication is prescribed that drug interaction and allergy checking will not be performed against the uncoded or free text medication.

Comment: Need functionality that promotes the future coding of any free text content. Retirement/Replacement history would be required e.g. free text "atenolol 10mg" gets replaced by medication list item that is encoded. These uncoded medications on the medication list need to be identifiable on the medication list so subsequent providers know that medication is not being included in interaction checking.

AF 05.01 to 05.08.01 Manage allergy and adverse reaction list

AF 05.01

Criteria: The system shall provide the ability to capture and store lists of medications and other agents to which the patient has had an allergic or other adverse reaction.

Comment: Allergy history updates should include real-time assessment against current medication list; we encourage functionality that allows drugs or exposures are documented very precisely - as close to what the patient states verbally as possible. This requires again that the allergen pick-list contains variable levels of drug abstraction and a mixture of Brand, Generic and Grouper drug names. Healthcare personnel are currently taking verbal histories and then "pigeon holing the history" and thus introducing potentially a new source of error. This is where it also must be stated that the CHI government recommendations that have been forwarded by NCVHS to HHS are without any credible endorsement at this time. The standard states that FDA UNII codes should be utilized for allergen ingredient documentation e.g. "amoxicillin" and that NDF-RT chemical classes e.g. "penicillins" are used for allergen groups. Neither code set is readily available, have a production - maintenance cycles or have channels.

AF 05.01.01

Criteria: The system shall provide the ability to capture and store lists of medications and other agents to which the patient has had an allergic or other adverse reaction in a standard coded form.

Comment: Another outstanding addition. An attribute that distinguishes hypersensitivity from other drug intolerances should be available to designate, when known. This attribute is essential as a filter for decision support algorithms that do "allergy cross-sensitivity". This attribute would be in part the solution to over alerting for the codeine/nausea reactions that trigger so many other types of opiate analgesics.

AF 05.02

Criteria: The system shall provide the ability to specify the type of allergic or adverse reaction.

Comment: Allergy/ADR manifestation (e.g. rash, itching) does not need to be coded. In contrast allergen substances/drugs should not be free text unless there are real-time report capabilities that will help facilitate retrospective coding of this important allergy/ADR content.

AF 05.02.01

Criteria: The system shall provide the ability to specify the type of allergic or adverse reaction in a discrete data field.

Comment: This manifestation data does not need to be coded, but does need to be retrievable to present within alert messages. Equally important are the severity level attribute and the Level of Certainty attribute.

AF 05.03

Criteria: The system shall provide the ability to deactivate an item from the allergy and adverse reaction list.

Comment: Allergy/adverse reaction alerts that are generated should include the immediate capability for healthcare personnel to "override" the alert ONLY after giving reason for override, and also be able to quickly up-date allergy history information that they feel is erroneous.

AF 06.06 to 06.06 Manage patient history

No Comments

AF 07.01 Summarize health record

No Comments

AF 08.01 to 08.23 Manage Clinical documents and notes

No Comments

AF 09.01 to 09.10 Capture external clinical documents

No Comments

AF 10.01 to 10.06 Generate and record patient-specific instructions

No Comments

AF 11.01 to 11.33.01 Order medication

AF 11.25

Criteria: The system shall provide the ability to alert the user at the time a new medication is prescribed that drug interaction, allergy, and formulary checking will not be performed against the uncoded medication.

Comment: Free text allowed only if effective report writing capabilities are available so as to facilitate retrospective coding of these orders

AF 11.26

Criteria: The system shall provide the ability to update drug interaction databases.

Comment: The date of database update should be viewable by end-user viewing drug-drug interaction message.

AF 11.29

Criteria: The system shall provide the ability to associate a diagnosis with a prescription.

Comment: "Dose type" drug regimen/order attributes such as acute treatment; loading dose; adjunctive therapy; primary prevention; secondary prophylaxis; suppression regimen are necessary in order to fully describe the intent of treatment (of course along with the condition stated).

