

Electronic Prescribing (e-RX) Standards; second teleconference in a series of four on the Medicare Modernization Act e-RX Pilot Evaluation

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ePrescribing Outcomes

RESULTS OF PILOT SITES TESTING

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Requirements of the MMA

- All health plans and pharmacies participating in the new Medicare prescription drug benefit (Part D) support an e-prescription program,
- The Secretary of Health and Human Services (HHS) establish federal standards that all e-prescribers must follow for Part D patients.
- The six “initial” standards are pilot tested to investigate their interoperability with “foundation” standards as well as clinical and economic outcomes associated with e-prescribing.



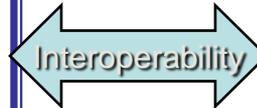
E-Prescribing Standards

FOUNDATION STANDARDS

NCPDP
Telecommunications
Standard

ASC x12N 270/271

NCPDP SCRIPT for
Change, New,
Renewal and Cancellation
Messages



INITIAL STANDARDS

NCPDP Formulary & Benefits
Standard

NCPDP SCRIPT Medication
History

MCPDP SCRIPT Fill Status
Notification

Structured and Codified SIG

Prior Authorization

RxNORM



Focus of Testing

Each of the five grantees were...

- required to test all six initial standards
- given flexibility to test and report on other outcomes of eprescribing
- able to include a wide range of participants including prescribers, pharmacies, technology vendors.



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The Initial Standards

- **Medication History** - provides a uniform means for prescribers, dispensers, and payers to communicate about the list of drugs that have been dispensed to a patient regardless of which physician seen or pharmacy visited.
- **Formulary and Benefits** - provides prescribers with information about a patient's drug coverage at the point of care which includes: whether drugs are considered to be "on formulary," alternative medications for those drugs not on formulary, rules for prior authorization and step therapy, and the cost to the patient for one drug option versus another.
- **Prescription Fill Status Notification** - notifies the prescriber after a patient has picked up a prescribed medication at the pharmacy. This information could enable follow-up with patients who appear to be non-compliant with their doctor's prescribed course of treatment.
- **Prior Authorization** – offers a streamlined, electronic process to communicate the need for prior authorization directly to the prescriber, and allow the prescriber to send the needed information along with the prescription.
- **Structured and Codified SIG** – includes patient instructions for taking medications (such as “by mouth, three times a day”) at the end of a prescription. These are called the signatura, commonly abbreviated SIG. Currently, there is no standardized format or vocabulary for SIGs.
- **RxNorm** – provides a standardized vocabulary for name, dose, and form of available drugs. There are currently multiple databases of drug names, forms, and dosages, each using slightly different versions of these data elements, requiring an individual at the pharmacy to make a manual match if a prescription is communicated using information from a different database.



Evaluation Objectives for Testing Standards

- Determine the initial standards that are reported to be functional, and those which are not.
- Determine the extent of the initial standards' interoperability with foundation standards.
- Document the benefits and challenges to implementing the initial standards in different settings.



ePrescribing Outcomes Tested by Pilots

- Prescriber uptake & satisfaction
- Workflow changes
- Impact on callbacks between providers, pharmacies, and PBMs/payers
- Impact on e-prescribing features & functions
- Effect on medication errors



Evaluation Methodology

- **Document Review** - The evaluation team reviewed various types of documents produced by pilot sites, including: grant proposals, quarterly progress reports, final project reports, and all publications and presentations produced during the grant period.
- **Structured Telephone Calls** - Prior to the site visit, the evaluation team contacted key pilot site staff (e.g., the PI, evaluator, project coordinator, etc.) to discuss various aspects of the project.
- **Site Visits** - One day, on-site visits to all five of the pilot sites were conducted.
- **Key Informant Interviews** – Brief, unstructured telephone interviews with conducted with key informants to validate the information learned during the site visits and from reviewing the pilot sites' final reports.



