

**BEST PRACTICES BRIEF**

# THOMSON REUTERS CDS SOLUTIONS: A POWERFUL PRESCRIPTION FOR PERFORMANCE IMPROVEMENT



## MEDICATION MANAGEMENT: A CENTRAL ISSUE IN PERFORMANCE IMPROVEMENT

- Medications play a key role in preventing, diagnosing, and treating illness; at any given time, 74 percent of the population is taking medications.
- Errors can occur throughout the medication management cycle: selection, ordering, verification, administration, patient education, and monitoring.
- Adverse drug events (ADEs) resulting from these errors harm at least 1.5 million people every year; there is one medication error, per inpatient, per day—resulting in 1.2 preventable ADEs per 100 hospital admissions; there are at least 500,000 preventable injuries or deaths each year from ADEs in outpatient settings as well.
- The additional cost of treating medication-related injuries occurring in hospitals alone is conservatively estimated to be \$3.5 billion a year.
- Preventable hospital-acquired conditions—for which Medicare and other payers are no longer providing reimbursement—are often caused by inappropriate medication use (e.g., falls) or can be prevented by effective medication use (e.g., venous thromboembolism, surgical infections).
- Publicly reported quality measures often relate to appropriate medication use for targeted conditions such as pneumonia, heart attack, heart failure, and others.

Sources: 2006 Institute of Medicine (IOM) report, January 2008 Express Scripts Survey: Geographic Variation Trends in Prescription Use: 2000 to 2006, CMS

# THOMSON REUTERS CDS SOLUTIONS: A POWERFUL PRESCRIPTION FOR PERFORMANCE IMPROVEMENT

Safe and effective patient care—that’s the goal. Clinicians strive for it. Payers look for it. Regulators demand it. Increasingly, your reimbursement, accreditation, and hospital employee compensation depend on publicly reporting and optimizing clinical performance.

It’s likely your organization is investing heavily in clinical information systems to help address these challenges. Using these systems to embed knowledge and intelligently filtered patient data into clinical workflow—that is, providing clinical decision support (CDS)—is a critical success factor. CDS can be a powerful tool to arm clinicians and patients with the right information to ensure care processes that should always happen—always do, and those that never should—don’t.

The formula for success known as the CDS Five Rights is conceptually straightforward:

- Get the **right information** (evidence-based, useful to guide action),
- to the **right stakeholder** (both clinicians and patients),
- in the **right format** (alerts, order sets, answers, others),
- through the **right channel** (Internet, mobile devices, clinical information systems),
- at the **right point in workflow** (to influence the decision/action).

Although the concept is not complicated, effective implementation can be challenging.

Consider your CDS approach:

- What are your improvement objectives and are they being realized?
- Are your current systems and tools being fully leveraged?
- Are vital ingredients or support missing?

The Healthcare business of Thomson Reuters can help you get CDS right.