AF 11.30

Criteria: The system shall provide the ability to display the associated problem or diagnosis (indication) on the printed prescription.

Comment: May need same many-to-many linkage association from problem list to medication list.

AF 12.01 to 12.09 Order diagnostic tests

No Comments

AF 13.01 to 13.05 Manage order sets

No Comments

AF 14.01 to 14.11 Manage results

AF 14.02

Criteria: The system shall provide the ability to display numerical results in flow sheets and graphical form in order to compare results, and shall provide the ability to display values graphed over time.

Comment: Abnormal lab results are usually never useful in isolation- they should be graphed over time and also graphed as incremental change over time. Serum creatinine increased to 1.4mg/dl. This creatinine lab results should be graphed over time and presented along with a second graph of percentage change over time.

AF 15.01 to 15.06 Manage consents and authorizations

No Comments

AF 16.01 to 16.03 Manage patient advance directives

No Comments

AF 17.01 to 17.03 Support for standard care plans, guidelines, protocols

AF 17.02

Criteria: The system shall provide the ability to create site-specific care plan, protocol, and guideline documents.

Comment: Clinical decision support functionality can be suppressed for orders contained within these plans of care. That is duplicate therapy or drug-drug interaction checking need not occur for drug contained with a single plan of care.

AF 18.01 Capture variances from standard care plans, guidelines, protocols

No Comments

AF 19.01 to 19.13.01 Support for drug interaction

AF 19.01

Criteria: The system shall provide the ability to check for potential interactions between medications to be prescribed and current medications and alert the user at the time of medication ordering if potential interactions exist.

Comment: *Future modification - When a potential drug-drug interaction is detected, the system shall evaluate the potential adverse effect against patient characteristics, problem list and clinical circumstances to determine the patient's vulnerability to the potential adverse effect and assign a patient specific level of risk. If the level of risk exceeds an institutionally defined threshold the alert will be displayed to the user.

Example: a drug-drug interaction that has a high probability of causing mild to moderate

diarrhea. Consider two patients:

1. a 20 year old football player in good health. The system would likely a vulnerability of harm as low and would provide an informational message for clinician and patient.
2. An 80 year old patient in acute care with multiple problems including nutritional issues and recurrent diarrhea. The system would likely assign a high risk to this patient and send an alert to the clinician.

The algorithmic rules for this system should be available for institutional review and modification. Ideally, the rules should be written in the Arden Syntax (an HL7 standard for encoding clinical knowledge).

AF 19.02

Criteria: The system shall provide the ability to check for potential interactions between medications to be prescribed and medication allergies and intolerances listed in the record and alert the user at the time of medication ordering if potential interactions exist.

Comment: The system should determine the difference between an allergy and intolerance. This is done by requiring reactions to codified. Reactions are then determined is they are allergic in nature (SOB, hives) or they are intolerances (GI upset). By requiring reaction for every allergy, knowledge base vendors could provide far better algorithms and decrease the 90% false positive rate of certain allergy alerts. Change the word "alert" to "inform" (in this and all other cases). Alerts are not needed in every case. Alerts interrupt the workflow. Informing the clinician in a dialog that is not an alert should be acceptable. We do not believe that the "system" can determine what a hypersensitivity reaction is. Vs. intolerance in any given patient, but there should be a documentation attribute that can designate by healthcare personnel when history is taken. This attribute can be utilized in algorithms to filter or sort results.

AF 19.02.01

Criteria: The system shall provide the ability to check for potential interactions between medications ordered for administration (as opposed to prescriptions) and medication allergies and intolerances listed in the record and alert the user at the time of ordering if potential interactions exist.

Comment: Please clarify "ordered for administration" vs "prescription". Make language consistent with The Joint Commission on this issue. The clinical route of administration should be taken into consideration within drug-drug interaction algorithms. E.g. topical drugs may not have same interactions compared to the intravenous route.

