Medication Reconciliation: The Biggest Patient Safety Issue Facing Clinicians Today

Executive Summary: Medication reconciliation is one of the most significant challenges facing healthcare organizations today. An inaccurate medication history can follow a patient throughout every encounter during a hospital stay and beyond. Even small errors can negatively affect outcomes, greatly harm patients, and drive up the costs of care. Unfortunately, medication reconciliation is a complex process, making efforts to capture and pass along an accurate medication history difficult for clinicians.

In this white paper, we will discuss the critical role medication reconciliation plays in delivering safe care, why it is often difficult for organizations and their clinicians, and how Cureatr's real-time prescribing and pharmacy pickup history solution, Meds 360º can dramatically improve the efficiency, effectiveness, and accuracy of the medication reconciliation process.

The Importance of Medication Reconciliation

The Institute for Healthcare Improvement (IHI) defines medication reconciliation as the "…process of creating the most accurate list possible of all medications a patient is taking — including drug name, dosage, frequency, and route — and comparing that list against the physician's admission, transfer, and/or discharge orders, with the goal of providing correct medications to the patient at all transition points within the hospital."

When medication reconciliation efforts come up short, this leads to an inaccurate and/or incomplete medication list. Such a list increases the likelihood of a medication error. A medication error can happen more easily than many people realize. Common types of medication errors include the following:

- Wrong drug
- Omitted drug
- Therapeutic duplication
- Dosing error
- Improper administration method
- Wrong timing
- Overlooked drug interaction

When one or more medication errors occur, the results can be devastating. It is estimated that preventable medication errors impact more than 7 million patients and cost almost $21 billion annually across all care settings. Furthermore, about 30% of hospitalized patients have at least one discrepancy on their discharge medication reconciliation, which increases the likelihood of readmission.

In addition to preventing medication errors, capturing accurate medication information on admission is vital to ensuring patients receive appropriate treatment throughout their hospital stay. When patients receive care in multiple departments, their medication information travels with them to each department. As the number of care transitions increases, the likelihood of a medication error increases.

To explain the complex and layered healthcare system and how each healthcare worker could potentially prevent (and cause) medication errors, James Reason proposed the Swiss Cheese Model. According to this model, a series of barriers are in place to prevent hazards from causing harm to humans. However, each barrier, such as system alarms, administrative controls, surgeons, and nurses, has its unintended and random weaknesses, or holes, just like Swiss cheese. The presence of holes in one of the slices does not normally lead to a bad outcome; but when by chance all holes are aligned, the hazard reaches the patient and causes harm. Incomplete or inaccurate information can lead to discontinuities in care as clinicians base decisions on poor-quality information.
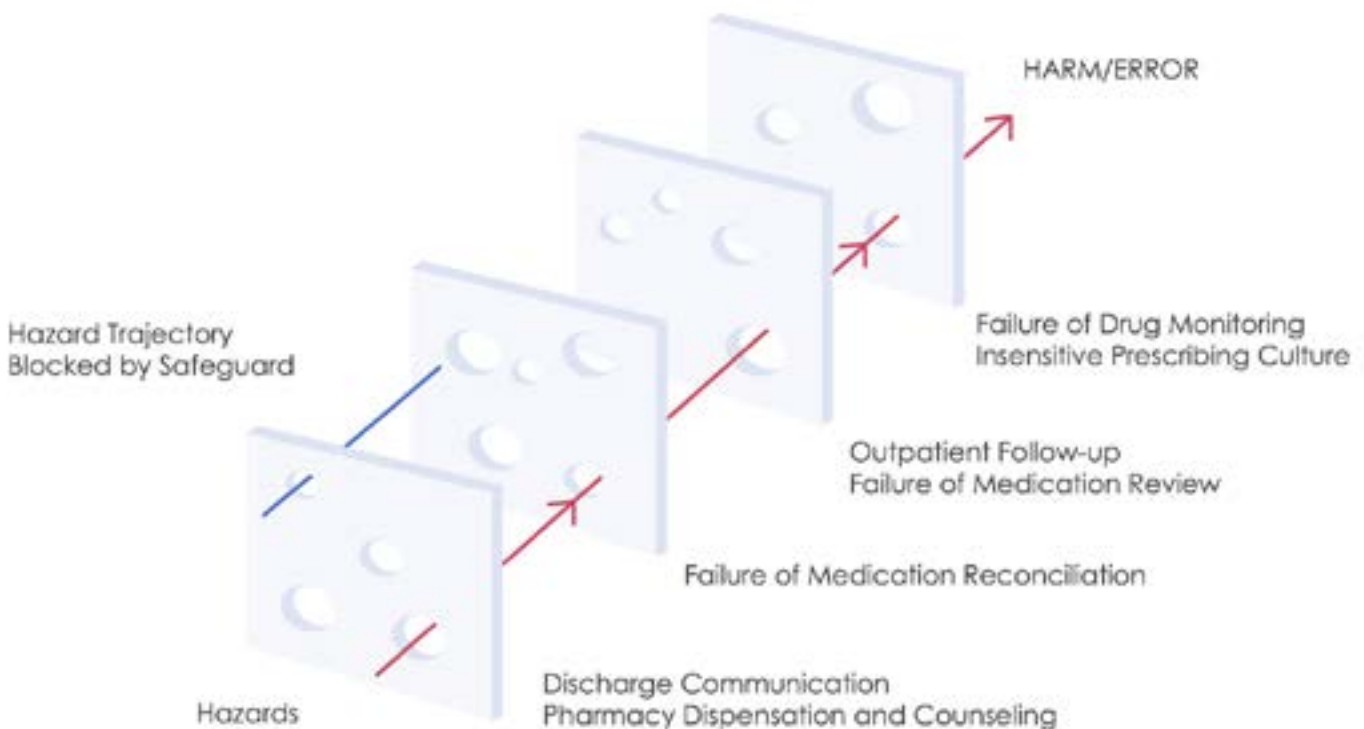
Industry Perspectives on Medication Reconciliation