Results & Recommendations

Initial Standards *Recommended* for Implementation

- **Medication History**
 - A well-structured standard with the capacity to exchange information consistently
 - **Implementation Caution:** *given that data are collected from a large number of sources, they must be verified and reconciled to ensure that a patient’s medication list is complete.*
- **Formulary and Benefits**
 - Supports the transfer of e-prescribing information.
 - **Implementation Caution:** *systems must adequately match patients to health plans, or the formulary and benefits data will not be available. Second, payers vary in the level of information that they provide, and data elements can be difficult to interpret even when they are transmitted accurately. Finally, to be most useful, this transaction should support real-time changes in a patient’s status as he or she moves through different stages of a benefit (such as the Part D “doughnut hole”).*
- **Prescription Fill Status Notification**
 - The standard adequately supports the activities of a pharmacy sending messages to the prescriber as to the status of a prescription, when the information is available.
 - **Implementation Caution:** *Many pharmacies do not have the ability to track patient pick-up accurately. In addition, the pilots indicated that there may be little prescriber demand for this capability at this time.*



Results & Recommendations

Initial Standards *NOT Ready* for Implementation

- **Prior Authorization**
 - The pilot sites had limited live experience with this standard.
 - There are several issues that would need to be resolved before this standard is recommended.
- **Structured and Codified Sig**
 - The SIG format needs additional work with reference to field definitions and examples, field naming conventions and clarifications of field use.
 - With additional development, the standard may provide a controlled vocabulary that reflects prescriber thinking, offers structure and simplicity, and improves communications between prescribers and pharmacies.
- **RxNorm**
 - Versions 8/2/06 and 12/21/06 were tested.
 - The dictionary standard requires further evaluation and refinement before it can be deployed in a live setting.
 - RxNorm has the potential to create efficiencies in many e-prescribing functions once modifications are made.



Just the Beginning

- What we've seen reported thus far is only preliminary results.
- Additional data analysis is needed to draw more rigorous conclusions.
- We're at a turning point, yet not at the finish line yet.
- Recommendations going forward should support ongoing training and education of *all* key stakeholders in the prescribing process.



Studies of Initial E-Prescribing Standards in the New Jersey E-Prescribing Action Coalition

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New Jersey E-prescribing Action Coalition

- Horizon BCBSNJ “E-Prescribe” program
 - 1000 MDs
 - Install + pay honorarium for use
- Caremark - *iScribe*
- Allscripts - *TouchWorks*
- InstantDx - *OnCallData*

- RxHub
- SureScripts
- Point of Care Partners
- UMDNJ
- RAND



Conceptual Model

- Structure of the standard
 - ↓ enables
- Information display / capture at prescriber
 - ↓ enables
- Changes in work processes
 - ↙ produce ↘
- Changes in drug use
 - Appropriateness
 - Costs
 - Patient adherence
- Other effects
 - Labor and other costs
 - Health service use
 - Patient satisfaction



Medication History: Expected Benefits

- Current and past medications
 - Safety checking for new meds (DDI, duplication)
 - Review what's been tried
- E-prescribing without Med History transaction
 - Listing and checking can be based on past e-prescriptions through same system
- E-prescribing *with* Med History transaction
 - Outside prescriptions can be included in the medication list



STANDARD	METHODOLOGY
Medication History transaction of NCPDP SCRIPT, 8.1 NCPDP Formulary and Benefit, 1.0	<ul style="list-style-type: none"> • Technical expert panel • Physician, pharmacy site visits • Claims data analysis • Physician survey
Fill Status Notification transaction of NCPDP SCRIPT, 8.1	<ul style="list-style-type: none"> • Technical expert panel • Focus groups with storyboard prototypes • Physician survey
<u>Prior Authorization</u> ASC X12N 278 ASC X12N 275 with HL7 attachment	<ul style="list-style-type: none"> • Comparison of existing forms with HL7 attachment standard • Live pilot study • Physician web survey • Physician site visits
RxNorm (July, Nov. 2006 versions)	<ul style="list-style-type: none"> • Analysis of coverage for a sample of Rx data • Expert panel
Structured and Codified Sig, 1.0 (June 2006 draft)	<ul style="list-style-type: none"> • Analysis of agreement in representing a sample of Rx data