AF 19.02.02

Criteria: The system shall provide the ability to check for potential interactions between medications ordered for administration (as opposed to prescriptions) and current medications and alert the user at the time of ordering if potential interactions exist.

Comment: Please clarify "ordered for administration" vs "prescription". Make language consistent with The Joint Commission on this issue.

AF 19.03

Criteria: The system shall provide the ability to prescribe a medication despite alerts for interactions and/or allergies being present.

Comment: Institution should have the option to require ordering clinician to select an override reason for an alert. This information will be transmitted to the pharmacy system with the order. This will help reduce unnecessary phone calls to the prescriber.

AF 19.03.01

Criteria: The system shall provide the ability to generate a report of items overridden. The report shall include date, provider, patient, interaction (drug-drug and drug-allergy) and reason for override.

Comment: *Suggestion - add another criteria for 2008 that requires this and other data be available via SQL query. The results of the SQL query must be able to export to Excel or an other spreadsheet application for analysis.

AF 19.04

Criteria: The system shall provide the ability to set the severity level at which drug interaction warnings should be displayed.

Comment: The system should provide an ability to set individual interactions on or off, not just the severity level. This should have the ability to turn individual sets of interactions on or off at the physician or physician specialty level. Drug interactions are mostly group interaction pairs e.g. systemic macrolide antibiotics. It is necessary to first be able to explode the interaction pairs to the individual ingredient formulations and then be able to customize the severity level; interrupt type; intervention recommendations; reference sources etc.

AF 19.06

Criteria: The system shall be capable of providing proactive alerts, for patients on a given medication when they are due for required laboratory or other diagnostic studies, to monitor for therapeutic or adverse effects of the medication.

Comment: *Clarification - Rules triggered by orders for tests or procedures with known medication interactions. Example: In a patient taking metformin, an order for medical imaging with certain contrast media will trigger an alert. The intent of this criteria is

more Drug- Lab monitoring and not (drug-procedure interaction checking). Metformin drug orders may require or trigger a serum creatinine lab test result be known.

AF 19.07

Criteria: The system shall be capable, at the time of medication ordering, of alerting the provider that based on the results of a laboratory test, the patient may be at increased risk for adverse effects of the medication.

Comments: *Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care. Lab results information will need to be coded by standard terminologies e.g. LOINC in order for drug-lab rules to fire and threshold values for abnormal result value clearly stated in the alert generated.

AF 19.07.01

Criteria: The system shall be capable, at the time of ordering a medication for administration (as opposed to prescribing), of alerting the user that based on the results of a laboratory test, the patient may be at increased risk for adverse effects of the medication.

Comment: Please clarify "ordered for administration" vs "prescription". Make language consistent with The Joint Commission on this issue.

AF 19.09

Criteria: The system shall provide the ability to display, on demand, potential interactions on a patient's medication list, even if a medication is not being prescribed at the time.

Comment: This might be a situation where all drug-interactions should be displayed regardless of severity ranking. Unfortunately, it is very common that drug-drug interaction algorithm run on "inactive" or older "prn" medications that have not been administered recently. This is a waste of everyone's time and should be discouraged!

AF 19.10

Criteria: The system shall provide drug-disease interaction alerts at the time of medication ordering.

Comment: *Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care. Drug-Disease decision support knowledge bases are available and alerts can be triggered by active problems on a patient problem list. ICD9cm coding or SNOMED-CT problem

list coding is all that would be needed as a trigger. Customization capabilities should be available for severity etc. just as described for drug interactions customization.

AF 19.10.01

Criteria: The system shall provide the ability to check for drug-disease interactions for medications ordered for administration (as opposed to prescriptions) and alert the user at the time of ordering if potential interactions exist.

Comment: Please clarify "ordered for administration" vs "prescription". Make language consistent with The Joint Commission on this issue.

AF 19.10.02

Criteria: The system shall provide drug-disease interaction alerts at the time of entering a problem.

