



Clinical Xpert™ Medication Reconciliation

WHITE PAPER

ABSTRACT

Growing safety concerns are among the most urgent pressures faced by healthcare providers and regulatory agencies in today's complex healthcare environment. Many new reporting requirements—and resulting administrative practices and vendor solutions—focus on safety issues. In particular, rising figures on adverse drug events (ADEs) have alerted the industry to the fact that providers must exert greater control over the medication prescribing process. With the quantity and diversity of medications available these days—along with the growing decentralization of treatment, and lack of effective tracking mechanisms—providers have found it difficult to ensure that patients are consistently using a safe combination of drugs, in safe amounts. Medication reconciliation provides an effective response to this growing problem.

Clinical Xpert™

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A WHITE PAPER FROM

THOMSON HEALTHCARE

EXECUTIVE SUMMARY

According to The Joint Commission, "Medication reconciliation is the process of comparing a patient's medication orders to all of the medications that the patient has been taking. This reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions. It should be done at every transition of care in which new medications are ordered or existing orders are rewritten. Transitions in care include changes in setting, service, practitioner, or level of care."

Although the majority of healthcare providers have at least initiated medication reconciliation procedures, most are still using paper-based methodologies that can be expensive and time-consuming. They are also prone to errors that, in the case of resulting ADEs, can be fatal. The few electronic resources that are being marketed today as medication reconciliation solutions do not provide the full range of functionality required, and often lack key ease-of-use features that complicate adoption and contribute to a continued high cost of maintenance.

This paper examines how a simple electronic environment built from the ground up can deliver the specific workflow and ease-of-use capabilities needed for an accurate, cost-efficient medication reconciliation solution. In particular, it presents the Clinical Xpert™ Medication Reconciliation Solution from Thomson Healthcare. This solution is the only end-to-end electronic resource available that provides a range of targeted capabilities along with exceptional ease-of-use features that simplify adoption and implementation.

The Clinical Xpert Medication Reconciliation Solution:

- Reduces the potential for adverse drug events due to incomplete or incorrect medication lists
- Eliminates the need to manually reconcile patient medications, saving both time and effort
- Addresses Joint Commission medication reconciliation requirements
- Streamlines communication between clinicians at all stages of care, including transitions and outpatient settings
- Generates an accurate discharge medication list, prescriptions, and clear instructions

With so much at stake—including patient safety, hospital liability, community accountability, and overall profitability—the Clinical Xpert Medication Reconciliation Solution provides a

dependable option for ensuring the continued accuracy and effectiveness of all medication-related procedures in an acute-care setting.

MEDICATION ISSUES AND TRENDS

Rising number of ADEs

One of the most pressing issues among healthcare providers today is the growing incidence of ADEs. The National Coordinating Council on Medication Error Reporting and Prevention defines an ADEs as “any preventable event that may cause or lead to inappropriate use or patient harm, while the medication is in the control of the healthcare professional, patient, or consumer.”¹ The ADE problem has become so severe that the Institute of Medicine (IOM) of the National Academies has estimated that 1.5 million preventable ADEs occur each year in the United States.²

In addition, the costs of coping with ADEs — extended stays, additional treatment, and lawsuits—have soared. The Agency for Healthcare Research and Quality (AHRQ) states that additional hospital costs related to ADEs can be estimated at up to \$5.6 billion per year. The agency also cites studies indicating that hospitals incur an extra 8-12 days length of stay (LOS) and up to \$24,000 for each patient experiencing an ADE.³

Inadequate medication reconciliation

Studies show that a high proportion of ADEs are attributable to inefficient or nonexistent medication reconciliation. According to the Institute for Safe Medication Practices (ISMP), lack of effective medication reconciliation is responsible for more than 50 percent of all medication errors, and up to 20 percent of all ADEs.⁴ The ISMP also identifies the types of medication errors that can be reduced or eliminated through an effective medication reconciliation process:

- Discontinued medications that are used in error in the hospital and upon discharge
- Omitting a medication
- Failure to restart a medication that has been placed on hold
- Failure to discontinue contraindicated home medications
- Failure to resolve discrepancies in dosages or route

The Joint Commission echoes these findings: “The Joint Commission’s sentinel event database includes more than 350 medication errors resulting in death or major injury. Of those, 63 percent related, at least in part, to breakdowns in communication, and approximately half of those would have been avoided through effective medication reconciliation.”⁵

Other areas of industry research support this outlook. For example, an *Extended Care Product News* article states, “By far, the most pervasive cause of ADEs is medication-to-medication interactions. These interactions are often triggered by the decrease or increase of the presence of a medication in the blood where other medications are already present.”⁶ Effective medication reconciliation helps providers avoid such interaction oversights.