Numerous publications note that initial descriptions of medication reconciliation were likely presented in 2003 by Pronovost et al. in the *Journal of Critical Care* article, "Medication reconciliation: a practical tool to reduce the risk of medication errors." Since then, medication reconciliation has been recognized by many organizations, studies, and industry experts as one of the most critical processes for ensuring patient safety and high-quality outcomes.

In 2005, The Joint Commission added medication reconciliation as a National Patient Safety Goal (NPSG.03.06.01) across the care continuum. In a 2006 Sentinel Event Alert concerning medication reconciliation, The Joint Commission noted that "Accurate and complete medication reconciliation can prevent numerous prescribing and administration errors." Furthermore, at the time, The Joint Commission stated that its sentinel event database included "more than 350 medication errors resulting in death or major injury. Of those, 63% related, at least in part, to breakdowns in communication, and approximately half of those would have been avoided through effective medication reconciliation."

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The Institute for Healthcare Improvement included medication reconciliation as one of the interventions in the "5 Million Lives Campaign," a follow up to the 100,000 Lives Campaign that also included "Prevent adverse drug events (ADEs) by implementing medication reconciliation" as an intervention.

The High 5s Project, launched in 2006 by the World Health Organization (WHO) to address continuing significant concerns about patient safety, includes the medication reconciliation process. WHO notes that many ADEs can be prevented through proper medication reconciliation.

The Leapfrog Group, which collects, analyzes, and publishes hospital data on safety, quality, and resource use, gathers information on medication reconciliation through its Leapfrog Hospital Survey. In 2018, the National Quality Forum-approved measure "Number of Unintentional Medication Discrepancies Per Patient" was publicly reported for the first time.

A study of adult patients admitted to the general medicine, cardiology, or general surgery services of a tertiary care academic teaching hospital over a two-month period concluded that, "Medication reconciliation processes have a high potential to identify clinically important discrepancies for all patients."

An article in *The American Journal of Pharmacy Benefits* concludes that, "Successful performance of medication reconciliation can have a positive impact on patient response to a hospital stay as well as support improvement in clinical quality and financial outcome."

Author and Professor Emerita of Pediatric Nursing Jane Barnsteiner, in *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*, writes, "Medication reconciliation is a major component of safe patient care in any environment."

Numerous other studies and analyses published in both the United States and worldwide recognize medication reconciliation as an essential process for the safe delivery of care.

5 Reasons Obtaining Information From Patients is Difficult

On the surface, the medication process doesn't seem overly complex. In fact, IHI breaks it down into just three steps: collecting of the medication history, ensuring that medications and doses are appropriate, and documenting changes in the orders. But, as IHI notes, "These steps are more difficult than they might appear."

One of the greatest challenges in performing a proper medication reconciliation is receiving current, accurate information about medications from patients themselves, which is complicated for many reasons.