Comment: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care. Drug Disease decision support knowledge bases are available and alerts can be triggered by active problems on a patient problem list. ICD9cm coding or SNOMED-CT problem list coding is all that would be needed as a trigger. Customization capabilities should be available for severity etc. just as described for drug interactions customization.

AF 19.11

Criteria: The system shall provide the ability to view the rationale for a drug interaction alert.

Comment: ASHP strongly supports this criterion. Links to reference citations and to full text monographs is useful e.g. AHFS (American Hospital Formulary Service) content.

AF 19.12

Criteria: The system shall provide the ability to check for potential interactions between a current medication and a newly entered allergy.

Comment: *Suggest changing to 2008 functionality. Allergy checking algorithms should run after medication list/order updates as well as allergen list updates.

AF 19.13

Criteria: The system shall provide the ability to generate alerts based on patient age at the time of order entry.

Comment: *Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

AF 19.13.01

Criteria: The system shall provide the ability to check for medication contraindications based on patient age for medications ordered for administration (as opposed to prescriptions) and alert the user at the time of ordering.

Comment: Please clarify "ordered for administration" vs "prescription". Make language consistent with The Joint Commission on this issue.

AF 20.01 to 20.06 Support for medication or immunization administration or supply

No Comments

AF 21.01 to 21.02 Support for non-medication ordering (referrals, care management)

No Comments

AF 22.01 to 22.11 Present alerts for disease management, preventive services and wellness

AF 22.01

Criteria: The system shall provide the ability to establish criteria for disease management, wellness, and preventive services based on patient demographic data (minimally age and gender).

Comment: Alerts should be changed to reflect the ability to inform the user by non-modal methods. Alert fatigue is an epidemic already. Informing clinicians with notices, areas on the screen or other non-modal ways should be acceptable. *Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

AF 22.04

Criteria: The system shall provide the ability to update disease management guidelines and associated reference material.

Comment: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

AF 22.08

Criteria: The system shall provide the ability to modify the rules or parameters upon which guideline-related alerts are based.

Comment: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

AF 22.11

Criteria: The system shall provide the ability to individualize alerts to address a patient's specific clinical situation.

Comment: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

AF 23.01 to 23.09 Notifications and reminders for disease management, preventive services and wellness

No Comments

AF 24.01 to 24.06 Clinical task assignment and routing

No Comments

AF 25.01 to 25.03 Inter-provider communications

No Comments

AF 26.01 to 26.05 Pharmacy communications

AF 26.01

Criteria: The system shall have the ability to provide electronic communication between prescribers and pharmacies or other intended recipients of the medication order.

Comments: This communication must contain information on all decision support overrides.

AF 27.01 to 27.05 Provider demographics

No Comments

AF 28.01 Scheduling

No Comments

AF 29.01 to 29.08 Report generations

AF 29.03

Criteria: The system shall provide the ability to generate reports regarding multiple patients (e.g. diabetes roster).

Comments: Population queries should be available that utilize drug therapeutic classification schemas e.g. give me a list of all patients on beta-blockers. These query results could then be cross-queried against and disease classification data such as myocardial infarction.

AF 30.01 to 30.06 Health record outputs

No Comments

AF 31.01 to 31.04 Encounter management

No Comments

AF 32.01 to 32.03 Rules-driven financial and administrative coding assistance

No Comments

AF 33.01 Eligibility verification and determination of coverage

No Comments

AF 34.01 to 34.03 Manage Practitioner/Patient relationships

No Comments

AF 35.01 to 35.02 Clinical decision support system guidelines updates

AF 35.01

Criteria: The system shall provide the ability to update the clinical content or rules utilized to generate clinical decision support reminders and alerts.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

Consider that not all decision support is rules-based. This criteria is just stating that the content deployed needs to be updateable; whether it is pick-lists, rules or data tables.

AF 35.02

Criteria: The system shall provide the ability to update clinical decision support guidelines and associated reference material.