Technical Expert Panel

Category		Company
Point of care software vendors	EHR	Allscripts
	eRx	iScribe
	eRx	InstantDx
	EHR	MedPlus
	eRx	ZixCorp
Content Providers		First DataBank
		Wolters Kluwer
Intermediaries		RxHub
		SureScripts
		NDC
Pharmacies	Mail	Caremark Mail
	Mail	Medco Mail
	Large Chain	Walgreens
	Independent	QS1



Prescriber & Work Process Results

- Site visits
 - Interviews, observations at 12 sites pre-eRx
 - 2 cancelled installation
 - 2 stopped using the system
 - 2 staff using the system for renewals only
- Prescriber web survey
 - Of 395 eligible MDs recruited, 58% completed
 - 139 e-prescribers
 - 89 non e-prescribers (from eRx waiting list)



Medication History: Technical Level

- Technical problems hinder reconciliation of Medication History with prescriptions that the POC originated
 - No data available for many patients
 - Patient must be identified through 270/271 Eligibility
 - Drug prescribed may not be identifiable
 - Can be 100+ NDC codes for a drug; may not map
 - Many other fields are optional and often left empty
 - Prescriber ID, *Sig*, quantity dispensed, pharmacy
- Some vendors find reconciling Medication History too hard
 - Drive alerts only from prescriptions that they originated
- All enthusiastically support developing RxNorm to solve NDC mapping problems



Medication History: Prescriber Level

- Many e-prescribers unfamiliar with the Med History feature
 - “It’ll basically have whatever we input for the patient, but patients see other doctors, and if they aren’t using the system, there’s no information... That’s huge.”
 - Of the 37% “familiar” with accessing Medication History
 - 16% use it “often” or “very often”
 - 39% agree data is complete for most patients
- “Information I have about medication history enables me to...”

(agree or strongly agree)

	<u>eRx</u>	<u>non eRx</u>
– Identify clinically important DDIs	83%*	67%
– Prevent callbacks for safety problems	68*	54
– Identify medications from other MDs	65	61



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Formulary & Benefit: Technical Level

- NDC a poor drug ID → huge files, mismatches
- Plan-level coverage can differ from group-level
- Of the standard's major components, only the formulary status list (FSL) is widely used
 - Other major components used much less
 - alternative suggestions (ALT)
 - coverage limitations (COV)
 - patient co-pay information (COP)
 - Cross-reference file not used at all
 - Could enable manual lookup of pt's plan, vs. rely on successful Eligibility transaction



Formulary & Benefit: Prescriber Level

E-prescribers held a range of opinions about F&B

- Some perceived as accurate, others inaccurate

In survey, few expected benefits of F&B perceived:

• Drug coverage information...	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>
– Helped me manage patient costs	23%	37%	39%
– Reduced need to change Rx	27	39	34
– Reduced calls re: coverage	30	41	29
– Saves me time	29	41	30
– Reduces costs for my office	31	50	19
– Overall, satisfied	25	38	37



Formulary & Benefit: Prescriber Level

In an average week, how many calls or messages do you get about prescription drug coverage problems? (%) $(P = 0.10)$

	<5	6-10	11-15	>15	<i>E.V.</i>
Non-eRx	44	27	10	19	8.1
eRx	33	42	13	12	7.9

For an average day that you see patients, how much time do you spend dealing with prescription drug coverage problems? (%) $(P = 0.73)$

	<5 min	5-15 min	16-30 min	31-60 min	>1 hr
Non-eRx	13	43	28	11	4
eRx	15	44	29	11	1



Fill Status: Technical Expert Panel

- Originating SCRIPT reference number is an optional field
- No marketplace demand
 - “Even if a physician wants it, who is going to pay for it?”
- Burden of handling opt-in or opt-out requests
 - “The process of setting-up and maintaining the [opt-in or opt-out] indicator would be significant. Numerous interfacing systems would need to change.”
 - “That’s something that can be designed for and I think that having a patient opt in or out of this is probably something on which we should do more research.”
- Dispensed & not-dispensed messages both unreliable
 - “If patients are opting-in or opting-out ... then [if] the physician doesn’t get a ‘filled’ response what does the physician know? Maybe I opted out. They can’t really determine that it was filled, and they can’t determine that it wasn’t filled.”



