The Future of ePrescribing: Leveraging HIT to Manage Medications

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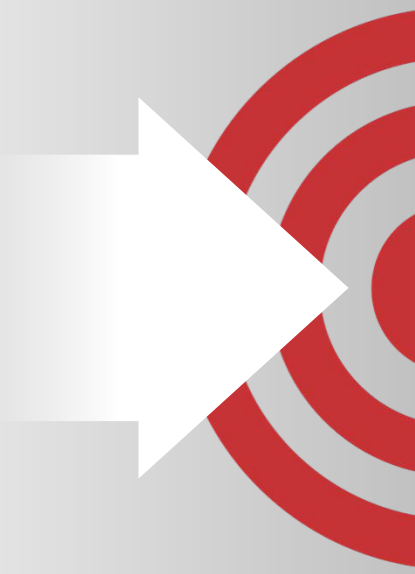
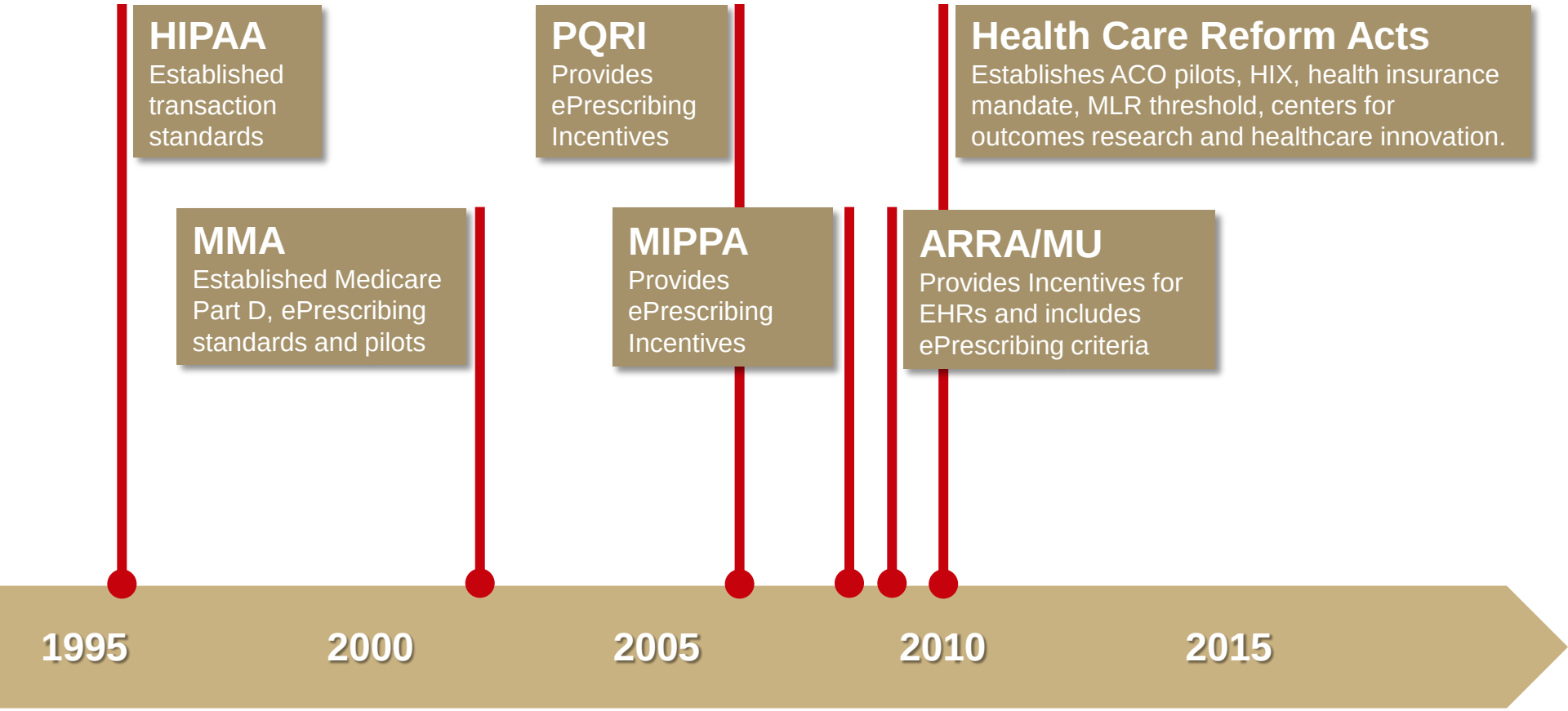
Agenda

- **ePrescribing background**
  - Drivers
  - Change in Focus
  - Flow
  - Components & Value
  - Evolution to eMedication Management
- **Gaps, Challenges & Opportunities in ePrescribing**
- **What's Available and In Development in other areas of eMedication Management**
  - Dispense
  - Monitor
  - Assess
- **Conclusions**

Background



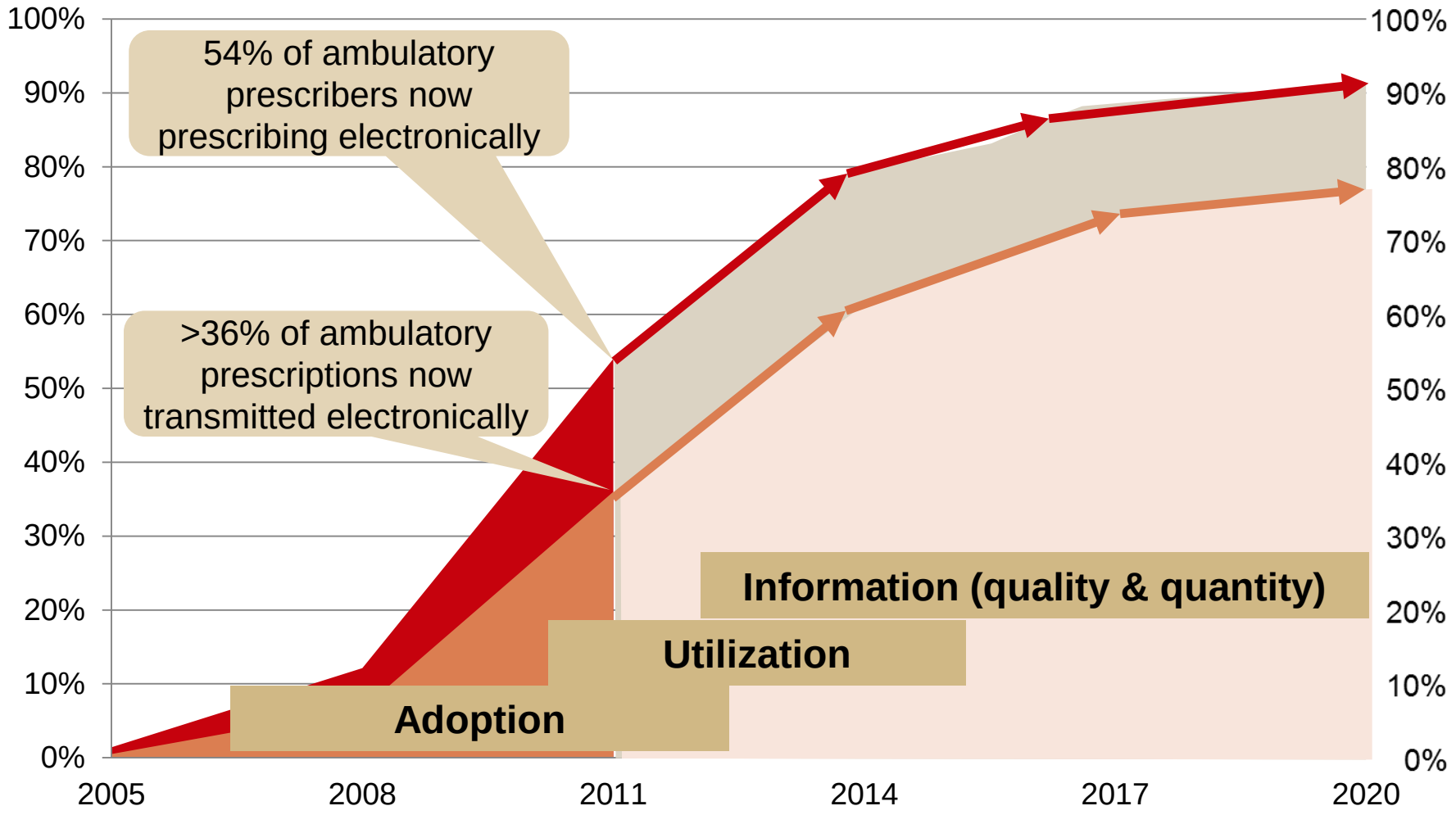
For over a decade the Federal Government has influenced ePrescribing and Medication Management