Comments: Suggestion that any method to updating is NOT acceptable. Clinical rules engines should be standardized and consistent from application to application. This is important for two reasons: 1. So CDS specialists will only need to learn one medical logic encoding syntax for all applications. 2. To make it easier to share CDS modules between applications and institutions. But at this point in time any methods of getting updates is a good thing; rules can be shared between clinicians if there is the desire, without restricting the badly needed advancements in technology for implementing rules.

AF 36.01 to 36.05 Enforcement of confidentiality

No Comments

AF 37.01 to 37.03 Data retention, availability and destruction

No Comment

AF 38.01 to 38.02 Audit trail

No Comment

AF 39.01 to 39.04 Extraction of health record information

No Comment

AF 40.01 to 40.04 Concurrent use

No Comment

CV.1 to CV.34 Cardiovascular

CV.9

Criteria: Laboratory Results - Digoxin Level

Comments: For any drug level measured, the times of the last administered drug doses (prior to blood draw) are also relevant to interpreting the level.

CV.18

Criteria: Medications - Beta-Blocker

Comments: A single aggregated variable may not be available and there is a stable identifier; why does this criterion have to be so specific to a single identifier from an unstated therapeutic classification schema?

CV.19

Criteria: User Interface - Problem List

Comments: As Problems require mapping to SNOMED BUT--a cross-walk to a billable code is available from the NLM. The clinical nomenclature should drive this list; all medications must have a mapping to Rx Norm.

CV.26

Criteria: Clinical Guidelines - Clinical Practice Guideline Integration

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

CV.28

Criteria: Clinical Guidelines - Clinical Decision Support

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

CH.1 to CH.27b Child Health Criteria

CH10a - Medication - Dosing Decision Support and Analysis

Criteria: Allergy information must either be coded as searchable structured data, or unstructured data subjected to an automatic text search, parser engine.

Comments: Allergy decision support functionality in the ED seems out of place in this dosing decision support category.

CH10b - Medication - Dosing Decision Support and Analysis

Criteria: Allergy information must either be coded as searchable structured data, or unstructured data subjected to an automatic text search, parser engine.

Comments: Allergy decision support functionality in the ED seems out of place in this dosing decision support category.

CH16 - Immunization Decision Support

Criteria: The system shall provide the ability to add all new vaccine products and antigens to the system's immunization tracking mechanism within thirty days of published changes by the Center for Disease Control in its Morbidity and Mortality Weekly Report.

Comments: New vaccine products are recorded in a coded manner that also includes important inactive ingredients so that allergy checking for these inactive ingredients is deployable.

CH23 - Immunization: Decision Support

Criteria: The system shall provide the ability to inform the clinician of recommended required immunizations, and when they are due, based on patient risk factors and other criteria as identified in widely accepted immunization schedules and recommendations (e.g. Center for Disease Control).

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

CH24a - Medication: Dosing Decision Support and Analysis

Criteria: The system shall compute drug doses, based on appropriate dosage ranges, using the patient's body surface area and ideal body weight.

Comments: Loading doses should be distinguished from maintenance doses; also disease severity or indication may impact the calculation. Dose rounding (mg/kg rounding) and dose titration to the closest reasonable clinical formulation increment are also necessary for pediatric dosing decision support.

CH27a - Demographics: Discrete Age

Criteria: The system shall capture date of birth and time of birth, down to the minute.

Comments: Gestational age is often required for dosing and clinical decision support.

ED.1 to ED. 130 Emergency Department Criteria 2008

ED.115 - Medication Management: Allergies

Criteria: Allergens, including immunizations, and substances are identified and coded (whenever possible) and the list is captured and maintained over time. All pertinent dates, including patient-reported events, are stored and the description of the patient allergy and adverse reaction is modifiable over time.

Comments: This is very good. Reaction type should be used to determine true allergy (SOB, rash, anaphylaxis) versus intolerance (GI upset). The system should be able to distinguish between an Allergy and an adverse reaction to harmonize what is stated in criteria for FN, IP, and AMB.