Fill Status: Focus groups

- Allscripts users presented with storyboard prototypes displaying adherence alerts
- Significant concerns expressed:
 - Implied need for telephone follow up
 - New, unpaid work for physicians and staff
 - Medico-legal liability for non-adherence
- Possible mitigating factors:
 - Prescriber controls Rx's alerted, time interval
 - Deliver alerts during follow-up visit
 - Medication history data might substitute



Prior Authorization

- Strong demand for process improvements
 - 91% of MDs surveyed agreed or strongly agreed that the PA process is frustrating, both for them and for patients
 - “I hate prior authorizations... because of the time they take.”
 - “Basically, you have to say what the insurance people want to hear.” “I frequently lie, yell or scream.”
- Developed prototype modules for iScribe, Allscripts
- Few of the data elements in the HL7 PA Attachment were useful in Horizon’s PA processes
 - Wording of PA questions → meaning of data
 - ICD-9 codes usually inadequate to capture meaning
- Very little use of ePA during 8-10 weeks of live pilot-testing



RxNorm Lab Evaluation

- First DataBank, MediSpan, RAND (using RxNorm distribution) independently attempted to match an SCD for new and renewal Rxs
 - Non-matches
 - 9789 non-device new prescriptions
 - 148 (1.5%) no matching SCD found; 93% multi-vitamins, bowel preps, drugs packaged in a drug delivery device
 - 8956 (91.5%) matched by 3 of 3
 - 10,035 non-device renewal requests
 - 47 (0.5%), did not match to an SCD; 96% in categories above
 - 9777 (97.4%) matched by all 3
 - Mismatches
 - 592 of 9510 new Rx with 2+ SCD matches (6.2%)
 - 411 of 9940 renewal requests with 2+ SCD matches (4.1%)
- Root causes:
- Previously recognized & corrected synonyms (20%)
 - Previously unrecognized synonymy (30%)
 - Errors in NDC-to-SCD mappings used by one of the matching efforts



Structured and Codified Sig

- Selected 42 *Sig* text strings from 10000 new Rx's
 - Each mapped into *Sig* standard by 3 independent reviewers

- 15 of these (36%) used no “repeats”: # Reviewers in Agreement

<u>Segment</u>	<u>All 3</u>	<u>2 of 3</u>	<u>None</u>
– Repeating Sig		N/A	
– Dose	3	10	2
– Dose Calculation		Not used	
– Vehicle Name	1	0	14
– Route	0	1	14
– Site	0	3	12
– Frequency	1	6	8
– Administration Timing	0	2	13
– Interval	4	7	4
– Duration	N/A to any of the 15		
– Dose Restriction	N/A to any of the 15		
– Indication	0	2	13
– Stop		N/A	
– FREE TEXT STRING	0	9	6

- 27 (64%) had a repeat used by at least one reviewer
 - 1 to 6 iterations used; varied widely



Conclusions

- Medication history, Formulary and Benefit
 - Technically adequate
 - Falling short due to NDC
- Fill status
 - Significant concerns; promise for focused uses
- Prior authorization
 - Research on representing data for PA decision
- RxNorm
 - Needed; holds significant promise
- Sig
 - Difficult to use consistently; suggest simplifying



CMS/AHRQ Long-Term Care e-Prescribing Pilot Study



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Purpose of LTC e-Prescribing Pilot