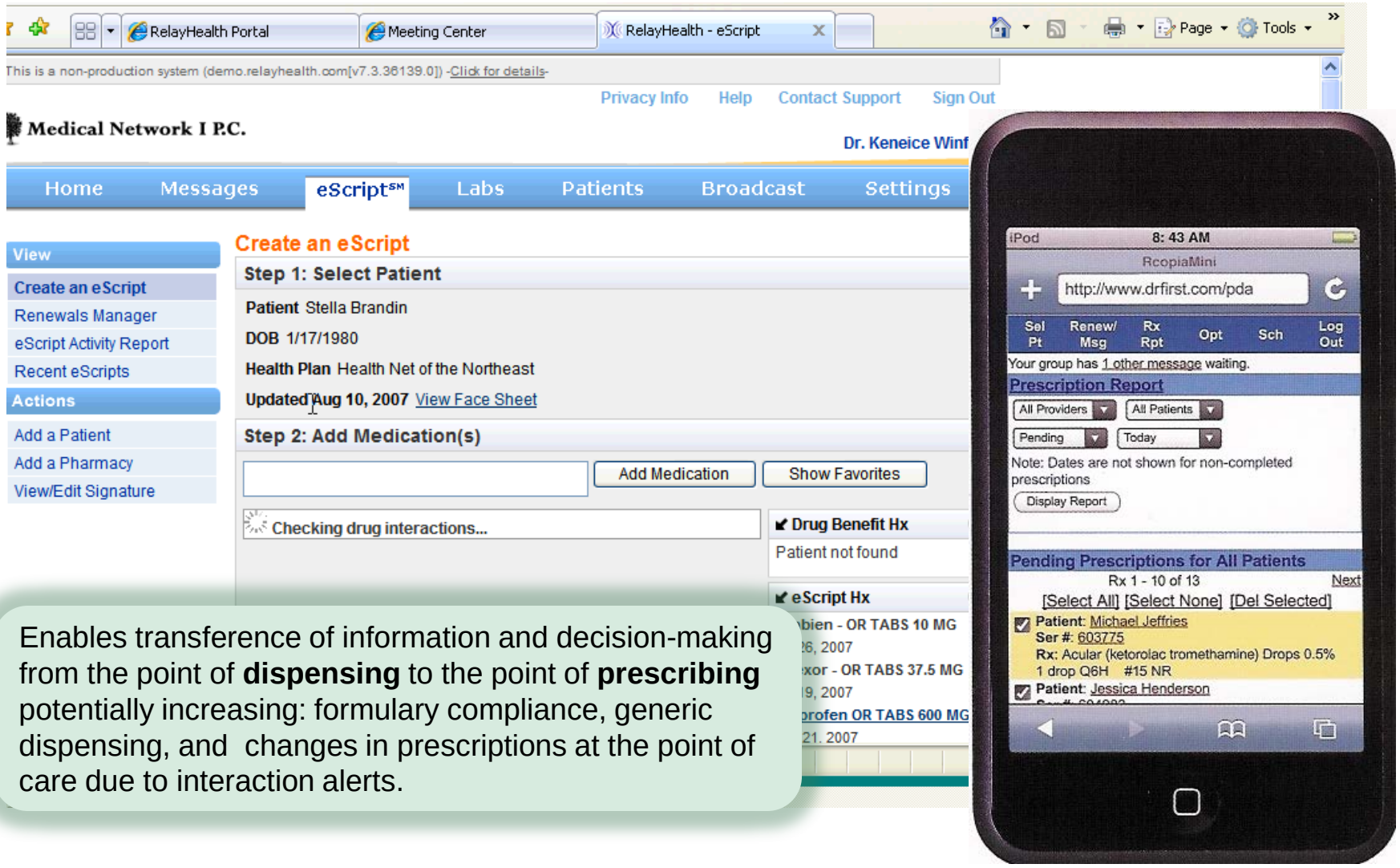
Other ePrescribing Drivers

- General shift from FFS to value-based care will necessitate the infusion of information into the ePrescribing process
  - ACOs, PCMH
- The push for efficiency
  - Prescriber
  - Health plan
  - Pharmacy
- State ePrescribing mandates
- Payer pressure
  - mandates, P4P, formulary compliance
- Hospital ownership of physician practices
- Clinical Decision Support

As ePrescribing increases over the next decade, the focus will shift from adoption to utilization to information quality & quantity

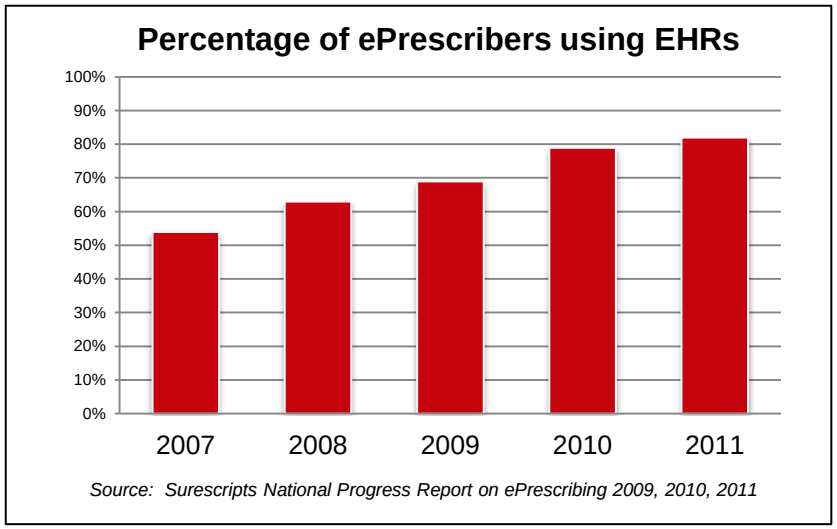


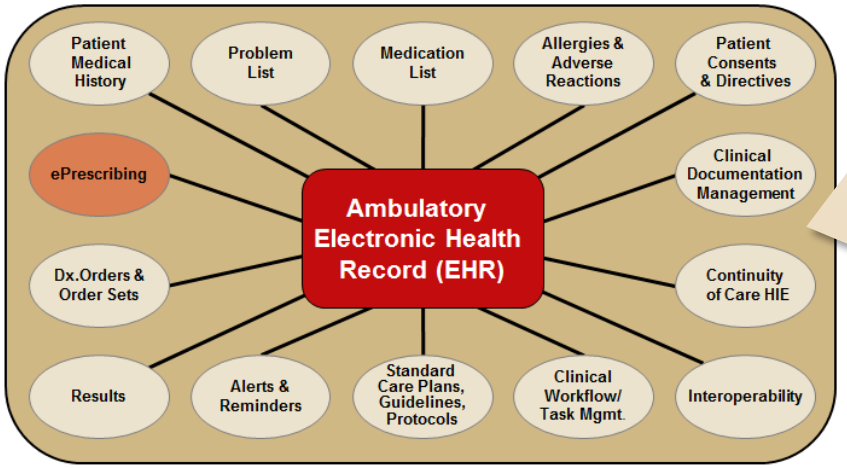
ePrescribing Applications: now much more than an electronic prescription writer



Enables transference of information and decision-making from the point of **dispensing** to the point of **prescribing** potentially increasing: formulary compliance, generic dispensing, and changes in prescriptions at the point of care due to interaction alerts.