FN.1 to FN.59 Foundation Criteria

FN.35 - Order Medications

Criteria: The system shall provide the ability to display patient specific dosing recommendations based on age and weight.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

FN.47 - Interaction checking

Criteria: The system shall provide drug-diagnosis interaction alerts at the time of medication prescribing/ordering.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

New Criteria

NEW.1 - Patient Demographics and Administrative Information

Criteria: The system shall provide for the ability to identify patients with special needs e.g. isolation, language needs, clinical protocol participant, etc...

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

NEW.6 - Patient Demographics and Administrative Information

Criteria: The system shall be capable of recording admission date, time and reason.

Comment: Reason for admission should be coded.

2.03 - Provider Information

Criteria: The system shall provide the ability to assign clinicians to appropriate teams, where teams are defined as groups of clinicians who share responsibility for covering the same group of patients.

Comments: Pharmacist roles should be included in this interpretation of "clinician" (comment applies to many of the criteria in this section).

5.09 - Allergy Information

Criteria: When allergies are "Unknown" or "Unable to Assess Allergies," the system shall provide the ability to inform the clinician for the need of an update.

Comments: Consider moving to 2008 timeframe.

6.03 - Medication List

Criteria: The system shall provide the ability to view the name of the ordering clinician, medication order (name, dose, route, and frequency), a start date and time, and a stop date and time for entries on the medication list.

Comments: For 2009 or 2010....changes to a med orders are often reflected as a dc/reorder which changes the order number, start time etc...Some type of 'wrapper' needs to identify a group of orders that constitute a single therapy or have a common therapeutic intent in this specific patient that maintain the initial state of who ordered it and when. Those orders may be active at the same time in the case of a taper or using different size tabs to make an odd dose. --COMMENT IS GOOD - BUT THIS MAY NOT BE THE BEST PLACE

6.09 - Medication List

Criteria: The system shall provide the ability to display on the medication list the medications that the patient brings from home which the Pharmacy would not dispense.

Comments: This should include a flag or switch to indicate that the medication has been identified by the pharmacy. This is a common policy among hospitals.

NEW.85 - Medication List

Criteria: The system shall provide the ability to change / order medication directly from the medication list

Comments: Please include language to ensure that ALL features, alerts, information etc are available at the time of ordering no matter what portion of the application the order is launched from.

NEW.92 - Medication List

Criteria: The system should provide a way to merge medications that have been entered in a duplicate patient chart.

Comments: Merged profiles would need to be reconciled.

NEW.94 - Medication List

Criteria: The system shall provide the ability to display potential side effects of medications on the medication list.

Comments: Adverse event profiles can be quite long. If this functionality is implemented from a reference database, the information overload may create an 'alert fatigue' like syndrome. Care should be taken when drafting the test criteria to ensure this does not happen. An alternative may be to display monitoring criteria for the medication. **OTHER COMMENT:** this should allow for a clinical finding (or potential side effect) search and display the medications that could cause the effect. Incorporation of the FDA's Standard Product Label (SPL) project may be an added benefit to this criterion. If CCHIT waits for the SPL, then moving to 2010 timeframe would be necessary.

NEW.28 - Results Access and View

Criteria: The system shall provide the ability to access test results from external systems.

Comments: Providers should be able to view them in-line with other results.

NEW.33 - Results Access and View

Criteria: The system shall provide the ability for the hospital to create and customize templates to display clinical results. Consider adding this criterion to 2008 certification process.

Comments: A facility can develop a library and users can further customize. It should be possible to distinguish the template from instance specific documentation. When templates are copy/pasted over multiple days it can be very hard to tell what is actually changing with all the template content remaining static.

8.21 - General Ordering Requirements

Criteria: The system shall provide the ability for a clinician to save frequently used and approved orderables ("favorites" or "preferences") to facilitate retrieval and ordering.