## A ROADMAP AND PARTNER FOR SUCCESSFUL CDS

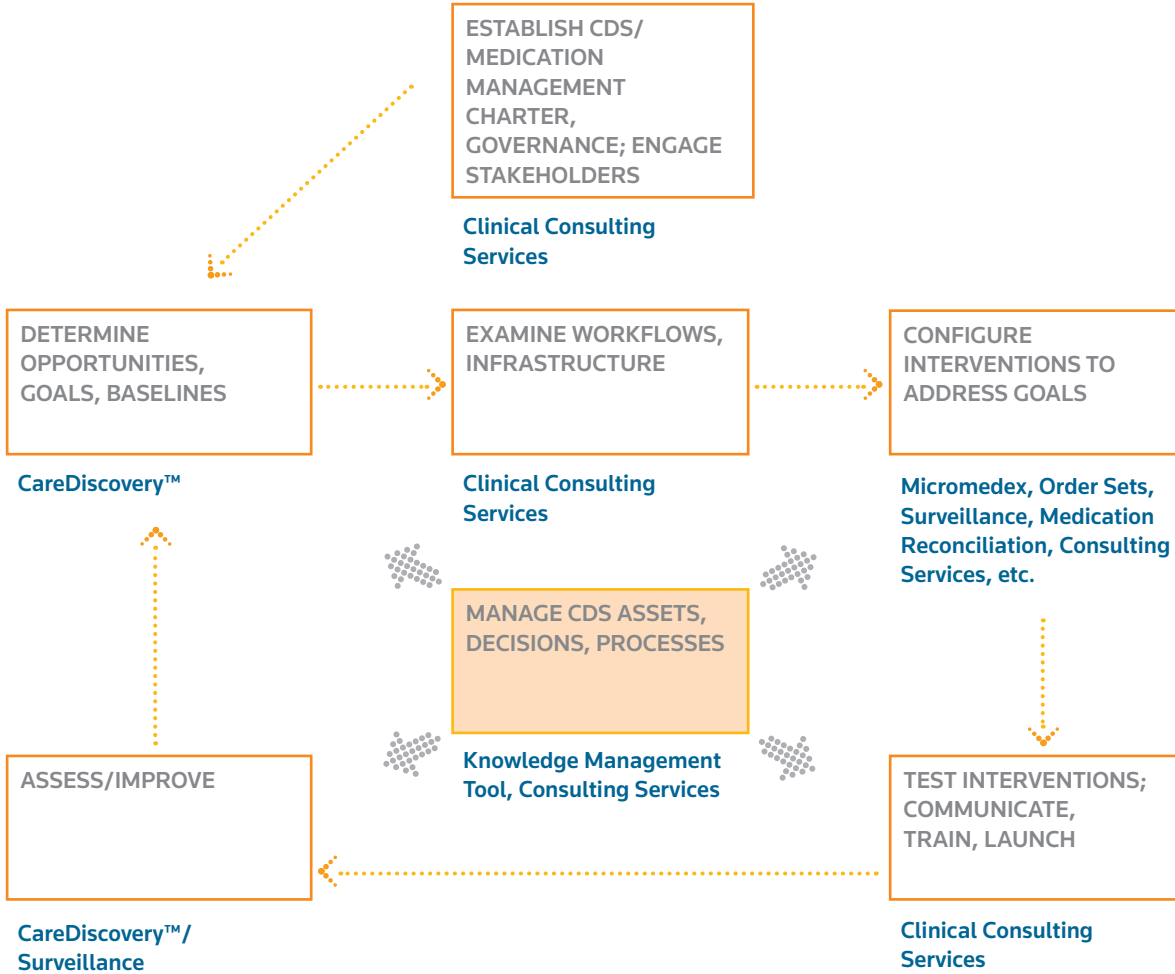
Thomson Reuters has provided leadership in efforts to help the healthcare industry understand how to harness the tremendous potential of CDS to improve critical outcomes, both at the national<sup>1</sup> and the provider organization level.<sup>2</sup>

*Improving Medication Use and Outcomes with CDS: A Step-By-Step Guide* is a new book edited by Jerome A. Osheroﬀ, MD, FACP, FACMI, chief clinical informatics officer for the Healthcare business of Thomson Reuters. The new book reflects the collected insights from nearly 100 editors, contributors and reviewers. It is copublished by leading healthcare and medication management societies,<sup>3</sup> and cosponsored by the Agency for Healthcare Research and Quality (AHRQ), three major clinical information system vendors, and others. This new book is a detailed follow-up to the best-selling, award-winning, *Improving Outcomes with Clinical Decision Support: An Implementer’s Guide*.<sup>2</sup>

**SOLUTIONS FROM THOMSON REUTERS CAN HELP**

The strategies outlined in these CDS implementers' guides underpin the Thomson Reuters approach to helping our customers realize measurable performance improvement in high-priority areas. For example, the boxes in Figure 1 outline the major steps for improving medication management, as outlined in the latest CDS guide. Thomson Reuters products and services that support each step are summarized in blue.

**FIGURE 1: CDS Medication Management Approach and Thomson Reuters Solutions**



Likewise, the new CDS guide provides a framework for delivering on the CDS Five Rights (as outlined on page 2) during each step in medication management. Figure 2 (opposite page) illustrates how the Thomson Reuters CDS knowledge and data management solutions can be applied within this framework. In this paper, we provide some further details about these offerings and services. Although they are designed to work together, even one solution may help significantly improve outcomes. In fact, you may already have the Micromedex® Healthcare Series, the UltiMedex® System, or Clinical Xpert™ (formerly from MercuryMD) in place at your facility.