Most ePrescribing Occurs within EHRs





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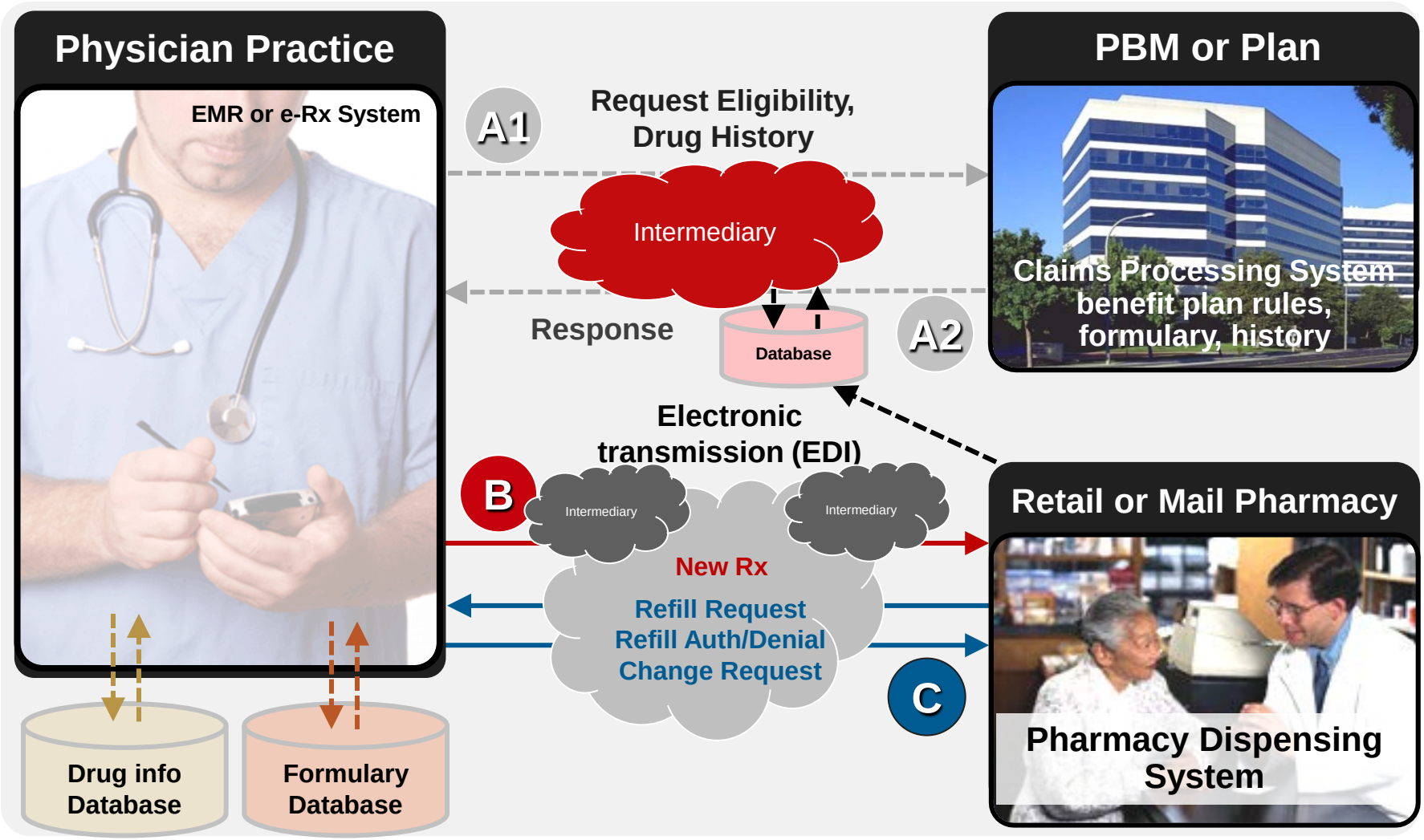
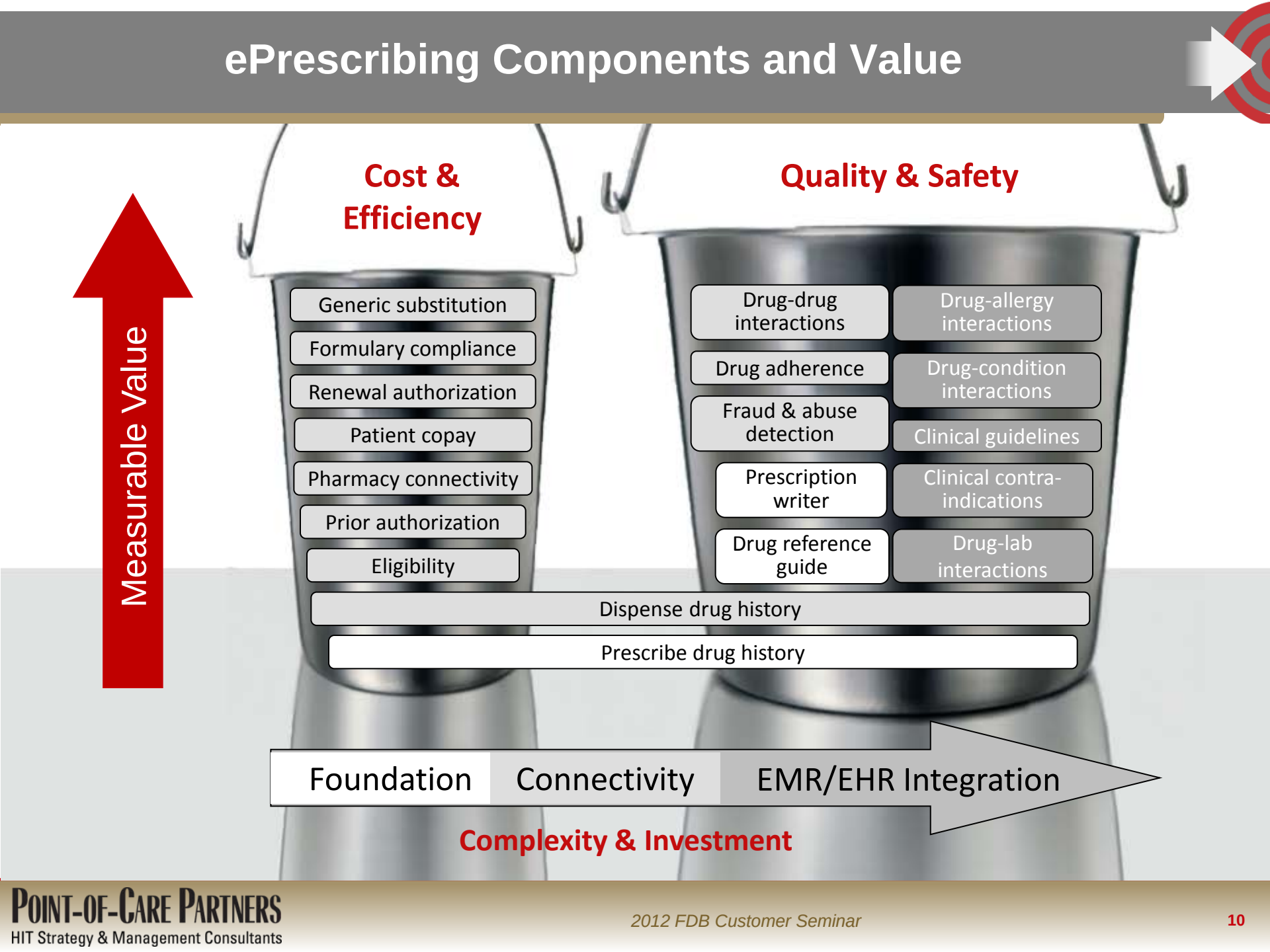
Ideal ePrescribing Software Features within an EHR

- Generate a medication list
- Select medications, transmit prescriptions, respond to refill requests and conduct safety checks electronically
- Customize DUR alerts based on **user's** preferences
- Provide eligibility-informed formulary data, medication history, and prior authorization requirements electronically from the patient's drug plan.
- Provide mail-order eligibility information and ability to transmit to mail-order electronically
- Ability to handle ePrescribing of controlled substances (EPCS)
- Import diagnosis codes and other relevant medical information from the EMR into electronic prescription

ePrescribing Flow



ePrescribing Components and Value



ePrescribing Saves Lives, Averts Permanent Disability and Prevents Health Care Costs