The Joint Commission Mandates

As a further boost to voluntary adoption of medication reconciliation procedures throughout the country, The Joint Commission has issued a number of mandates (Goal 8 - 8A/8B) that place the burden on healthcare providers to implement effective patient safety measures with regard to medications. These mandates require healthcare providers to:

- **Goal 8A:** Implement a process for obtaining and documenting a complete list of the patient’s current medications upon the patient’s admission to the organization and with the involvement of the patient. This process includes a comparison of the medications the organization provides to those on the list.

“Lack of effective medication reconciliation is responsible for more than 50 percent of all medication errors, and up to 20 percent of all ADEs.”

—ISMP

- **Goal 8B:** A complete list of the patient’s medications is communicated to the next provider of service when a patient is referred or transferred to another setting, service, practitioner, or level of care within or outside the organization. The complete list of medications is also provided to the patient on discharge from the facility.

It is specified that these rules be applied “. . .across the continuum of care. This means medication reconciliation applies to all care settings—including ambulatory, emergency and urgent care, long term care, and home care—as well as inpatient services.”⁷

The definition of “medication” is comprehensive: A medication includes “any prescription medications; sample medications; herbal remedies; vitamins; nutraceuticals; over-the-counter drugs; vaccines; diagnostic and contrast agents used on or administered to persons to diagnose, treat, or prevent disease or other abnormal conditions; radioactive medications; respiratory therapy treatments; parenteral nutrition; blood derivatives; intravenous solutions (plain, with electrolytes and/or drugs); and any product designated by the Food and Drug Administration (FDA) as a drug.”⁸

The steps a medication reconciliation process should consist of are also detailed as: “. . .1) develop a list of current medications; 2) develop a list of medications to be prescribed; 3) compare the medications on the two lists; 4) make clinical decisions based on the comparison; and 5) communicate the new list to appropriate caregivers and to the patient.”⁹ From a provider’s workflow perspective, this breaks down into three clear tasks:

1. Identify a patient’s list of medications taken prior to arrival at the hospital.
2. Review and compare this list to medication orders throughout points of care (admission, transfer, discharge).
3. Communicate the list to the patient and to caregivers throughout the healthcare system.

Current approaches to medication reconciliation

The majority of healthcare providers have adopted paper-based medication reconciliation methodologies in an effort to achieve compliance with Joint Commission requirements in the fastest, simplest way possible. However, these manual methods have turned out to be inaccurate, expensive, and time-consuming. Disadvantages include:

- Reliance on patient memory to create initial medication list
- Decentralized—multiple copies are hard to track and become out of date
- Illegible handwriting/not enough room to write
- No way to avoid prohibited abbreviations
- No interaction, allergy, and duplication checking
- Physician complaints that the process takes too long
- Pharmacist complaints that prescription data is incomplete

Studies show that the most effective way to lower the risk of ADEs and reduce associated costs is to implement computerized systems. The AHRQ offers a range of statistics supporting this view:

“Anywhere from 28 percent to 95 percent of ADEs can be prevented by reducing medication errors through computerized monitoring systems.”

“Hospitals can save as much as \$500,000 annually in direct costs by using computerized systems.”

“Computerized medication order entry has the potential to prevent an estimated 84 percent of dose, frequency, and route errors.”¹⁰

As support for this approach, a number of industry vendors have started to market electronic medication reconciliation solutions. The drawback to most of these solutions, however, is that most are incomplete, and tend to emphasize only one aspect of the medication reconciliation process. For example, electronic prescribing applications help avoid pharmacy errors but fail to address other medication reconciliation issues. Stand alone reference databases enable quick lookup of medication information, but fail to provide workflow or reconciliation capabilities. Also, workflow applications improve speed and accuracy, but lack easy links to existing patient medication information and are often resisted by the physician community as being too much of a divergence from familiar workflow and documentation processes.

THE MEDICATION RECONCILIATION CHALLENGE

Components of an ideal medication reconciliation solution

To be complete, a medication reconciliation solution should be able to deliver the full range of functionality required, in an integrated package that is easy to use and reflects a real-world workflow. It should offer:

- **Easy data access** – Simple access to current, accurate, and complete patient medication data at any point during a patient’s hospital visit, including:
 - a) Past medication history
 - b) Current home medication list
 - c) Any medications that have been administered during the current visit
 - d) Modifications made to the home medication list during the current visit
- **Medication ID** – Ability to quickly identify home medications when patients are unable to correctly identify the medications themselves
- **Easy-to-use interface** – Simple ways for healthcare providers to update patient medication history throughout a patient’s hospital stay
- **Checks and alerts** – Quick duplication checks and adverse reaction alerts, including drug-to-drug interactions and patient drug allergy notification
- **Printouts** – Ability to print an up-to-date medication list and instructions for each patient upon discharge
- **Printed prescriptions and e-prescribing** – Printed prescriptions for the patient or electronic prescription transmittal to pharmacies
- **Administrative ease-of-use** – Efficient ongoing management capabilities

