Prescription Monitoring Integration with E-Prescribing and Health Information Exchange

PDMP East Regional Meeting
April 5, 2011

Grant M. Carrow, Ph.D.
Massachusetts Department of Public Health
Agenda

- Interfacing of prescription monitoring with e-prescribing
  - Research and demonstration project of electronic prescribing of controlled substances
- Integration of prescription monitoring with health information exchange
  - Online PMP batch lookup
  - Electronic unsolicited reports
Enabling E-Prescribing and Enhanced Management of Controlled Medications
(AHRQ Grant # R18 HS17157)
Expected Benefits of EPCS

- Safety – improve legibility and decrease ADEs
- Prescriber ease of use – single workflow for all electronic prescriptions
- Tracking – potential for electronic interface with prescription monitoring programs
- Reduce Fraud & Abuse
Project Purpose and Method

- Encourage the expansion, adoption and diffusion of e-prescribing, a key component of health IT and electronic health records, to improve medication management by ambulatory care clinicians at the point-of-care.

- Test and demonstrate the safety, security, quality and effectiveness of electronic transmission of prescriptions for federally controlled medications in the ambulatory care setting.
Project Specific Aims

**Aim 1:** Develop, implement and verify a system of safe and secure electronic transmission of prescriptions for federally controlled substances in an ambulatory care setting.

**Aim 2:** Develop and test the interfacing of the e-prescribing system developed in Aim 1 with the Massachusetts Prescription Monitoring Program.

**Aim 3:** Conduct systems process and outcomes evaluations of improvements to patient care, risk reductions, patient and clinician benefits, patient safety, information privacy, confidentiality

**Aim 4:** Develop and implement a plan for dissemination of findings for Aims 1, 2 and 3.
## Key Project Milestones

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 2007</td>
<td>AHRQ grant award - MA EPCS project begins</td>
</tr>
<tr>
<td>Sept. 2008</td>
<td>DEA/MDPH Memorandum of Agreement</td>
</tr>
<tr>
<td>Sept. 2009</td>
<td>First EPCS transmitted – pilot initiated</td>
</tr>
<tr>
<td>Jan. 2010</td>
<td>System activation - 33 providers receive cryptokeys</td>
</tr>
<tr>
<td>June 2010</td>
<td>Live demonstration of EPCS (Washington, DC)</td>
</tr>
</tbody>
</table>
EPCS Transaction

PATIENT

PRESCRIBER

CREDENTIALING & AUTHORIZATION PROCESS

SECURITY TOKEN

E-PRESCRIBING SYSTEM

(Pharmacy Management System,
DigiSignature & Archiving)

DEA DATABASE

E-PRESCRIBING NETWORK

(eRx Network, SureScripts-RxHub, etc.)

PHARMACY

PHARMACY MANAGEMENT SYSTEM

(PDX, QS/1, Walgreens, etc.)

PBM

Digital Signature & Archiving
EPCS/PMP Reconciliation Work Flow

PHARMACY

Dispensed Rx Information (ASAP 4.1 format)

PHARMACY MANAGEMENT SYSTEM (PDX, QS/1, Etreby, etc.)

PHARMACY PMP Data Collector

NCPDP SCRIPT Format

PRESCRIBER

NCPDP SCRIPT Format

e-PRESCRIBING APPLICATION

Prescribed Rx Information (CSV)

PMP

Dispensed Rx Information (ASAP 4.1 format/CSV)

PMP PRESCRIBER e-PRESCRIBING APPLICATION

PRESCRIBED-DISPENSED RECONCILIATION REPORTS
Observations

- Aim 2 is intended to develop a methodology for reconciling prescribing data generated by prescribers’ applications with dispensing data reported to the MA PMP by pharmacy applications.

- Without key numbers linking the prescribed data to the dispensed data, only problematic “fuzzy” matching algorithms would be possible.

