RAND HEALTH

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

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Testimony to the National Committee on Vital and Health Statistics, Standards and Security Subcommittee

May 1, 2007

Participating Organizations

- New Jersey E-prescribing Action Coalition
  - Health plan/Payers
    - Horizon BCBSNJ
    - Caremark Rx
  - E-prescribing vendors
    - iScribe
    - Allscripts
    - InstantDx
  - Intermediaries
    - RxHub
    - SureScripts
  - Evaluation
    - RAND
    - Point of Care Partners
    - UMDNJ
- MDs from Horizon BCBSNJ "E-Prescribe" program
  - Install + pay honorarium for use; 1000 MDs

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

STANDARD	METHODOLOGY
• Medication History transaction of NCPDP SCRIPT, 8.1 • NCPDP Formulary and Benefit, 1.0	• Work process model • **Expert panel** • Physician, pharmacy site visits • **Claims data analysis** • **Physician web survey**
Fill Status Notification transaction of NCPDP SCRIPT, 8.1	• **Focus group evaluation of storyboard prototypes** • **Expert panel** • Work process model
Prior Authorization ASC X12N 278 ASC X12N 275 wrapper with HL7 attachment	• **Comparison of existing forms with HL7 standard** • Work process model • Live pilot study • Physician web survey • Physician site visits
RxNorm (July, Nov. 2006 versions)	• **Lab analysis of coverage for a retrospective sample of Rx data** • Expert panel • Work process model
Structured and Codified Sig, 1.0 (June 2006 draft)	• **Lab analysis of coverage for a retrospective sample of Rx data**

Medication History: Expert Panel

- Technical problems hinder reconciliation of Medication History with prescriptions that the POC originated
  - Many fields are optional and often left empty
    - Prescriber ID, *Sig*, quantity dispensed, pharmacy
  - NDC codes are poor drug identifiers
    - Often cannot be mapped to POC's drug compendium
  - Patient IDs must first be retrieved from 270/271 Eligibility
    - About half of Eligibility checks fail
- Some vendors had given up on reconciling Medication History
  - Drive alerts only from prescriptions that they originated
  - All enthusiastically support developing RxNorm

Medication History: Prescriber Survey

- 411 MDs recruited, 395 eligible, 58% response
  - 139 e-prescribers
  - 89 non e-prescribers (from waiting list for eRx)
- Information I have about medication history enables:

(agree or strongly agree)	eRx	non eRx
– Identifying clinically important DDIs	83%*	67%
– Prevent callbacks for safety problems	68*	54
– Identify medications from other MDs	65	61

- Among e-prescribers
  - 37% familiar with accessing Medication History; of these:
    - 16% used it often or very often
    - 39% agree data is complete for most patients

F&B: Technical Issues

- Plan IDs: reliance on Eligibility; no cross-ref
- NDC Codes: mismatches, redundancy
- Plan-level coverage ≠ Group- or patient- level
- Variance in use among PBMs:

Component	Downloads/mo
formulary status list (FSL)	728
alternative suggestions (ALT)	89
coverage limitations (COV)	21
patient co-pay information (COP)	2

F&B: Prescriber Survey

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

(*P* = 0.10)

	None	1-5	6-10	11-15	>15	E.V.
Non-eRx	1	43	27	10	19	8.1
eRx	1	32	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

F&B: Prescriber Survey

Among e-prescribers:

• Drug coverage information…	Disagree	Neutral	Agree
– 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

F&B: Claims Analysis

	n	
• eRx-group physicians	319	
0 - 12.5 eRx/mo	167	
12.5 - 50 eRx/mo	91	(29%)
> 50 eRx/mo	61	(19%)
– Continuously enrolled patients	28,364	
• Prescription claims	402,068	
– New ACE inhibitor starts	1114	
• Control-group physicians	2092	
– Continuously enrolled patients	2,382,865	
• prescription claims	2.2 million	
– New ACE inhibitor starts	5973	

Factors Associated with Generic Start

- **Probability of Generic for New ACE Inhibitor Rx**

	OR	(95% CI)	*P*
• Time (quarter)	1.1	1.07 - 1.14	<.0001
• Pt. income (per $10k)	0.96	0.92 – 1.0	.05
• Rx volume (<300/mo)	1.3	1.1 – 1.6	.01
• Post-activation x			
high user (> 50/mo)	2.3	1.1 - 4.6	.02
medium user (12.5-50)	ns		
low user (0-12.5/mo)	ns		

- Also ns: Pt. age, race, gender; MD specialty

Extent of E-Prescribing Use

To what extent do you use the e-prescribing system? (%)	iScribe	Allscripts
I use the system to write all of my prescriptions (except DEA Schedule II medications)	48	34
I use the system to write some prescriptions	40	47
I no longer use the system	12	18

Does your staff use e-prescribing to transmit new prescriptions or renewals? (%)	Partial users	Non-users
Yes	34%	66%
No, my staff does not use the system	0%	100%

Reasons for Continuing to Use Paper Prescriptions

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Patients were not in the PDA	5	8	5	47	36
I can't use the PDA because of technical problems (e.g. network connectivity)	3	3	6	37	51
I get too busy	10	17	7	35	31
Pharmacies don't reliably receive and process the prescriptions I send electronically	8	13	33	36	10
System interfered with established office workflow	16	34	22	22	7
System takes too much of my time	15	24	19	30	13
System takes too much of my staff's time	24	32	30	9	6

Fill Status: 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."
- 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
- Developed prototype modules for iScribe, Allscripts
  - Very little use during 8-10 weeks

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

- Sampled 42 *Sig* text strings from 10000 new Rx's
  - Each mapped into *Sig* standard by 3 independent reviewers
- For 15 without use of a repeat, poor agreement

	3	2	0
– Repeating sig			
– Dose	3	10	2
– Dose calculation		not used	
– Vehicle	1	0	14
– Route	0	1	14
– Site	0	3	12
– Frequency	1	6	8
– Admin timing	0	2	13
– Interval	4	7	14
– Duration			
– Indication	0	2	13
– Stop			
– Free text	0	9	6

- "Repeating Sig" used for 27 (64%) by at least one
  - 1 to 6 iterations used; varied widely
- No reviewers correctly used the modifier fields for variable dosing or variable frequency

Conclusions

- Medication history, Formulary and Benefit
  - Technically adequate
  - Falling short of their promise as currently used
- 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

Technical Expert Panel

Category		Company	Primary Contact
Point of care software vendors	EHR	**Allscripts**	Jill Helm
	eRx	**iScribe**	Linda Schilling
	eRx	**InstantDx**	Krishnan Seshadri
	EHR	MedPlus	Rohit Nayak
	eRx	ZixCorp	David Robertson
Content Providers		First DataBank	Tom Bizzaro, RPh
		Wolters Kluwer	Karen Eckert, RPh
Intermediaries		**RxHub**	Teri Byrne
		SureScripts	Ken Whittemore, RPh
		NDC	Warren Williams
Pharmacies	Mail	**Caremark Mail**	Jane Niemtschk
	Mail	Medco Mail	Michele Glynn
	Large Chain	**Walgreens**	Mike Simko, RPh
	Medium Chain	Ahold/Stop&Shop	Brad Dayton, RPh
	Independent	QS1	Tammy Devine