Technical requirements

An effective medication reconciliation solution also depends on certain technical capabilities:

- A centralized, integrated application platform
- An automated interface between the medication reconciliation application and existing hospital information system (HIS)
- Automated and/or simplified links with external, recognized healthcare information sources
- Electronic prescribing capabilities
- Simple, intuitive graphic user interface that can be quickly learned by hospital staff
- Online workflow features that match up with typical, real-world hospital activities
- Built-in security features that meet HIPAA requirements
- Easy administration and maintenance, including simplified reporting
- Proven underlying technologies
- Reliable technical support

CLINICAL XPERT MEDICATION RECONCILIATION SOLUTION

The Clinical Xpert Medication Reconciliation Solution from Thomson Healthcare is the first electronic system designed from start to finish to provide the ease-of-use features and end-to-end functionality required for a complete medication reconciliation solution. By matching product design to workflow needs, the solution ensures speed and accuracy, minimizes administrative costs, lowers risk and liability, and provides a comfortable user interface that makes it easy to meet compliance requirements.

Broad, integrated feature set

Proven technology platform – The solution is built on the award-winning MercuryMD MData® Enterprise platform, which integrates data from existing information systems and delivers patient information to the desktop. The underlying technology, as part of the Thomson Healthcare MData Mobile Solution, has remained the KLAS® award leader in its category for five consecutive years, providing clear evidence of reliability, durability, high performance, and customer satisfaction.

HIS integration – Feeds, which can be created for any HL7-compliant hospital information system, deliver information on patient medications ordered during previous visits. HIS patient allergy data is used behind the scenes to trigger on-screen alerts. Links with HIS databases help decrease errors that could otherwise occur in a home medication list due to incorrect patient recall or second-hand information from friends and family. This also simplifies data gathering and reduces administrative time related to the patient visit. The versatility of the Clinical Xpert platform permits users to develop custom outbound integration solutions for most major HIS systems, further enhancing efficiency and staff productivity.

Data feeds from external sources – Through a partnership with DrFirst®, the solution integrates patient-specific prescription data from retail pharmacies and insurance plans into a patient's medication history. By incorporating information from DrFirst® partners such as SureScripts®, RxHub®, NDCHealth, and others, the solution enables the patient's home medication list to be as complete as possible.

Simplified drug identification – Transparent links with Thomson Healthcare Micromedex® referential data permit an admitting nurse or other intake staff to identify loose medications based on physical description, imprints, and photos. This further increases the accuracy of the home medication list and facilitates the intake process.

Drug interaction checking – Interaction monitoring provides on-screen alerts in case of conflicts, increasing patient safety and enhancing the accuracy of the medication reconciliation process throughout a patient's hospital visit.

Comprehensive drug look-up information – One-click InfoButton Access® feature allows staff to view extensive dosage, contraindication, and other drug information without having to open another application.

Drug allergy notifications – Alerts, based on information received in the background from the HIS, warn caregivers about patients' drug allergies before processing the order and reconciling the medication.

Built-in drug duplication checks – The system checks for drug duplication (due to accidental or therapeutic error) and alerts care providers to duplications. This capability further increases patient safety, reduces error, and helps streamline the medication reconciliation process.

Integrated electronic prescribing – Care providers can choose to transmit prescriptions electronically to pharmacies, eliminating errors due to illegibility and avoiding unnecessary delays in getting medications to patients in a timely manner.

Customizable reports – A variety of detailed reports—based on Business Objects™ Crystal Reports®—are available for tracking, analysis, and regulatory reporting purposes. Flexible features include the ability to incorporate a hospital logo, URL, contact information, or other information into the documents. Built-in reporting capabilities simplify administration and reduce the costs and time involved in meeting reporting requirements.

Easy-to-use Web-based interface – Clinical Xpert Medication Reconciliation provides easy data entry and retrieval without extra steps or time (and without annoying pop-ups). Intuitive prompts and data entry fields, plus common-sense menus and features, reflect the typical clinician’s workflow process.

REAL-WORLD WORKFLOW

Build and reconcile the home medication list

When a patient arrives at the hospital, admitting staff are required to assemble complete, accurate data on the medications that the patient is taking. This is a time-consuming procedure and can impact the rest of the patient visit (and post-visit experience upon discharge). From the medication reconciliation perspective, this has been the most difficult step in the process, since current manual/verbal methods for data gathering can be error-prone and can lead to incomplete results that undermine patient safety.