- No such fields were available in the existing American Society for Automation in Pharmacy (ASAP) standard for PMP reporting.
Actions

- In November, 2009, based on input from MA PMP, the American Society for Automation in Pharmacy released ASAP v4.1 for PMP’s with the new fields: DSP18 (RxNorm) and DSP19 (Transaction Control Reference Number)
  - DSP18, RxNorm, is a standard code to indicate prescribed drug by ingredients, strengths and form
    - Managed by the National Library of Medicine with anticipated implementation in 2012
    - Will facilitate reconciliation of prescribed product (RxNorm value) to dispensed product (NDC value)
  - DSP19 is designed to contain the NCPDP SCRIPT Transaction Control Reference Number (UIB-030-01)
    - A unique number generated by the prescribing application and passed to the receiving pharmacy application
    - When used in combination with the prescriber’s DEA number, uniquely links a prescribed to a dispensed prescription
Actions

- Prescription records will be sent to PMP from:
  - Prescribing Applications
    - Special Project Extracts
  - Pharmacy Applications
    - Contained in regular PMP submissions leveraging DSP18 and DSP19

- PMP plans to reconcile the prescription information from the two sources for the purposes of the EPCS project to study:
  - Instances of possible drug diversion
  - Patient pick-up compliance
  - Validity and robustness of the reconciliation process
  - Unanticipated side-effects of e-prescribing
Prescription Monitoring and Health Information Exchange
Challenges for Single-Patient Lookup Functionality

- Prescriber workflow/time
  - 15-20 minute patient encounters
  - PMP inquiry process takes 4-5 minutes
  - Prevailing usage model has prescriber using PMP in exam room during patient encounter time

- Prescriber-patient relationship/trust

- Expectation for return on invested time may be low
Strategic Vision

- **Premise:** Increased and more efficient use of the Online PMP by prescribers and dispensers can increase safety of prescribing and dispensing.

- **Goal:** Encourage the expansion, adoption and efficient use of the Online PMP by prescribers and dispensers.

- **Approach:** Increase efficiency of Online PMP use beyond single-patient lookup functionality by leveraging existing and future technology.
Strategy

- Integrate with provider systems to facilitate more automatic provider review of patients
- Change usage model to take PMP lookup task out of critical exam room time
- Lower time required to review a patient
- In EMR, present PMP data as an additional clinical data point along with all the other data that a provider reviews for a patient rather than something unique
- Flag small percentage of patients of concern by use of electronic unsolicited reports (“alerts”)
## Provider Systems to Integrate with MA Online PMP

<table>
<thead>
<tr>
<th>Function</th>
<th>PMS (Practice Management Systems)</th>
<th>EMR/EHR (electronic medical records/electronic health records)</th>
<th>HIE (Health Information Exchange)</th>
<th>PMIX (PMP Interstate Exchange)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing/Scheduling</td>
<td>Clinical data record (Usually also includes Billing/Scheduling)</td>
<td>Systems for exchanging EMR data between unrelated entities</td>
<td>Systems for exchanging PMP data across states</td>
<td></td>
</tr>
<tr>
<td>Prevalence 2011</td>
<td>95%+ of all practices have PMS in place</td>
<td>20-45% depending on how and when measured</td>
<td>Low today</td>
<td>Pilot stage</td>
</tr>
</tbody>
</table>

- **PMS (Practice Management Systems)**: Functions include Billing/Scheduling and Clinical data record.
- **EMR/EHR (electronic medical records/electronic health records)**: Includes Clinical data record with possible additional billing/scheduling.
- **HIE (Health Information Exchange)**: Systems for exchanging EMR data between unrelated entities.
- **PMIX (PMP Interstate Exchange)**: Systems for exchanging PMP data across states.

Prevalence data as of 2011:
- 95%+ of all practices have PMS in place.
- 20-45% depending on how and when measured.
- Low today.
- Pilot stage.

Integration approaches include:
- Semi automatic – CSV file – “Batch”
- Fully automatic “Web Services” HL7
- Fully automatic “Web Services” HL7
- Fully automatic “web services” NIEM
Systems Integration Vision

Computer Interface

Web Interface

Software

Controlled Substances Rx Databases to support online usage

PMIX

EMR/HIE

Pharmacies

MA Online PMP

“Batch”

Practice Mgmt Systems

Medical End Users

Pharmacy End Users

Law Enforcement

Regulatory Agencies
PMS Integration Workflow: Batch

1. PMS or EMR system creates file of patient identifiers
2. End user uploads file to Online PMP
3. Patient summary info provided for many patients in single output
## Batch Lookup Output Screen