Validate that the e-Prescribing standards work in a LTC setting

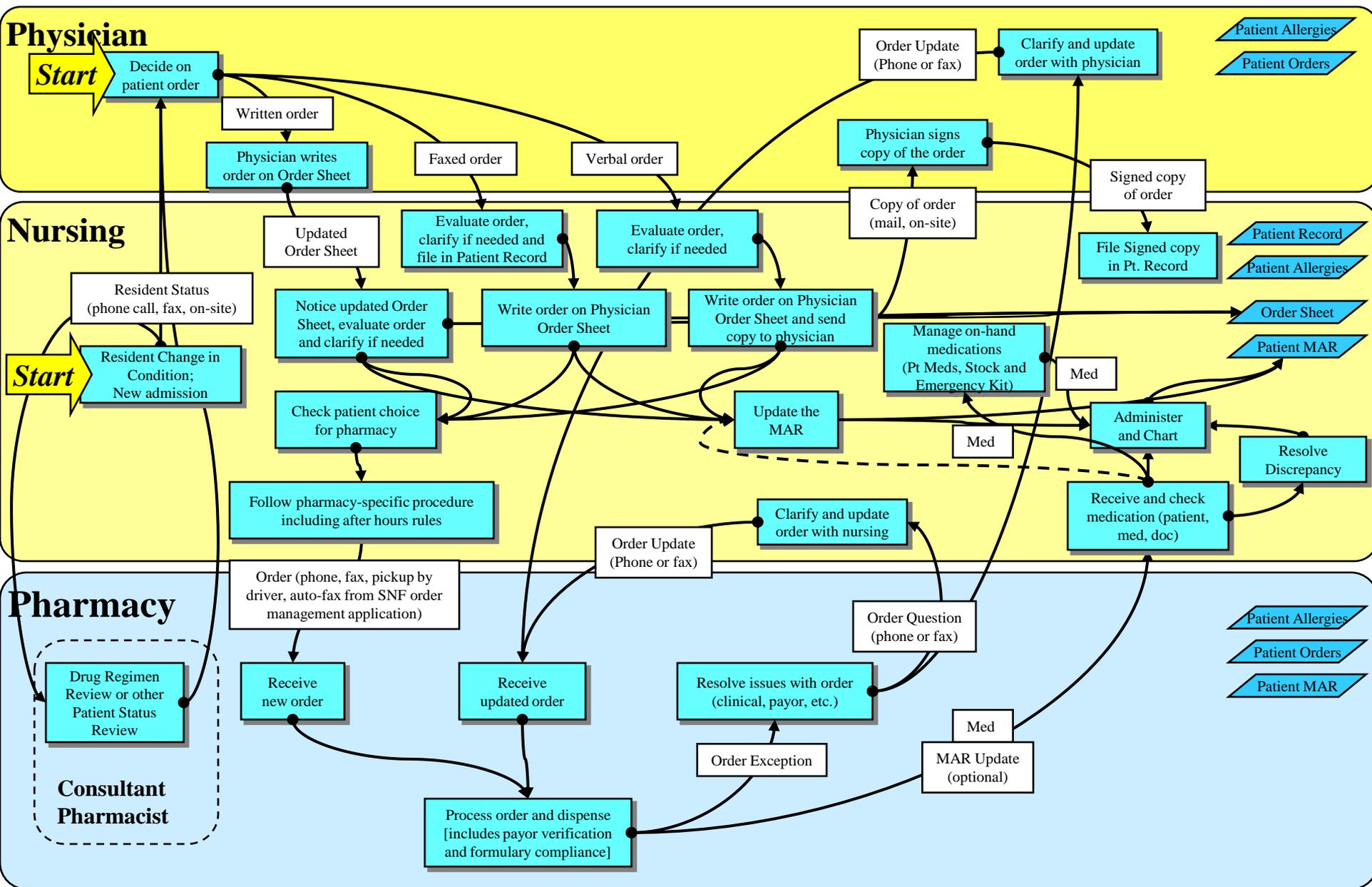
and

To study the effects of the **electronic prescribing** standards in **long-term care** on cost, quality and safety



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The Infamous LTC Prescribing Slide