1. **Memory and recall.** In an optimal situation, patients will bring all their medications and accompanying information and instructions to an appointment. But that's more likely to be the exception than the norm, which places greater pressure on patients' memories and their ability to recall what medications they are taking as well as each medication's dosage, frequency, and other critical details. This is likely to become more challenging as memory functions suffer, the number of medications increase, and the types of medications go through more frequent changes.

   Patients at a particularly high risk of memory and recall issues are the elderly, with forgetfulness a normal part of aging, and those with cognitive impairment. The Centers for Disease Control and Prevention notes that more than 16 million people in the United States are living with cognitive impairment.

   Furthermore, a study published by *The Gerontologist* explored post-visit recall of medication regimens and lifestyle recommendations among 83 elderly patients making visits to a clinic which specialized in elderly care. Recall was problematic, with the average elderly patient failing to recall 46% of the medications recorded in their chart. Of the 42 patients receiving lifestyle recommendations, 52% failed to recall

   them post-visit. Patterns of communication during the visit were more strongly related to recall than patients' ages, affective state, or cognitive functioning.

2. **Quantity of medications.** As noted, when the number of medications increase, patient recollection of all these medications and their details is likely to become more difficult. An UpToDate article notes that a survey of more than 2,200 community-dwelling adults aged 62 through 85 years found that at least one prescription medication was used by 87% of these individuals, five or more prescription medications were used by 36%, and 38% percent used over-the-counter (OTC) medications. A *Pharmacy Times* report notes that almost 20% of community-dwelling elders 65 years or older take 10 or more medications. A *Medscape* column cited research noting that people aged 65-69 years fill an average of 14 prescriptions per year and adults aged 80-84 years average 18 prescriptions per year.

   With each new prescription, a patient's medication regime becomes more complex, as will be the patient's ability to accurately and fully describe the regimen.

3. **Types of medications.** Medication recollection is further complicated when one considers the types of medications organizations should

document when performing medication reconciliation. Barnsteiner's handbook notes, "A comprehensive list of medications should include all prescription medications, herbals, vitamins, nutritional supplements, OTC drugs, vaccines, diagnostic and contrast agents, radioactive medications, parenteral nutrition, blood derivatives, and intravenous solutions." A *New York Times* article, citing a Gallup poll and *Journal of Nutrition* study, found that more than 50% of American take vitamin supplements, including more than two-thirds of individuals aged 65 years and older, and a 2017 study found that 29% of older adults take four or more supplements of any kind.

Patients may not consider many of the non-prescription and OTC drugs as medications. Furthermore, some patients may not even be aware of what is considered an herbal, vitamin, supplement, etc. Even if organizations can convince patients to bring their medications to appointments, there is a high probability that patients who take a wide variety of medications — and many of them — will not bring all their medications.

4. **Regimen changes.** Every change to a medication regimen can make reconciliation more difficult. Patients may struggle to recall recent changes, particularly if new medications with unfamiliar names were added to an already long list of medications. Patients may also struggle to accurately recall how such changes affected other medications in their regimen. If a regimen undergoes several changes over a short period of time, this can further complicate matters. Finally, as discussed earlier, patients may not consider changes to non-prescription and OTC drugs as notable if they do not consider the likes of herbals, vitamins, supplements, etc., as medications.

5. **Health literacy.** Health literacy can be defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. Unfortunately, as the National Assessment of Adult Literacy notes, only 12% percent of adults have proficient health literacy. In other words, nearly nine out of ten adults may lack the skills needed to effectively manage their health and prevent disease.

Poor health literacy can create a significant challenge concerning medication reconciliation. As the Agency for Healthcare Research and Quality (AHRQ) notes, "... patients with limited health literacy may have problems adhering to a medication regimen and may be unable to provide an accurate medication history."

Furthermore, low literacy skills can hinder recall abilities. AHRQ references studies showing that "... 40-80% of the medical information patients receive is forgotten immediately, and nearly half of the information retained is incorrect." This does not bode well when attempting to collect complete, accurate information.

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## 8 Barriers Clinicians Must Overcome for Success

Medication reconciliation would be difficult enough if clinicians only had to take the patient challenges discussed into account. But there are many other obstacles clinicians may face and need to overcome to ensure successful medication reconciliation.

1. **Time.** Clinicians are under pressure to produce timely orders and keep patients progressing through the continuum of care. In fact, a *USA Today* article notes that some physicians who work for hospitals say they've been asked to see one patient every 11 minutes. If medication reconciliation is a component of an encounter (as should most often be the case), clinicians may find themselves feeling rushed to complete the process before they even start it. This feeling will likely be magnified if any changes are made to a patient's regimen. Add possible complicating factors like language barriers, assessing a patient's cognitive ability or level of health literacy, or a need to verify information with another clinicians or pharmacy and time spent on the process will quickly add up.