Comments: If order sets change but some of the old orders are 'favorites' how would this be handled. The order set itself is a form of decision support and the maintenance of personal lists should not become a way to 'work around' them.

NEW.100 - Order Sets

Criteria: The system shall have the ability to display links to the internet to access reference material.

Comments: With a high percentage of errors due to knowledge gaps, this should be a function that should not wait to 2010. Beyond order sets links to references sources would be available anywhere a medication is displayed in the entire system by 2009.

NEW.101 - Order Sets

Criteria: The system shall have the ability to repeat the entire order set for the same patient from a previous encounter to a new encounter.

Comments: How would this impact reconciliation? Especially if the 'repeated' set is several steps behind the current medication list. This may open a can of worms. If the intent is to create longitudinal orders like chemo or other ILV, would prefer a more specific intent to be communicated.

NEW.102 - Order Sets

Criteria: The system shall have the ability to designate an order set for future date activation

Comments: What about changes in patient's condition in the intervening period. Will these be visible for CDS against new orders placed in the intervening period prior to activation?

NEW.104 - Order Sets

Criteria: The system shall have the ability to allow a provider to cancel the order set and all associated orders at one time

Comments: What if support orders were part of 2 sets and those dup orders were not added but then the first set is discontinued.

9.23 - Order Sets

Criteria: The system shall provide the ability to report on the use of order sets, including ordering provider, date/time ordered, patient data (for example age, diagnoses, etc) and facility defined data. The facility shall have the ability to include / exclude specific items from the report.

Comments: Additional item: CDS triggers should be able to be turned off selectively within an order set.

10.03a - Ordering: Medication Orders

Criteria: The system shall provide the ability to allow the clinician to order medication doses in mg/kg and mL/kg.

Comments: The system should then allow the assignment of dispensable units to the order for proper compounding and labeling.

NEW.54 - Ordering: Medication Orders

Criteria: The system shall prohibit the entry of a single order to resume all previously held orders.

Comments: Blanket 'resume' orders are not allowed!!! I'm not insensitive to the workload of reentering orders, but mechanisms to ensure conditions changes are reviewed and CDS is applied must be specified with these types of criteria.

11.08 - Medication Reconciliation

Criteria: At admission, the system shall provide the ability to display corresponding inpatient orders for home medications the provider designates as being continued.

Comments: At admission the medications being reconciled from external sources to be continued should have Duplicate Therapy/Duplicate Ingredient decision support functionality. In order to facilitate reconciliation, it should be possible to sort the drug list being reconciled by therapeutic classification

12.03b - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability to detect a cumulative dose (across inpatient stays and lifetime) that exceeds the recommended dose and inform the clinician during ordering.

Comments: Cumulative dose checking in a 24 hour period is important even for common drugs like acetaminophen that is included in multi-ingredient prn ordered drugs.

NEW.115 - Decision Support for Medication and Immunization Orders

Criteria: System shall provide the capability to prompt for verification or entry of patient-specific information not currently available for the decision support checking.

Comments: An example might be a pharmacogenomics data element needed for example before instituting abacavir therapy.

NEW.116 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide guidance during ordering for medications requiring age and body surface area dosing.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.05 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide guidance during ordering for medications that require consideration of laboratory test results for dosing.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.07 - Decision Support for Medication and Immunization Orders

Criteria: For medications requiring dosing based on body surface area, the system shall provide the ability to check for inappropriate dosing and inform the clinician during ordering.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.08 - Decision Support for Medication and Immunization Orders

Criteria: For medications that require consideration of laboratory test results in dosing, the system shall check for inappropriate dosing and inform the clinician during ordering.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.09 - Decision Support for Medication and Immunization Orders

Criteria: The system shall be capable of providing proactive alerts, for patients on a given medication when they are due for required laboratory or other diagnostic studies, to monitor for therapeutic or adverse effects of the medication.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.11 - Decision Support for Medication and Immunization Orders

Criteria: For medications requiring consideration of laboratory test results in dosing, the system shall provide the ability to notify the clinician responsible for the patient's care when changes in test results require that the dose be reconsidered.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

12.13 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability to identify when multiple medications of the same therapeutic or pharmacologic class are ordered and inform the user during prescribing / ordering.