**FIGURE 2: How Thomson Reuters Solutions Help Improve Medication Use and Outcomes**

**MEDICATION MANAGEMENT CYCLE STEPS**

CDS FIVE RIGHTS	WHY (Goal)	Optimize: EBM/Quality/Regulatory, Cost, Safe Transition	Safer Use: DDI, dosing, allergies, etc.	Safety/Appropriateness Check	Safe Administration	Optimize Patient Self-Care	Track Intention/Unintentional Effects
	WHEN (Workflow)	Reconcile/Select	Prescribe/Order	Verify/Dispense	Administer	Educate	Monitor
	WHO (Person)	Prescriber, Nurse, Pharmacist, (Patient)	Prescriber	Pharmacist	Nurse, Other Clinician, (Patient)	Clinicians, Patient	Clinicians, Patient, Health System
	WHAT (Information)	Medication Reconciliation, Formulary Advisor*, Micromedex (IDENTIDEX*, DRUGDEX*, DISEASEDEX*)	Order Sets, NeoFax*, UltiMedex*, Micromedex (DRUGDEX)	UltiMedex alerts, NeoFax, KINETIDEX*, Micromedex (DRUGDEX, DISEASEDEX)	Micromedex (DrugPoints*, DRUGDEX), IV INDEX* (IV screening), NeoFax	CareNotes* (Drug, Lab, Disease), Consumer Health Solutions (Health & Wellness, A/V)	CareFocus, Micromedex (DISEASEDEX, DrugPoints), KINETIDEX, NeoFax
	HOW (Format)	Reference (lookup/ InfoButton Access*): Medication Reconciliation, Formulary Advisor*	Reference (lookup/ InfoButton Access): Order Sets (Web integration to HIS)	Reference (lookup/ InfoButton Access): Alerts (UltiMedex Integration to HIS)	Reference (lookup/ InfoButton Access in HIS)	Patient Education integration into HIS via InfoButton Access, Files, Thomson Reuters Web Hosted	Reference (lookup/ InfoButton Access in HIS)
	WHERE (Channel)	HIS Clinical Applications, Thomson Reuters Internet, Mobile	HIS CPOE, Thomson Reuters Internet, Mobile	HIS Pharmacy, Thomson Reuters Internet	HIS, MAR, Thomson Reuters Internet, Mobile	HIS, ClinDoc, ED Portal, PHR, FacilityWeb site	Relevant HIS Modules, Thomson Reuters Internet, Mobile

**PERFORMANCE IMPROVEMENT APPLICATION HIGHLIGHTS**

Prior to any CDS implementation and throughout its use, it is helpful to identify clinical improvement opportunities where decision support can have the most impact, and then measure that impact. This will help you track improvement effort results and report performance to regulatory agencies such as CMS and The Joint Commission. To support these efforts, Thomson Reuters offers its benchmarking, measurement, and reporting solution—CareDiscovery™

Once you've identified your improvement targets, the Thomson Reuters CDS solutions help you deliver the CDS Five Rights at each step in the medication management cycle to achieve those objectives.

**Selection/reconciliation**

In order to facilitate selection of appropriate, evidence-based therapies, and encourage safe medication transition between various care settings, Thomson Reuters provides:

- Clinical Xpert™ Medication Reconciliation: complete admission-to-discharge medication reconciliation workflow solution
- Formulary Advisor®: helps manage and provide immediate access to the facility's formulary
- IDENTIDEX®4: a tool for identifying unknown tablets and capsules by imprint code or physical characteristics
- DRUGDEX®4: a comprehensive resource for using medications safely and effectively
- DISEASEDEX®4: answers to support disease management and treatment decisions

**Prescribing/ordering**

Evidence-based, current information concerning interactions, appropriate dosing, and allergies are crucial to this portion of the process. To support clinicians' needs, Thomson Reuters offers:

- Order Sets: a continually updated library of more than 950 standard order sets based on extensive research of quality, regulatory, and clinical standards
- Knowledge Management Tool: an easy-to-use tool to customize order sets according to local requirements; provides version control, audit trails, and single-step replacement or removal of items across all published order sets

- NeoFax®: the premier must-have neonatal drug information resource for dosing and TPN calculations
- DRUGDEX<sup>4</sup>: a comprehensive evidence-based resource for using medications safely and effectively
- UltiMedex®: interactive CDS alerts and dose screening integrated directly into workflow via clinical information systems
- DRUG-REAX®: drug interactions tool to check interacting drug ingredients, their effects, and clinical significance