LTC ePrescribing Nuances

- Three way communication between
 - Prescriber – Nurse – Pharmacy
- Less dependent on physician adoption
 - Nurse as an agent
 - Nurse Practitioners and Physician Assistants
- Most orders have no end date or quantity
- Refill requests represent 80% of orders
- Renewals are different than in retail
- Need unique formulary and benefit information
 - Part A, Part D and Medicaid
- Little or no connected pharmacies



LTC e-Rx Pilot Study Abstract

- Study focused on standards most relevant to LTC
- The study included two geographically diverse treatment facilities (BHS) and two comparison facilities (non BHS)
- Participants were chosen for demonstrated thought leadership in the areas of LTC technology adoption and electronic prescribing standards development



Standards Tested

- Standards Testing:
 - SCRIPT 8.1 – NewRx, CanRx, Fill Status and ChgRx
 - Formulary Benefits and Eligibility
 - Prior Authorization
- Non Standards Testing:
 - Refills
 - Patient Safety Checks
 - Signatures
- Out of Scope:
 - Codified SIG
 - Medication History
 - RxNorm



Facility Characteristics

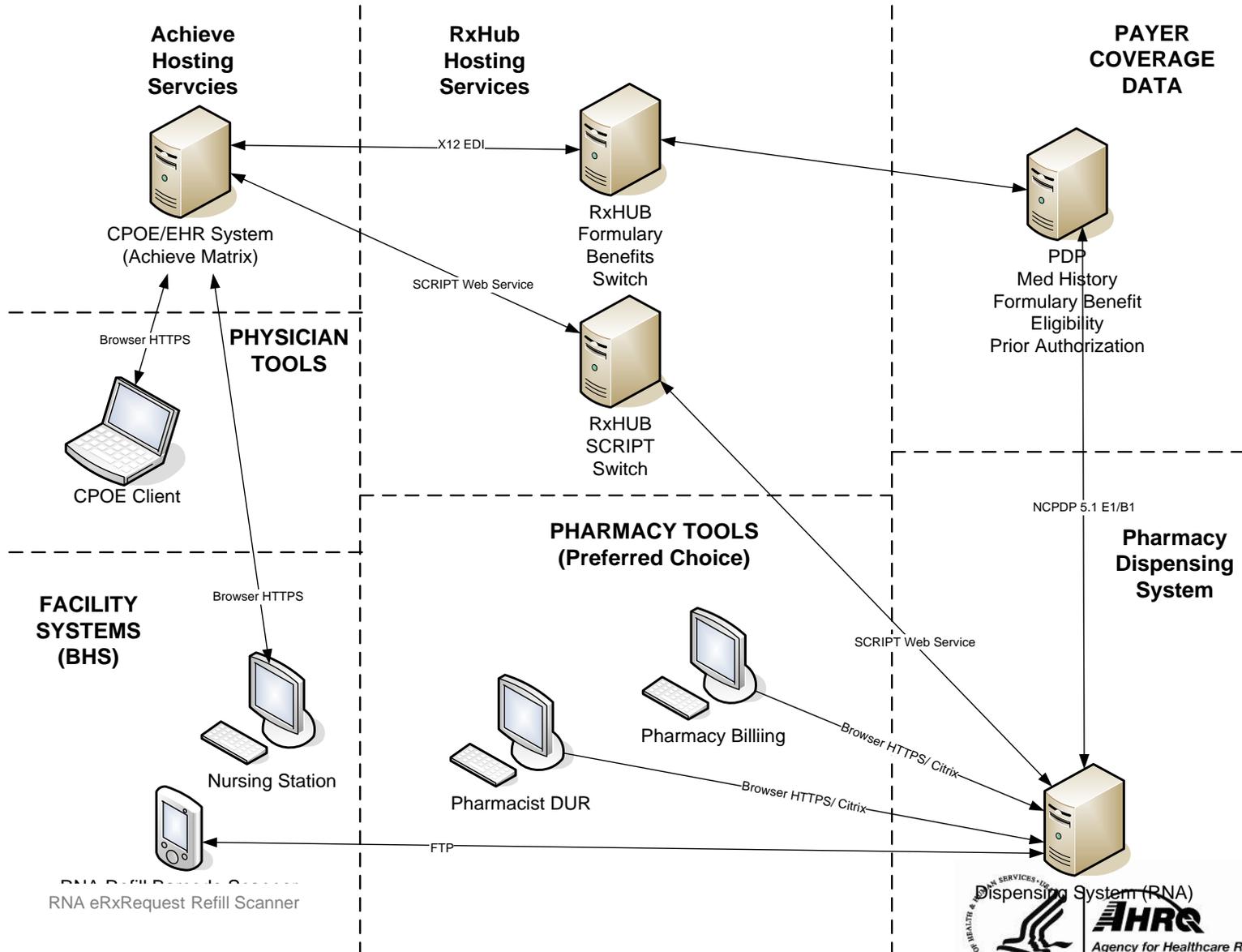
Characteristic	Test Facility A	Test Facility B	Comparison Facility A	Comparison Facility B
Type of Community	Suburban	Rural	Suburban	Suburban
Number of Beds	75	109	94	105
Preferred Choice Pharmacy	Yes	Yes	Yes	Yes
Electronic Medication Administration/Clinical Documentation System	Yes	Yes	Only MDS – Minimum Data Set	Only MDS – Minimum Data Set
Short Term Rehab Focus	Yes	No	No	Yes
Traditional LTC Focus	No	Yes	Yes	Yes
Extensive MD/Nurse Practitioner Involvement with Residents	Yes	Yes	Yes	Yes