Comments: The user should be able to designate a threshold level of when to be alerted by drug category.

12.14 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability for the hospital to exclude therapeutic categories and drug pairs from drug-drug interaction and therapeutic overlap checking.

Comments: Inactivating selected alerts increase the opportunity for false-negative results and patient harm. Rather than inactivation the system use algorithmic methods to evaluate patient data to determine the patient's vulnerability, and if the vulnerability is HIGH, then alert.

NEW.119 - Decision Support for Medication and Immunization Orders

Criteria: System shall allow for the 'tiering' of alerts based on severity, frequency of actual interaction/contraindication

Comments: Suggest adding patient characteristics, problem list, and clinical circumstances as other factors to alert "tiering".

12.22 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability to inform the clinician about drug-food advisories.

Comments: "Ability to inform" should be used instead of Alert in all cases in the document.

12.31 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability to transmit to Pharmacy the order override justification with the order and clinician, date, and time.

Comments: The override reason should be a permanent part of the database, but I'm not sure it should clutter up the eMAR.

12.36 - Decision Support for Medication and Immunization Orders

Criteria: The system shall provide the ability to update drug knowledge databases.

Comments: This should be extended to mean that it can be modified at the user level.

NEW.126 - Decision Support for Medication and Immunization Orders

Criteria: System shall provide the ability to create rules and alerts to include any # of parameters/attributes that can access or be triggered off coded or structured data in the database

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

13.01 - General Clinical Decision Support

Criteria: The system shall provide the ability to display relevant, patient-specific laboratory test results when entering an order.

Comments: Suggested modification - The system shall use a standardized open-architecture for these rules such as an Arden syntax based clinical rules engine (an HL7 standard for encoding medical knowledge). This will allow the institution an opportunity to review and modify these rules to comply with new evidence or local standards of care.

NEW.128 - General Clinical Decision Support

Criteria: The system shall provide for 'actionable' alerts - that allow for selection of recommended alternatives from the alert

Comment: 2009 is too late - this should be in the 2008 criteria.

NEW.129 - General Clinical Decision Support

Criteria: The system shall provide for 'actionable' alerts - allow for selection of recommended alternatives from alert and return user to previous place in ordering process/workflow.

Comments: 2010 is too late this should be in 2008 or 2009; also this should only return to the previous workflow "if appropriate".

NEW.67 - Health Record Management

Criteria: The system shall provide for the capture and update of various industry-standard coding schemes (such as CPT, SNOMED, ICD9, etc). To support the appropriate clinical or reimbursement functions.

Comments: Rx Norm should specifically be included and time should be 2009.

NEW.Ipa - Medication Administration

Criteria: The system shall provide the ability to document medication administration using a barcode and scanner for patient name, med name, med dose, correct time of admin, route.

Comments: Would like to further comment on the bar-coding specifications recommending all barcode scanned fields follow The Health Industry Bar Code (HIBC) Provider Applications Standard, located at <http://www.hibcc.org/AUTOIDUPN/standards.htm>. The format allows for improved patient safety through prefixing where and what flags to every

barcode field. This would further identify if a provider were scanning an armband or other patient label, as an example."

14.27 - Medication Administration

Criteria: The system shall provide the ability for the hospital to provide links to reference information / knowledge resources for any medication on the MAR.

Comments: Links to Side Effect content should be available for administered drugs.

II-17 - Within Inpatient Care Setting - Orders and Medication Administration

Criteria: Integrate with other positive ID technology (e.g., RFID) to capture information

Comments: Some institutions have identified a "sixth right" - Right Documentation! It is felt that this "sixth right" is equally important to patient safety as the other five rights.