	Study Model^ (Jan-Jun 2006 Data)	Nationwide (Surescripts 2011 Data*)
Number of ePrescriptions	1,833,254	570,000,000
Number of Drug-Drug Interaction Alerts	279,476	85,500,000
Number of ePrescribers	2,321	390,000
Number of Unique Drug-Drug Interactions (assume 47.6% of Total DDI alerts are unique based on study assumptions)	133,051	40,704,242
Prevented Adverse Events per Year		
Serious	49	14,992
Significant	125	38,256
Minor	228	69,699
All	402	122,974
Prevented Injuries		
Death	3	918
Permanent Disability	14	4,283
Temporary Disability (<1yr)	31	9,484
Symptoms Lasting >= 30 Days	14	4,283
Symptoms Lasting < 30 Days	272	83,240
Abnormal Laboratory Results	68	20,799
All	402	122,974
Prevented Health Costs		
Hospitalization	$349,651	$106,968,611
Emergency Department Visit	$14,630	$4,475,750
Office Visit with New Medicine	$25,197	$7,708,509
Office Visit without New Medicine	$13,141	$4,020,221
Total	$402,619	$123,173,109
Savings per Clinician		
Projected Savings per Clinician	$173	$315.83

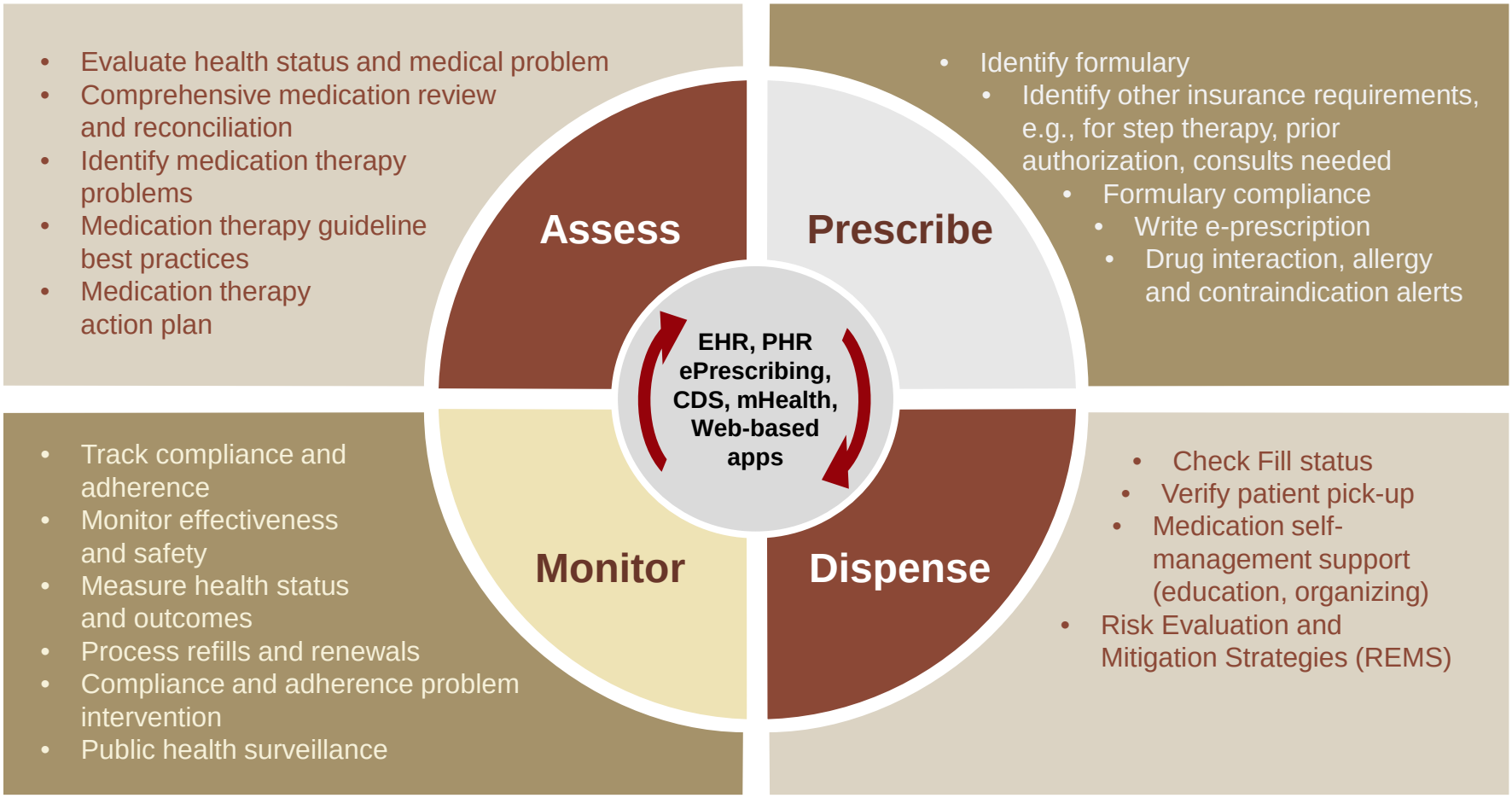
918
Deaths Likely Prevented

4,283
Permanent Disabilities Likely Averted

$123M
In Prevented Health Costs

^SN Weingart et al., An Empirical Model to Estimate the Potential Impact of Medication Safety Alerts on Patient Safety, Health Care Utilization, and Cost in Ambulatory Care, 2009;169(16):1465-1473.
*Surescripts National Progress Report 2011

The Evolution of ePrescribing to eMedication Management



- Evaluate health status and medical problem
- Comprehensive medication review and reconciliation
- Identify medication therapy problems
- Medication therapy guideline best practices
- Medication therapy action plan

- Identify formulary
- Identify other insurance requirements, e.g., for step therapy, prior authorization, consults needed
- Formulary compliance
- Write e-prescription
- Drug interaction, allergy and contraindication alerts

- Check Fill status
- Verify patient pick-up
- Medication self-management support (education, organizing)
- Risk Evaluation and Mitigation Strategies (REMS)

- Track compliance and adherence
- Monitor effectiveness and safety
- Measure health status and outcomes
- Process refills and renewals
- Compliance and adherence problem intervention
- Public health surveillance

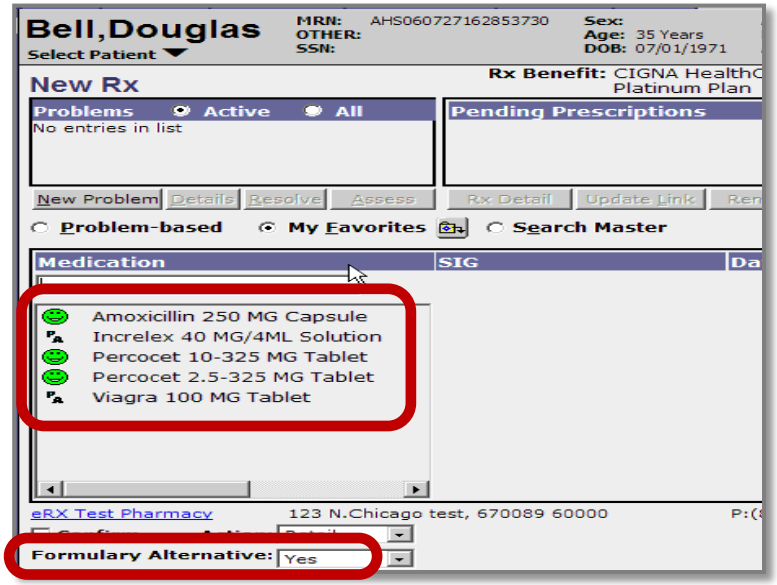
Prescribe

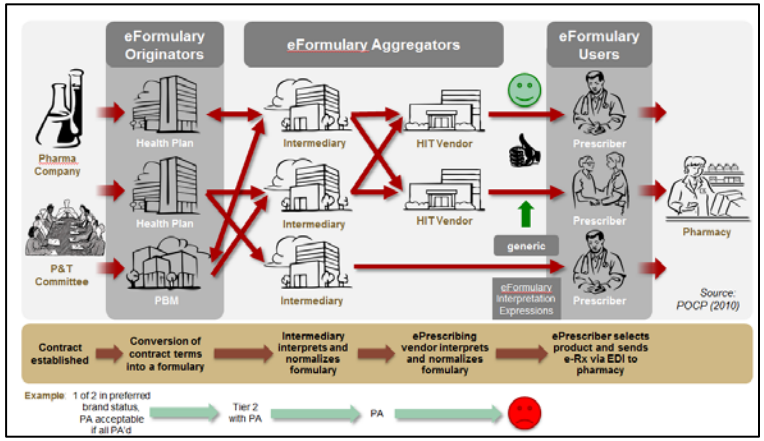
eMedication Management:

Gaps, Challenges & Opportunities Remaining in ePrescribing

eFormularies – increasingly part of the prescribing process and increasingly a source of concern

- eFormularies not always updated quickly
- Formulary check required for MU Stage 2
  - Eligibility-driven formulary not required
- Prescribers don't always trust or understand eFormulary representation
  - Dr. Smith, "Well, the product is not on formulary."
  - Provider Rep, "We have placed it on Tier 2."
  - Dr. Smith, "See, look here. It is a red frowning face."
- Vendors are not always as concerned as others about accuracy
  - "We're about 80% accurate and that is good enough for most physicians."
- Vendors often simplify formularies by using symbols and/or not providing additional information such as PA, copay, and tier

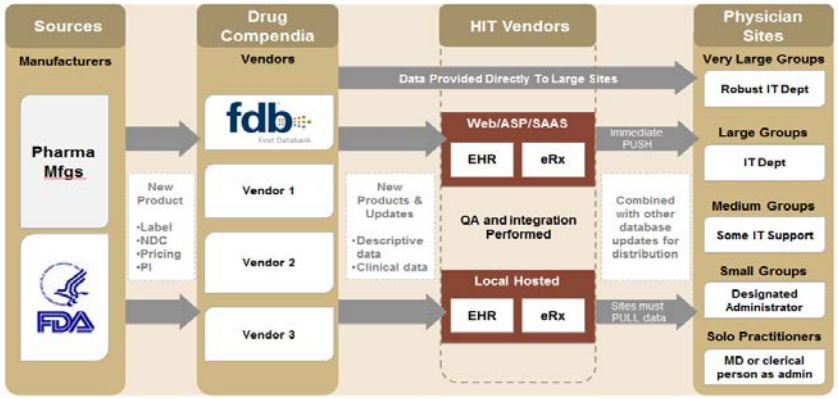




Data Latency – A Growing Concern

- Various stakeholders are becoming aware of **significant data latency** problems
  - Recently launched drug products are often unavailable to ePrescribers because ePrescribers lack an updated drug database
  - Latest alerts and black box warnings unavailable to ePrescribers
- The complex, multi-step process of data distribution is fraught with delays
  - Compendia vendors release updates
  - HIT Vendors process these updates (quarterly, monthly or weekly)
  - End-user clients either receive the data from vendor (SaaS) or initiate a "pull" of the data
  - Non SaaS sites often have **significant delays** in processing of updates
  - Result: **new drug entities** and **new alerts** may not be available to prescribers for **up to 6 months**
- Yet the size and variability of the client base is so great, direct distribution to them is improbable
  - Likewise, synchronizing with releases is imperative
  - Ripe for disruption with game-changing technology?

Drug Information Data Flow

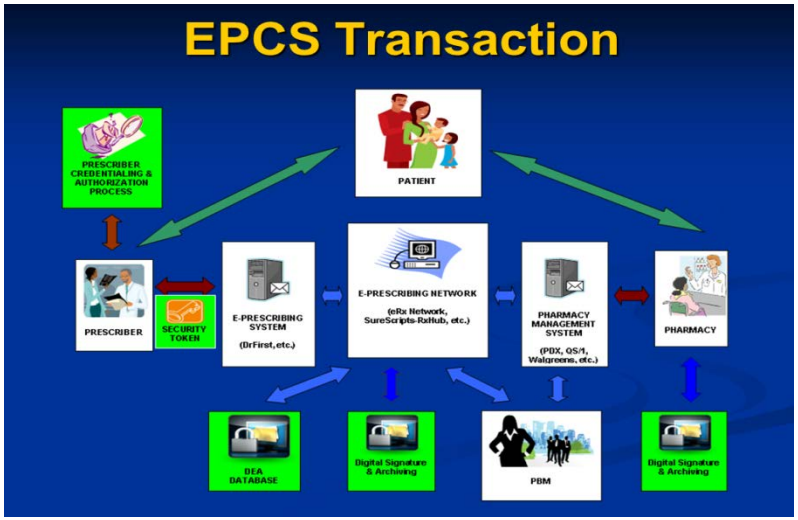


How Updates are Loaded in the Prescriber System

- Most leading HIT vendors require the provider system staff to do something to process and load updates
  - The legacy vendors with the most market share are not architected to support PUSH methods
  - Someone on site must download the data
  - Data files can be very large and include drug info, formulary and pharmacy data files
  - HIT vendors are unable to monitor if clients sites are current with processing updates
  - This is the reason for the most significant delays resulting in out of date drug information
- Prescribers assume their alert data is current, and are generally unaware of latency issues
- Anecdotal evidence that many sites don't understand the correlation between processing the updates and having new drugs and alerts

ePrescribing of Controlled Substances (EPCS)

- As of June 1, 2010 the federal barrier to EPCS removed
  - Allows prescribers the option of electronically signing and transmitting prescriptions for controlled substances
  - Permits pharmacies to receive, dispense, and archive electronic prescriptions for controlled substances
  - Includes Schedules II, III, IV, and V
  - Participation is voluntary
  - Written, manually signed, and oral prescriptions for controlled substances still permitted
- Stage 1 MU criteria do not include EPCS as part of the ePrescribing requirement however Stage 2 MU criteria does allow it to be included
- EPCS still not approved in ten states
- Limited number of vendors currently supporting EPCS:
  - **Pharmacy:** Cerner Etreby, CVS/pharmacy, H E B Pharmacy, MDScripts, Rite Aid, SUPERVALU, Walgreens,
  - **Prescriber:** DrFirst, GE Healthcare, NewCrop, NextGen, RxNT



EPCS is Burdensome

- ePrescribing software must go through an audit and certification process
- Pharmacy software must go thru an audit and certification process
- Physicians must undergo identity proofing
- Prescribers must utilize two-factor authentication
- Unlike non-controlled substances, electronic prescriptions for controlled substances are not allowed to get converted to fax therefore physicians must continue to have a process in place to print the eRx and manually sign it if the pharmacy is not enabled to receive it electronically

ePrescribing Errors – an increasing complaint

- **More and more pharmacies are reporting prescribing errors with eRx[1,2]**
  - More than 10% of electronic prescriptions contain an error
    - Four percent require a call-back to the prescriber resulting > $360 million in pharmacist labor costs
  - About two-thirds of the errors were omissions. For instance, some of the prescriptions left the duration, dose, or frequency blank.
- **Other prescribing errors[3]**
  - Drug product errors - incomplete drug name, strength omitted, error in strength, incorrect drug chosen
  - Dose errors - dose omitted, incorrect dose, ambiguity in sig field, dose incomplete, overdose, underdose
  - Route errors - incorrect route, omitted route
  - Frequency errors - frequency omitted, frequency changed
  - Special instructions - mismatch between what is indicated in this field and the other fields
- **Errors also are created when old NDCs are used and drug descriptions are not accurate**

Challenges with Solving ePrescribing Errors

- Limited efforts to measure how big this issue really
- Unknown whether it is limited to certain vendors or all vendors
- Providers (prescribers and pharmacies) are too busy to report the issues
- Limited systematic use of the codified data and fields currently available via eRx

1. Nanji KC, et al "Errors associated with outpatient computerized prescribing systems" *J Am Med Inform Assoc* 2011
2. Taylor TN, et all "Frequency of Prescription Problems Requiring Pharmacy-Prescriber Interactions: A Pilot Study" Final Report sponsored by Southeaster Michigan Beacon Community April 2012
3. Presentation by Eric Poon, MD, MPH. *Errors Associated with the Use of E-Prescribing.* Available at: http://www.ehcca.com/presentations/qualitycolloquium6/poon_1b.pdf