Participants



Flow of Information



Facility Impacts of ePrescribing

- Workflow
 - Facilities currently using electronic Physicians Orders will see little change or disruption to current workflow
 - Integration with Clinical System (EHR) is critical to facility adoption
 - Ability to transmit orders directly to the pharmacy yielded benefits in reduced rework
 - Prescriber adoption is vital as the capability expands



Pharmacy impacts of ePrescribing

- Efficiencies
 - Demographics pre-populated
 - Straightforward new orders
 - Discontinued orders
 - Readmissions
- New challenges
 - Combination orders
 - Protocols
 - Transcription accuracy
 - Timely transmission on admission orders



CMS Pilot Findings

- Nurse as an agent model works technically for e-prescribing
- Prescriber adoption is critical
- Leadership is critical for success – prescriber, facility and pharmacy
- Formulary benefits standards work unchanged
- Patient safety alerts are largely ignored when the nurse is the agent of the prescriber
- ePA is technically viable and relevant in LTC but requires physician adoption to gain full benefit



CMS Pilot Findings

- Observations (cont'd.)
 - Data entry errors can still happen
 - SCRIPT standard needs LTC enhancements including refills
 - There is a need for demographic (ADT) messaging in the NCPDP standards
 - Combination orders create a challenge



CMS Pilot Feedback

- Bottom line
 - Multi-system communication works technically
 - Electronic prescribing will continue to evolve as the standards are defined, but the core concept is valid
 - New challenges created by the e-prescribing process will require resolution
 - Standards need revisions for LTC (Most changes have been approved by NCPDP or are in process)



Closing Thoughts on LTC e-Rx

- Several non-standard projects are underway
- Industry capital availability is limited
- <10 LTC clinical software vendors represent >90% of technology implementations
- <5 LTC pharmacy systems represent >95% of technology implementations
- e-Rx standards are a key component of the larger EHR standard
- “Nurse as Agent” model can help bypass traditional issues with physician adoption



Closing Thoughts on LTC e-Rx

- CCHIT can use e-Rx standards compliance as a key element of EHR certification in LTC
- Timely legislation will limit the number of non-standard e-Rx implementations
- Government investment will help accelerate development by the ~15 key LTC technology vendors
- Government investment and reimbursement will help accelerate adoption by providers and pharmacies



Thank You for Attending

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