Building the list

Clinical Xpert Medication Reconciliation facilitates the building of a home medication list in a number of key ways:

- Displays detailed patient medication history
- Allows staff to add medication information manually whenever necessary (for example, for custom compounds or over-the-counter medications)
- Permits quick drug identification
- Runs drug checking in the background, providing in-line notification of potential adverse drug interactions or patient allergies

Reconciling

Once the home medication list has been created, the nurse or other authorized care provider can click on a “Reconcile” button in order to view and/or modify the list and to establish which medications the patient should be given while in the hospital. Options allow providers to continue, stop, modify, or add medications. The simple point-and-click interface makes it easy to view, select, and modify prescriptions—including dosage and frequency—so the entire reconciliation process becomes quick, intuitive, and flexible. The resulting list of medications becomes the inpatient or active medication list.

Saving and signoff

When an authorized care provider revises the home medication list in order to create what will become the inpatient medication list, changes can be saved temporarily so other physicians can participate in reconciliation at this initial stage. For example, a primary care provider may be reluctant to make decisions about medications related to a heart condition being treated by a specialist. This collaborative approach makes it much easier to share information about a patient in a way that ensures safety and maximizes the quality of care. The names of participants in this process are always displayed, so the full history of changes is clear. Once it is evident that everyone who needs to be involved has made their changes, an authorized user enters a secure PIN to sign off on the entire list.

Maintain and reconcile the active medication list

As a patient moves from one point of care to another within the hospital, the active medication list must be verified and reconciled—at every transfer point. With Clinical Xpert, the procedure follows the same steps as the initial reconciliation, allowing physicians or other authorized users to view, modify, and confirm the medication list whenever necessary.

Reconcile and print the discharge medication list

When the patient is ready to leave the hospital, staff must be able to generate an accurate discharge medication list for the patient and for any referred outside provider. Prescriptions must either be printed for the patient or transmitted to the patient's pharmacy. Clinical Xpert simplifies the discharge process in a number of ways:

- Permits a final, well-documented reconciliation, allowing physicians or other care providers to indicate in the patient history which medications the patient should continue from their previous home medication list, and which medications should be discontinued, modified, and/or added
- Provides the patient with a complete medication list, along with comprehensive instructions written in clear language
- Offers patients a convenient medication card
- Prints out prescriptions and/or sends prescriptions electronically to pharmacies
- Allows the hospital to notify outside providers of medication changes (via e-mail), if the providers are Clinical Xpert users and have been previously identified in the hospital HIS

HIPAA-compliant security

Clinical Xpert Medication Reconciliation is a Health Insurance Portability and Accountability Act (HIPAA)-compliant solution that meets and exceeds measures outlined in its guidelines. Its technical safeguards help providers meet requirements as specified in Section 164.312 of the HIPAA Final Security Rule, which relates to user authentication, access control, audit controls, encryption, integrity, and transmission security.

Implementation and technical support

Thomson Healthcare's experienced client services teams help set up the medication reconciliation solution to suit users' particular technical and business requirements. The low-maintenance, Web-based system centers around two Microsoft® Windows 2003 servers. One acts as a Web server, hosting the Clinical Xpert Medication Reconciliation Solution. The other hosts an Oracle® database and any software necessary for an HIS interface. Background links to most referential data operate over a hospital LAN, with secure outside pathways created to enable Internet exchanges with services such as DrFirst®. If Micromedex is already on site, a LAN connection is established. If not, the system is set up to permit a Web connection with Micromedex data at a remote Thomson Healthcare facility.

A full range of client services and technical support options are available to ensure that system implementation goes well and that ongoing operations meet expectations for performance, ease of use, and reliability.

BENEFITS

As one of the most complete electronic medication reconciliation solutions available today, Thomson Healthcare's Clinical Xpert Medication Reconciliation can help reduce the high costs associated with ADEs and enhance patient safety. By improving communication among hospital staff, it can also improve efficiency and productivity. In addition, the solution provides an effective method for complying with Joint Commission mandates, providing easily captured documentation of the medication reconciliation workflow, along with reporting mechanisms that match up with Joint Commission requirements.

ENDNOTES

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*For more information, call (800) 525-9083, ext. 6095
or visit www.thomsonhealthcare.com.*

Thomson Healthcare

6200 S. Syracuse Way, Suite 300
Greenwood Village, CO 80111-4740 USA
Tel (303) 486-6400
Toll-free (800) 525-9083
Fax (303) 486-6464

International Support

Tel +1 303 486-6444
Fax +1 303 486-6480