2. **Knowledge.** There are too many prescription medications — let alone the other medications discussed — for one person to recall. This can limit a clinician's ability to effectively review and assess a patient's medication regimen. Furthermore, if patients struggle to recall one or more medications they take, clinicians may not be able to effectively assist with filling in the memory gap.

3. **Education.** Medication reconciliation can quickly become very complex because of the factors previously discussed and other reasons. Consistently and effectively completing a thorough medication reconciliation requires training and education and then ongoing training and education when errors occur and to address changes in policies and procedures. Unfortunately, in a busy hospital, such training and education may not receive the attention it deserves.

4. **Distractions.** There is rarely actual "quiet" moments at a hospital. Any distraction — and there can be many — can contribute to a medication reconciliation error. The likelihood of an error will increase if the clinician is distracted when entering information about a look-alike/sound-alike medication.

5. **Lack of accountability.** The medication reconciliation process is often completed by multiple people in multiple roles. For example, in the emergency department and admissions, it is typically conducted by physicians, nurses, and pharmacists or pharmacy technicians. This is compounded by staffing changes — not only turnover, but even those associated with routine shift changes (i.e., time of day, day of the week). Some hospitals have moved to primarily using pharmacists and pharmacy technicians to handle medication reconciliation, but due to cost constraints, these individuals often only work during the week and a shift of 9:00 a.m. to 5:00 p.m.

   When a variety of roles have some control over the medication reconciliation process, maintaining accountability for a complete and accurate medication list can prove difficult. Coordinating training and education may also be challenging.

6. **Identification of current medications list.**
   It is important to remember that it is nearly impossible to have "one source of truth" when it comes to a medication list. How does one know if the medication data captured in an electronic health record (EHR) is accurate and complete? Clinicians often lack faith in this information because of concerns about education and training (as referenced in #3) and "too many cooks in the kitchen" (as referenced in #5). In addition, gaps in medication information can be outside of their control as the information in the EHR only likely represents the medication information captured within the hospital or health system and will likely be missing data from clinicians, organizations, and pharmacies not connected to the system.

7. **Over-simplification.** EHRs are great tools for satisfying medication reconciliation regulatory requirements. Unfortunately, they can come up short in the patient safety area due to the "checkbox" feature. It's aimed at simplifying the medication reconciliation process by giving clinicians the opportunity to review medications and simply check a box if the patient is still taking them. With such an option, clinicians can be compelled to quickly check all boxes so they continue moving through the screens and finish documentation of the encounter.
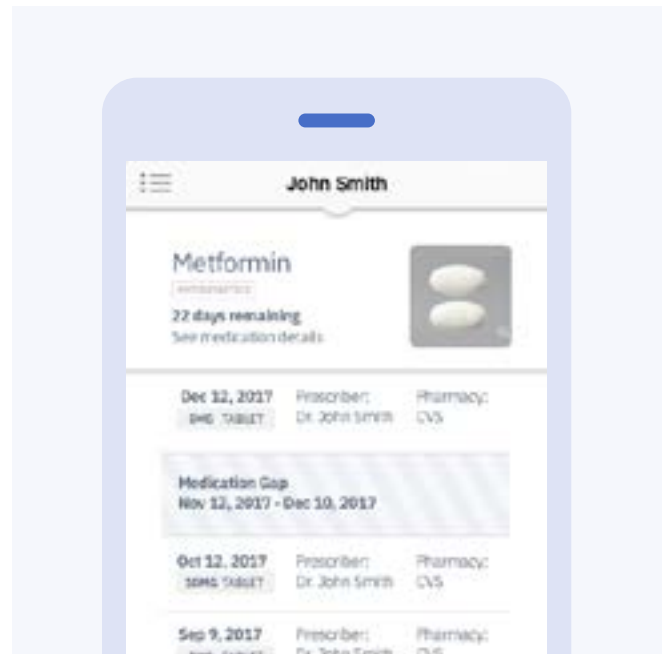
8. **Transition errors.** Clinicians have more to worry about than completing the medication reconciliation process during an encounter. Much can still go wrong when patients transition (i.e., are handed off) to the next phase in their treatment. In fact, studies indicate that around half of all medication errors occur at a transitional point of care. Factors contributing to errors during transitions include communication breakdowns, not enough time allocated for a successful handoff, patient education shortcomings, and no or limited accountability.