### Massachusetts Online PMP Batch Lookup
**Date:** 03/29/2011 11:16 AM  
**Username:** ehilman

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>DOB</th>
<th>City</th>
<th>Zip</th>
<th>Record ID</th>
<th>Total number of prescriptions in last 12 months</th>
<th>Number of unique prescribers in last 12 months</th>
<th>Number of unique pharmacies in last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>P1</td>
<td>05/01/1990</td>
<td>Boston</td>
<td>01234</td>
<td>1000000575</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Test</td>
<td>P2</td>
<td>06/01/1990</td>
<td>Saugus</td>
<td>01906</td>
<td>1000000576</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Test</td>
<td>P3</td>
<td>01/16/1980</td>
<td>Peabody</td>
<td>01960</td>
<td>1000000572</td>
<td>10</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Test</td>
<td>P4</td>
<td>03/21/1950</td>
<td>Essex</td>
<td>01980</td>
<td>1000000573</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Test</td>
<td>P5</td>
<td>11/23/1987</td>
<td>Beverly</td>
<td>01315</td>
<td>1000000574</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

*REDACTED* indicates a match to patient name and DOB, but not to zip code.
Efficiencies of Batch Lookup

- Lookup multiple patients with a single input
- Obtain summary of multiple patients in a single output
- Single log in (e.g., per day, biweekly, monthly)
- No manual input (typing) of patient identifiers
- Lookup file can be generated by office staff for use by authorized end user
- Lookup is outside of critical exam room time
- Provider can delegate to office staff initial review of PMP summary output
- Provider can target lookups to only those patients of concern based on provider’s review of summary information
EMR/HIE Integration

- EMR is coming
  - Regulations; incentives; Health Care Reform
  - Funded “Office of National Coordinator Health Information Technology”
  - Bush 2014 Goal of near universal deployment
- Goal for PMP integration
  - Present controlled substances prescription history information in context of all other overview clinical information without any provider or staff intervention
  - EMR ensures prescriber has relationship to patient (security concern)
  - Clinical information (diagnosis, etc.) could be sent to PMP
    - Usage studies
    - Security/Auditing considerations
Hypothetical Provider View
EMR/PMP

Include PMP Data Here
Comparison of EMR to HIE

- EMR Integration – establishes “data plumbing” for one EMR vendor at a time
- HIE Integration – establishes “data plumbing” for MANY EMR instances (many sites, many vendors) at once
HIE Integration

MA Online PMP

Brand X EMR, Institution 1

Brand X EMR, Institution 2

Brand Y EMR, Institution 3

Brand Z EMR, Institution nn
Electronic Unsolicited Reports - Alerts

- MA PMP establishes alert criteria (e.g., min. no. prescribers, excess days supply)
- Email to enrolled prescribers and dispensers
  - No patient information – just case number and instructions to login to Online PMP for details
- Paper mail possible for those not yet enrolled
- Technically possible to issue alert to EMR
  - Much standards work needs to be done to make this viable
This is to inform you that, according to an analysis of the records of the Massachusetts Online Prescription Monitoring Program (Online PMP), a patient to whom you have prescribed or dispensed a controlled substance appears to have obtained prescriptions for controlled substances from multiple sources and in potentially harmful quantities.
Summary of MA Integration Plan

2010
- Basic Online Single Patient Lookup

2011
- “Batch” for PMS Integration
  Usable for Semi Automatic EMR integration
- PMIX Alerts

2012 and beyond
- Full web services EMR/HIE Integration
- EMR systems adapt to display controlled substances prescription history info on patient home screen
Acknowledgements: EPCS

- MA Department of Public Health, Drug Control Program
- DrFirst, Inc., Rockville, MD
- eRx Network, an Emdeon company, Fort Worth, TX
- Brandeis University, Heller School for Social Policy and Management
- Berkshire Health Systems, Inc.
- U. S. Department of Justice, Drug Enforcement Administration
- Supported by a grant from the U.S. Agency for Healthcare Research and Quality
- Special thanks to Kelleher Associates
Acknowledgements: HIE

- Portions of this project were supported by grants awarded by the U.S. Bureau of Justice Assistance. Points of view or opinions in this presentation are those of the author and do not represent the official position or policies of the United States Department of Justice.

- Special thanks to Global Sage Group
  - Henry Theberge, President and CTO
  - Eric Hilman, Principal
Prescription Monitoring Program

For Additional Information

- **Websites**
  - [www.mass.gov/dph/dcp](http://www.mass.gov/dph/dcp)
  - [www.mass.gov/dph/dcp/onlinepmp](http://www.mass.gov/dph/dcp/onlinepmp)

- **Email**
  - dcp.dph@state.ma.us
Questions?