Medication contra-indication Alert Fatigue

- Alert fatigue is a significant issue for ambulatory ePrescribers - 6.6% of electronic prescriptions generate alerts[1]
- Shotgun approach to drug-drug interactions, dosing and duplicate therapy alerts
  - Everybody sees everything
  - Limited by a few basic severity parameters
  - Even “Severe” categories have far too many alerts
  - 90% of ambulatory ePrescribing alerts are overridden[1]
    - 9.2% of interactions; 23% of allergy alerts
  - Prescribers tend to “blow through” alerts, don’t believe they are relevant
- Refinements needed
  - Better classification of drug-drug interactions
  - Better implementations of the data (e.g., screening for route of administration)
  - Customized solutions by provider specialty or practice setting
  - Patient context sensitive alerts (e.g., diagnosis, age, lab values)

[1]“Overrides of Medication Alerts in Ambulatory Care” Archives of Internal Medicine Feb 9, 2009

First Databank Releases Major Innovation to Address Medication Alert Fatigue in HIT Systems

FDB AlertSpace™ Demonstrates How Easily Clinicians Can Customize Medication Alerts

South San Francisco, CA - 2/21/2012 3:31:00 PM

First Databank (FDB), a leading provider of clinical drug knowledge that improves medication-related decisions and patient outcomes, announced its new alert management solution, FDB AlertSpace™, designed to address alert fatigue in computerized provider order entry (CPOE) systems, has achieved unprecedented industry acceptance among various US hospital institutions. AlertSpace will be demonstrated in the FDB booth #2338 during the HIMSS12 Conference, February 20-24, this week in Las Vegas.

Studies have shown that clinicians override the majority of medication alerts in CPOE applications, suggesting that current alert configurations may inadequately protect patient safety. FDB developed AlertSpace in order to help its thousands of customers address this common industry-wide problem with the goal to accelerate clinician acceptance and utilization of CPOE applications. At present, hospitals are aggressively deploying CPOE applications as a requirement of the HITECH Act which provides incentive payments to encourage widespread adoption and use of health information technology to improve patient care.

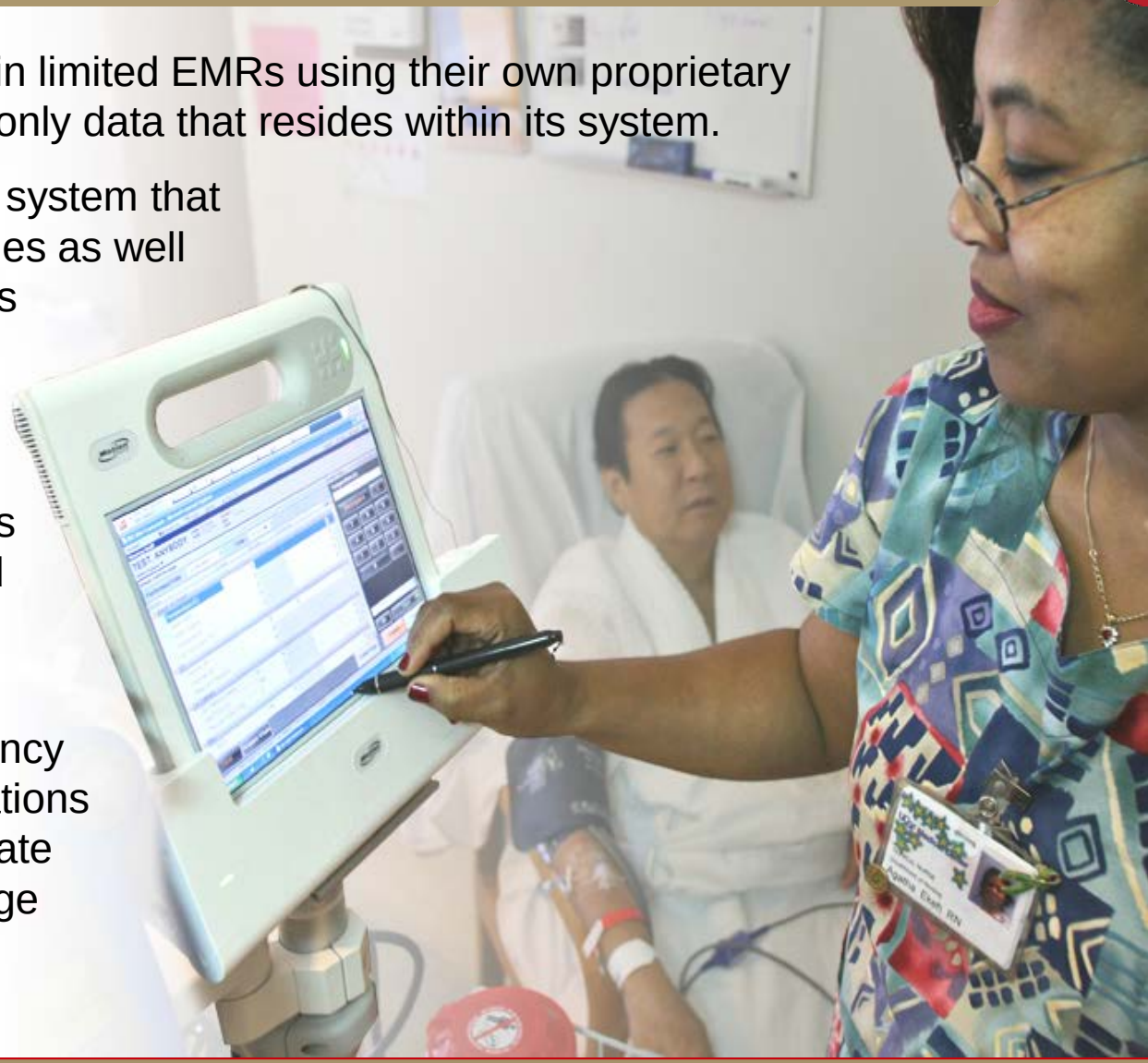
AlertSpace is a Web-based software solution with an intuitive user interface. Users can fine-tune FDB medication alerts and customize them to their organization's circumstances and clinician perspectives as they see fit. This approach to alert management facilitates collaboration among all clinical stakeholders at an institution and enables the deployment of alert best practices across disparate institutions. Furthermore, the solution will "crowd source" alert knowledge and enable creation of alert "playlists" so that institutions can share the most commonly-customized and clinically effective alerts.