### Verification/dispensing

It is pharmacists' responsibility to verify that each medication order is safe and appropriate. To aid them in this monumental task, Thomson Reuters provides:

- UltiMedex®: interactive CDS alerts and dose screening integrated directly into workflow via clinical information systems
- NeoFax: the premier must-have neonatal drug information resource for dosing and TPN calculations
- DRUGDEX: a comprehensive evidence-based resource for using medications safely and effectively
- DRUG-REAX®: drug interactions tool to check interacting drug ingredients, their effects, and clinical significance
- DISEASEDEX: answers to support disease management and treatment decisions

### Administering

Properly administering medications is vital to their safe use. Thomson Reuters offers several solutions to guide this step of the process including:

- DrugPoints<sup>4</sup>: summary information to help prescribe, administer, and monitor drugs safely and efficiently
- DRUGDEX\*: a comprehensive evidence-based resource for using medications safely and effectively
- IV INDEX® System: provides instant answers to IV compatibility questions from the authority on IV compatibility, Lawrence Trissel
- NeoFax: the premier must-have neonatal drug information resource for dosing and TPN calculations

### Education

Giving patients high-quality, easy-to-understand information about their conditions and treatments helps them become more engaged and effective participants in their care. To aid in that process, Thomson Reuters provides clinically consistent information through:

- CareNotes®: a customizable collection of patient-education documents covering drugs, labs, and diseases for clinicians to use when counseling patients
- Consumer Health Solution: a variety of interactive, patient-focused health and wellness tools accessible through a hospital's Web site

### Monitoring

Tracking patients for intentional and unintentional effects of medications is important in preventing ADEs and ensuring therapeutic success. To facilitate this step in the medication management process, Thomson Reuters offers:

- Clinical Xpert™ CareFocus: real-time clinical surveillance system with evidence-based profiles that identify and alert clinicians to high-risk patients
- DISEASEDEX: answers to support disease management and treatment decisions
- DrugPoints: summary information to help prescribe, administer, and monitor drugs safely and efficiently
- NeoFax: the premier must-have neonatal drug information resource for dosing and TPN calculations

## INTEGRATION OPTIMIZES THE VALUE OF YOUR CLINICAL INFORMATION SYSTEMS

Supplying context-specific clinical knowledge at the point of need requires tight integration with clinical information systems. Thomson Reuters offers multiple delivery channels for that information through InfoButton Access®, UltiMedex, Order Sets, and mobile alerts that take place directly within the information systems that support clinicians' workflow.

Furthermore, that integration needs to be easy to execute. Thomson Reuters CDS solutions are tightly integrated within information systems in more than 1,100 hospitals. We have successfully integrated and have relationships with major hospital information system (HIS) vendors including Cerner (BridgeMedical), CPSI, Eclipsys, Epic, GE, MEDITECH, Medware, QuadraMed, Siemens, and others.

## PROFESSIONAL SERVICES ENSURE IMPLEMENTATION SUCCESS AND RESULTS

Thomson Reuters provides a team of professionals dedicated to helping you get the most value from our CDS tools and resources. With your specific needs in mind, we offer customized implementation and integration support.

Our Clinical Consulting Services help you work through both the technical implementation as well as identify and address any need for cultural and clinical changes necessary to drive desired results. From a performance improvement perspective, we look at governance, processes, and workflow in addition to the best options for leveraging all your investments, resources, and technology as part of deployment. Our team of professionals can assist you in project management, readiness assessment, system configuration, training, process design, implementation support, and more.

Through a variety of communication and awareness tools, Thomson Reuters will also help you make sure your staff is aware of the powerful Thomson Reuters clinical knowledge resources available throughout your facility.

Once we help you get your CDS solutions promoted and deployed, you may need assistance with training for end-users and system administrators. Thomson Reuters provides prerecorded online sessions and customized, live Web seminars. If you want the most impact, we will develop personalized on-site training based upon your intended audience.

## ANALYTICS DELIVER MANAGEMENT SUPPORT THROUGHOUT THE PERFORMANCE IMPROVEMENT CYCLE

Delivering clinical knowledge and intelligent patient data into care processes is a critically important performance improvement component, but there are others. These include helping management identify improvement opportunities, baselines, and benchmarks; and measure and report results from CDS-enabled improvement efforts. Thomson Reuters provides industry-leading solutions, like CareDiscovery, and services in these areas as well (see Figure 3, below).