Cureatr's Meds 360º: The 'One Source of Truth'

The Cureatr development team was keenly aware of the medication reconciliation challenges discussed in this white paper, as well as many others, when they set out to develop the Meds 360º platform. This innovative solution provides clinicians with the vital "One Source of Truth," defined by AHRQ as the concept of a single list to document patient's current medications to be shared and utilized by all physicians, nurses, pharmacists, and others caring for the patient. The primary objectives of the One Source of Truth: reduce errors, keep patients safe, and save lives.

Here are 9 reasons why Meds 360º is becoming the solution clinicians and organizations nationwide are relying upon to significantly improve their medication reconciliation process.

1. **Comprehensive data.** Meds 360º provides up-to-date lists of medications. The data comes from pharmacy benefit management companies (PBMs) paid pharmacy claims as well as all major pharmacy networks and a growing number of independent pharmacies covering more than 265 million patients.

2. **Maintained in real time.** The data in Meds 360º reflects the most current information about patients' medications. When prescriptions are adjudicated by the pharmacy benefit manager or retail transactions are consummated through a connected pharmacy network, Meds 360º updates immediately. There's no need for clinicians to call pharmacies for information.

3. **Red flags.** Hazardous drug combinations, therapeutic duplications, and non-adherence are flagged, allowing clinicians to take immediate life-saving actions.

4. **Easy to analyze.** Meds 360º was designed with usability in mind. Information is presented in clean layout that's easy for clinicians to read, assess, and identify patterns. This helps reduce errors and even allows clinicians to predict potential issues before they turn into risks.

5. **Significant reductions in time.** Clinicians can lower their medication reconciliation times by up to 70%, with an average of 35% improvement. Less time spent on medication reconciliation means more time to allocate toward patient education, handoffs, and improving patient throughput.

6. **Reduced risk.** In addition to red-flagging potential hazards, Meds 360º also helps clinicians catch controlled substance-seeking behavior (e.g., multi-prescriber, multi-pharmacy, excess morphine equivalents) and take steps to prevent and address such behavior.

7. **No need to rely on patients' recall abilities.** A 12-month longitudinal profile that provides a more complete picture of patients' medication histories and adherences helps alleviate stress of relying upon patients' memories.

8. **Secure.** Meds 360º is a secure, HIPAA-compliant platform that maintains its security across web browsers and smart devices.

9. **Standalone platform.** Getting started with Meds 360º couldn't be simpler. There's no need for EHR integration, which will likely come as a relief to already taxed IT departments.

Why Meds 360º is a Difference-Maker

To gain a better understanding of how the Meds 360º platform improves the medication reconciliation process and reduces medication errors, Cureatr contracted with a research firm to perform a validation study with representatives of hospitals and health systems. Participants included chief medical officers, chief medical informatics officers, vice presidents/directors of pharmacy, and chief/vice president/director of quality/safety from a variety of hospitals and health systems.

Here is just a sampling of their perspectives on Meds 360º.

"I'm pleasantly surprised that somebody is thinking that far ahead. Well done. You hit the nail right on the head. The value of something like this can be appreciated the most by the provider."

"I'm not aware of many other platforms currently that can give you the data in a concise format in real time with alerts."

"This is very powerful. I have been practicing long enough and part of me makes me shudder that we need this level of monitoring. But we do."

"The pharmacy staff would love something like this, especially with the problems of care transitions from other facilities. This would be a great tool for us to have to alert everybody on the care team as to what has gone on previously and what is going on currently."

"You thought of a lot that is on our wish list — which usually turns into our wait list. When can I get it?"

"I think this is a must-have. I see so many errors downstream due to incorrect medications. If I could get accurate information … it would make it easier for us to make a decision."

"Everything seems to be intuitive and comprehensive. I can't think of an area that would add to this. Every physician in the network, quality management team, prescriber — anyone who discharges and prescribes would be able to tap into this."

"I can't think of a place where I can see this information at my fingertips. I would think this is a must-have. We are behind the times doing this — relying on the patient or our memory. I think this could impact patient care and quality."

"This is a must-have because I do not see EHRs solving this problem on their own in next 2-5 years. The reason I say must have is because in the next 3-5 years, I am going to be taking a lot of the risk."

"If you give this to physicians, you'll never get it away from them. People are going to want this product more than the EHR."