Alert Fatigue: A Common Complaint

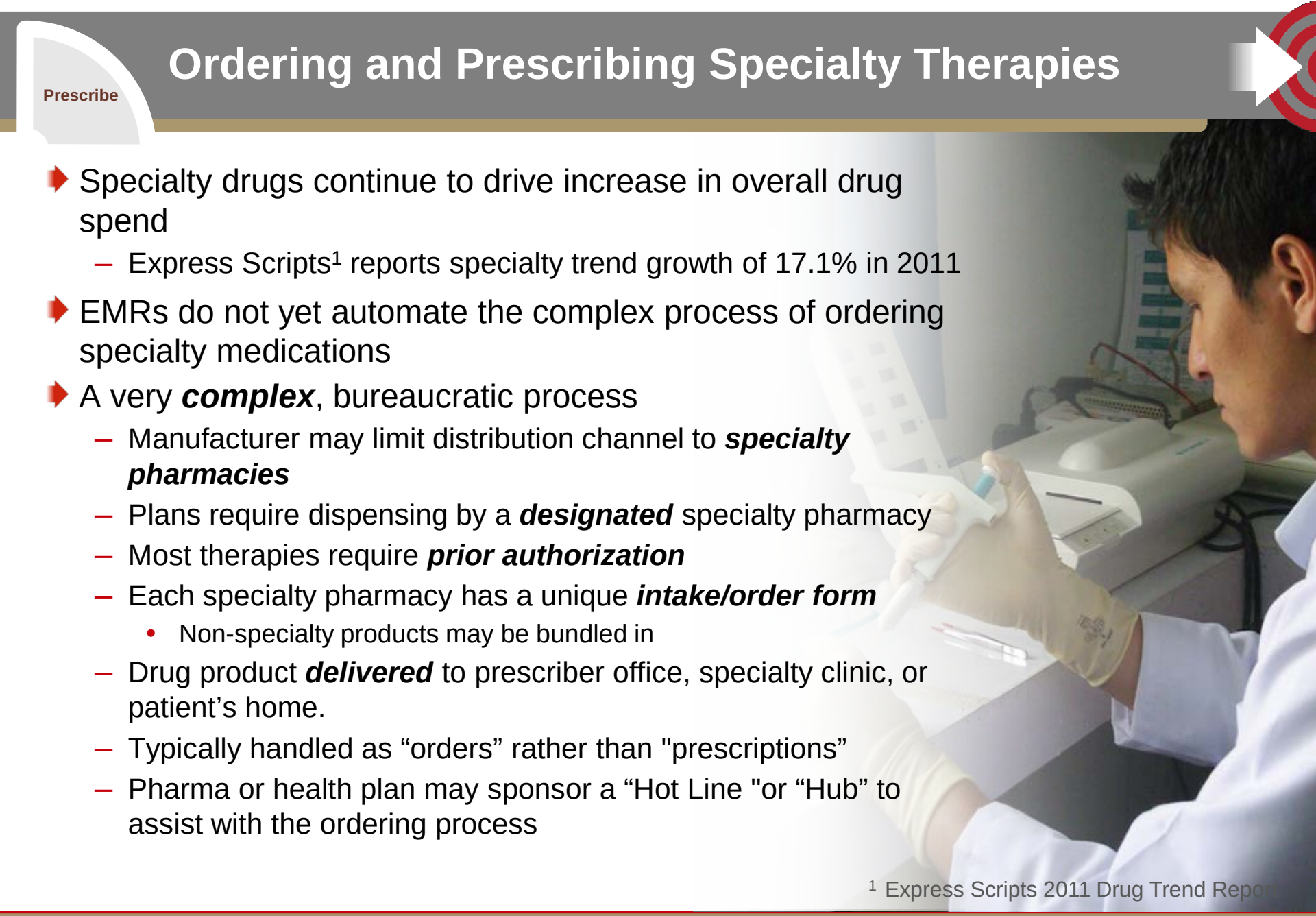
- The complaint is more commonly voiced thru large physician groups and enterprises, but the problem is pervasive
- It is a problem for the EHR vendors
- EHR vendors need a solution that is easy to implement
- There are solutions such as FDB’s Alert Space (above)
- Limited efforts to measure how big this issue really and whether some systems are better than others
- Issue is not easily tracked and/or providers are too busy to report inappropriate alerts
- Even if a prescriber overrides an alert an the point of prescribing the alert likely continues to fire downstream - at the pharmacy, at the health plan

Clinical Decision Support (CDS)

- Currently, CDS is available in limited EMRs using their own proprietary mechanism and leveraging only data that resides within its system.
- Create a standardized CDS system that leverages the latest guidelines as well as clinical information across care givers.
- This can substantially improve adherence to medical treatment guidelines within both the inpatient and ambulatory settings.
- A robust CDS system can help bring greater transparency behind clinical recommendations to prescribers and disseminate best practices to a wide range of clinicians.



Ordering and Prescribing Specialty Therapies



- Specialty drugs continue to drive increase in overall drug spend
  - Express Scripts[1] reports specialty trend growth of 17.1% in 2011
- EMRs do not yet automate the complex process of ordering specialty medications
- A very ***complex***, bureaucratic process
  - Manufacturer may limit distribution channel to ***specialty pharmacies***
  - Plans require dispensing by a ***designated*** specialty pharmacy
  - Most therapies require ***prior authorization***
  - Each specialty pharmacy has a unique ***intake/order form***
    - Non-specialty products may be bundled in
  - Drug product ***delivered*** to prescriber office, specialty clinic, or patient's home.
  - Typically handled as "orders" rather than "prescriptions"
  - Pharma or health plan may sponsor a "Hot Line "or "Hub" to assist with the ordering process

[1] Express Scripts 2011 Drug Trend Report

State of Automation for Specialty Drug Orders

Prescribe

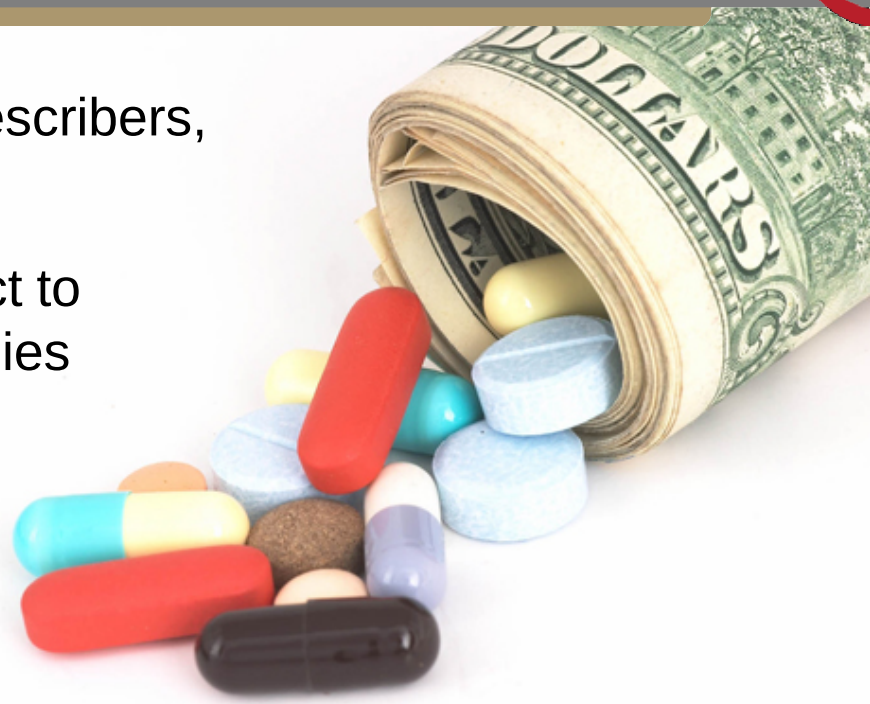
- Most specialty pharmacies have the ability to accept electronic SCRIPT transactions
  - Not typically used
  - SCRIPT doesn't accommodate all necessary data
- Electronic prescribing systems do not support the concept of ***restricting*** the ***routing*** *of certain* ***drugs*** to limited list of pharmacies
- Prior Authorizations are not yet automated
- Orders are typically documented in the 'Notes' section of EMR
  - May or may not be added to "Medications List'
  - May not run through full Drug-Drug checks
- May not appear on the Medication History list since outside the typical prescription flow

Medication Management Tools Must Evolve

- As specialty trend increases, percentage of drugs that are "ePrescribable" with today's EMR systems will decrease
- Trend is towards more aggressive management, more control, more red tape
  - Increased formulary tiers
  - Step therapies
  - Prior authorizations
  - Specialty pharmacies
- Medication management tools and decision support need to evolve to properly address these requirements
- Transaction standards need to become more robust
  - Accommodate more data elements

Electronic prescribing systems and standards have not evolved to handle the complexities of specialty pharmacy orders.