**FIGURE 3: How Thomson Reuters Solutions Support the Full Performance-Improvement Cycle**



## WHY PARTNER WITH US?

We provide a single source for authoritative, clinically consistent CDS content for professionals and patients, throughout your enterprise and clinical systems. Through our thought leadership, we also supply a roadmap for successfully improving outcomes with these and other CDS solutions.

Healthcare professionals in 85 countries worldwide rely on Thomson Reuters solutions, including approximately 3,400 hospitals in the U.S. and Canada. Since more than 70 percent of all large U.S. hospitals subscribe to Thomson Reuters solutions, chances are your organization already has one or more of our offerings in place.

With that in mind, we would like to highlight some questions that can help uncover opportunities to significantly enhance the value Thomson Reuters brings to your performance improvement efforts.

### What are your objectives and are they being realized?

Start by thinking about your organization's top clinical performance objectives and your role in helping ensure those objectives are achieved. Consider how Thomson Reuters solutions, and the guidance in *Improving Medication Use and Outcomes with CDS: A Step-By-Step Guide*, can help your organization ensure that the right clinical processes and outcomes always happen, and the wrong ones never do. For example: How can these tools help you prevent adverse drug events (ADEs) or non-reimbursed "never events" such as hospital-acquired venous thromboembolism (VTE), and increase performance on Core Measures?

### Are your current systems being fully leveraged?

Next, consider what Thomson Reuters solutions your organization already has in place. Are you fully leveraging all the capabilities as outlined in this paper and in Figure 2? Would additional support for clinician awareness and successful use of currently deployed CDS offerings (e.g., Micromedex Healthcare Series) be valuable in fully capitalizing on these investments? Are you fully using available dissemination channels for this information (e.g., InfoButton and mobile access to patient data and evidence-based care information)?

### Are vital tools or support missing?

Are there critical elements in the performance improvement cycle where additional Thomson Reuters solutions could be of value—for example, evidence-based order sets, real-time surveillance tools such as CareFocus, or Medication Reconciliation?

We know there are many variables to consider when deploying effective CDS. That's why Thomson Reuters takes a full-spectrum approach to supporting your efforts. This includes the thought-leadership to guide CDS program design and implementation; CDS knowledge and data management solutions to support this program; integrated offerings to optimize the value of your information systems; and a range of services to ensure improvement objectives are realized.

## CONCLUSION

The challenges in healthcare today are great, and the stakes couldn't be higher. You and your organization are working hard to do the right thing for patients and for your business. We've got a lot to offer (some of which you may already have in place), and would like to help you use our solutions effectively to address your imperatives for patient care, quality, safety, and efficiency.

For more information, visit <http://info.thomsonhealthcare.com/content/CDSGuide> where you'll find more information about the *Improving Medication Use and Outcomes with CDS: A Step-By-Step Guide*, detailed Thomson Reuters product descriptions, and case studies presenting measurable results from implementing our solutions.

## ABOUT THOMSON REUTERS

The Healthcare business of Thomson Reuters produces insights, information, benchmarks and analysis that enable organizations to manage costs, improve performance, and enhance the quality of healthcare. Thomson Reuters is the world's leading source of intelligent information for businesses and professionals. We combine industry expertise with innovative technology to deliver critical information to leading decision makers in the financial, legal, tax and accounting, scientific, healthcare and media markets, powered by the world's most trusted news organization. With headquarters in New York and major operations in London and Eagan, Minn., Thomson Reuters employs more than 50,000 people in 93 countries. Thomson Reuters shares are listed on the New York Stock Exchange (NYSE: TRI); Toronto Stock Exchange (TSX: TRI); London Stock Exchange (LSE: TRIL); and Nasdaq (NASDAQ: TRIN).

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1 <http://www.jamia.org/cgi/content/abstract/14/2/141>  
2 See [www.himss.org/cdsguide](http://www.himss.org/cdsguide) for further information on industry-leading CDS implementation guides  
3 HIMSS, the Scottsdale Institute, AMIA, ISMP, ASHP, and AMDIS  
4 These tools are available from the Healthcare business of Thomson Reuters through a collection of actionable information databases called the Micromedex® Healthcare Series