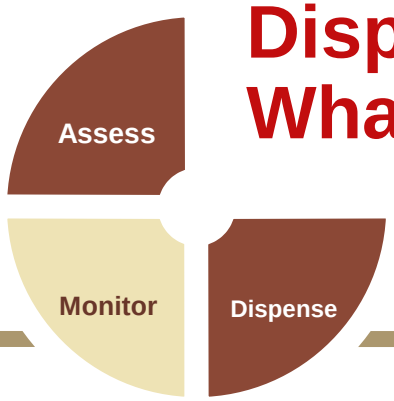
Electronic Prior Authorization (ePA)



- PA is an administrative burden for prescribers, pharmacies, patients, and payers
- More drugs are expected to be subject to PA as the average cost of new therapies increases (e.g., specialty meds)
- ePA legislation has appeared in multiple states over the last year
- An ePA standard was created by NCPDP in 2009, and is in the process of being updated. Balloted standard expected by mid-2013
- ePA pilots have been launched by CVS Caremark and others; AMA attempting to pilot ePA of services, DME and medications

eMedication Management:

Dispense, Monitor & Assess – What's In Development & Available



Dispense

- **Available**
  - Check Fill status (standard developed but non being utilized)
  - Medication self-management support (education, organizing)
- **In Development**
  - Verify patient pick-up
  - Risk Evaluation and Mitigation Strategies (REMS)

Risk Evaluation and Mitigation Strategies (REMS)

- With more and more drugs being approved by the FDA with REMS requirements, the future of ePrescribing should plan to accommodate the various REMS requirements
- REMS requirements include:
  - distribution of medication guides
  - enrollment into a tracking program
  - lab value monitoring
  - other requirements
- ePrescribing should be able to accommodate and help oversee that these requirements have been fulfilled

Dispense

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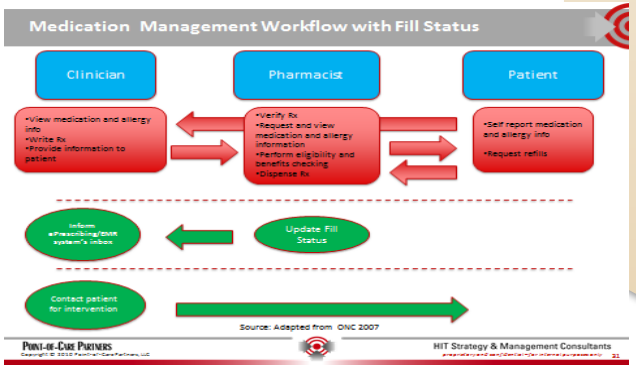
Fill Status

- Fill status is a MMA foundation standard for ePrescribing
- Fill status can provide a truly accurate calculation of medication adherence ratios
- Pharmacy and provider systems will need to make investments to appropriately implement the transaction
- Prescribers (or support staff) will need to intervene when presented with a fill status notifications



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- Check Fill status (standard developed but non being utilized)
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In Development

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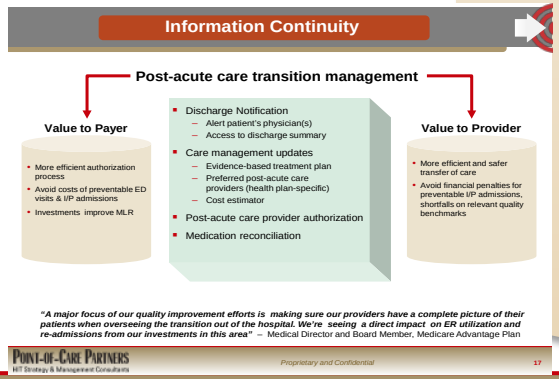
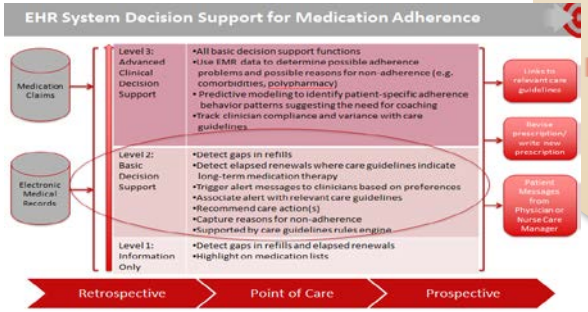
Medication Self-Management

- Patient education
  - Interactive tutorials on outcomes,, risks, challenges with medications; specific to patient's interests and concerns
- Patient counseling
  - Virtual consultations during stressful events, transitions of care, etc.
  - Pharmacist-provider communications
- Self-reinforcement
  - Tracking of timely pickup of medications, and rewards for successful compliance



Monitor

- **Available**
  - Process refills and renewals
  - Public health surveillance
- **In Development**
  - Track compliance and adherence
  - Monitor effectiveness and safety
  - Measure health status and outcomes
  - Compliance and adherence problem intervention



Medication Adherence and Persistency

- One-third to one-half of patients do not take their medications as prescribed
- Medication non-adherence costs the health care system $290 billion annually
- Medication history information can be leveraged more intelligently to provide adherence and persistency rates that can be tracked and incorporated into ePrescribing systems
- Providing notifications to providers can help identify first-fill, on ongoing persistency issues

Monitor

- **Available**
  - Process refills and renewals
  - Public health surveillance
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  - Track compliance and adherence
  - Monitor effectiveness and safety
  - Measure health status and outcomes
  - Compliance and adherence problem intervention

Monitor Effectiveness & Safety

- ePrescribing systems need to mature to integrate surrogate markers on effectiveness of therapy (e.g., lab values, imaging results, physical assessments, etc.)
- Medication safety issues should be able to be reported electronically leveraging the ePrescribing system
  - Safety issues should be reported electronically to the FDA and manufacturers
  - Patients should be able to report safety issues electronically to providers
  - Safety alerts from the FDA and manufacturers should immediately appear within systems

Assess

Assess

- **Available**
  - Evaluate health status and medical problem
  - Medication therapy guideline best practices
  - Comprehensive medication review and reconciliation
- **In development**
  - Identify medication therapy problems
  - Medication therapy action plan

Medication Therapy Guideline Best Practices

- Basic best practice guidelines are incorporated into ePrescribing to influence ePrescribing behavior
- Advanced guidelines can be set and the provider or institution level and incorporate medication history data
  - Payer specific guidelines may be incorporated, especially around medications that require prior authorization or step therapy
- Ensuring the latest guidelines are incorporated into systems will be a challenge

Assess

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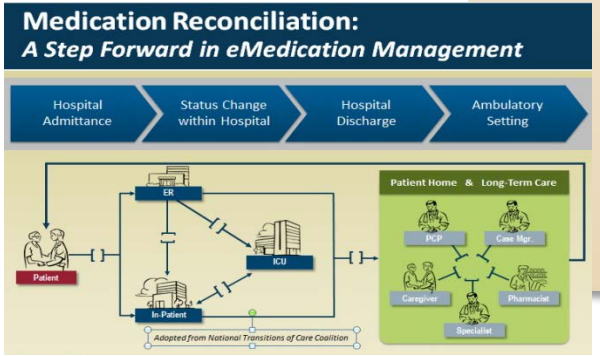
eMedication Reconciliation

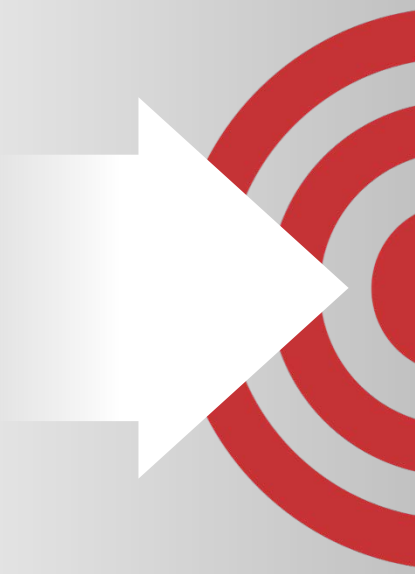
- Medication reconciliation required for hospital JCAHO accreditation
- MU Stage 2 requires it 50% of the time
- Can leverage electronic medication history data to support the MedRec process
  - Translates into time savings; manual MedRec takes from 19 to 30 min, but can be done electronically in under a minute
  - Improves patient safety
  - Especially helpful if patient cannot communicate (unconscious, incapacitated, cannot speak English, etc.)



Conclusions

- ePrescribing is well on the way to becoming a standard of care
- Gains in patient safety and efficiency are certainly being achieved today
- More hard work is ahead to refine and mature the products to raise the bar for quality and usability
  - Specialty drugs
  - eFormulary quality
  - Data Latency
  - Alert Fatigue
  - MedRec
- ePrescribing is just one component on the spectrum of eMedication Management
- Among the other components, some are available and others in development
- Eventually Meaningful Use will run it's course, and solution providers will be back to focusing on value to key stakeholders

DISCUSSION



The End

POINT-OF-CARE PARTNERS

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