

Beyond the EHR: Best Practices in Enterprise Medication Management

Progress on preventing adverse drug events has slowed in recent years, due in part to complex factors surrounding adoption of electronic health records, a commitment to best-of-breed technologies that fail to fully communicate, rising patient acuity and a shift of care to outpatient sites that are not fully integrated into health systems.

Technologies like computerized physician order entry (CPOE), bar code medication administration (BCMA) and smart infusion pumps have made incremental improvements in reducing medication errors, but in many cases these systems fail to form a cohesive enterprise medication management infrastructure.



“Despite substantial investments in new technologies and automation, there is a sense that in many cases they have not had the desired effect. Often, these technologies don’t talk to one another, so errors can be made at several points between order entry and medication delivery at the bedside. Our objective is to create a connected medication management system that is designed to prevent these errors from slipping through the cracks.”

Michael Garrison, Worldwide President, Medication Management Solutions, BD

Disparate medication management systems can result in nursing and pharmacy staff resorting to time-consuming manual workarounds in an attempt to address inadequate workflow design and technology shortcomings. These workarounds can mask deficiencies, undermine standardization, create barriers for timely care delivery, and potentially jeopardize safety measures.

Various studies have documented a process with up to 50 steps for the delivery of a single medication to a patient, where each step can be a potential source of error.¹ Certain critical steps in the process can carry up to a 49% risk of error.² Half of the nurses surveyed in a recent poll reported having witnessed a medical error resulting from a lack of coordination among medical devices in a hospital setting.⁴



Up to 50

process steps to deliver a single medication to a patient.¹



49%

risk of error in certain critical steps in the process.²



68%

of medication errors occur during administration.³

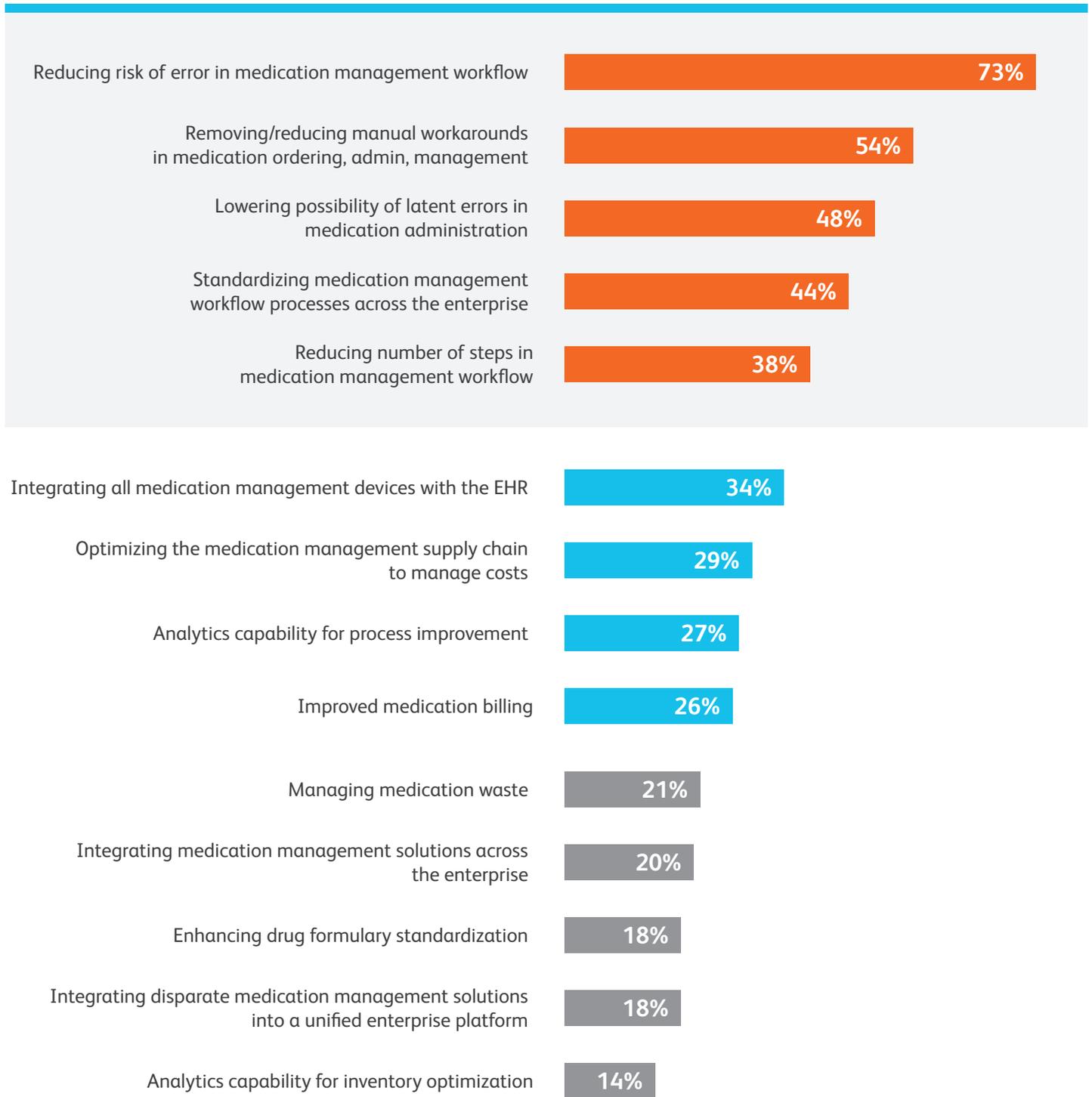


\$3,000

average increased costs per patient due to adverse drug events.⁵

Providers are facing a number of medication management challenges

Top challenges: reducing errors, removing workarounds, standardizing processes



A 2017 Healthcare Information and Management Systems Society (HIMSS) Analytics study,⁶ which included quantitative responses from 153 health care professionals, including clinical pharmacy and informatics leaders, and qualitative in-depth interviews with 20 respondents, found:

- More than 50% of respondents stated that the greatest vulnerability in the medication management process exists in patient care transitions and at the bedside.
- 64% of clinicians cited inventory management as a key process that exists outside the electronic health record (EHR).
- 56% of respondents indicated that the medication management process captures at least 90% of their medication errors; there is significant room for improvement for those who stated that it captures 80% or less.
- 69% of organizations that capture less than 80% of errors recognize better integration as an opportunity to improve.
- 71% see the value in moving to a single vendor for medication management.

This last point bears further examination, as many purchase single solutions from multiple vendors, even though these solutions might not be able to fully communicate.

HIMSS has created the Medication Management Assessment Model (MMAM)⁷ to allow health care organizations to compare where they stand against other participating organizations with respect to key aspects of the medication management process. The MMAM findings indicate that hospitals, on average, use 8 medication-management solutions. These solutions comprise:

- Computerized provider order entry (89%).
- Bar code medication administration (84%).
- Pharmacy operations systems (77%).
- Automated dispensing cabinets (77%).
- Drug inventory management solution (66%).
- Dispensing cabinet and EMR interoperability (59%).
- Pharmacy analytics (56%).
- Drug diversion management solution (47%).
- IV preparation workflow solution (46%).

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Despite all of these technologies, MMAM participants expressed a lack of confidence in their abilities to meet the top medication management challenges. Only 11% of the health care professionals assessed their organizations as being “highly effective” in meeting the challenge of “optimizing the medication management supply chain in order to manage costs,” while just 29% said their organizations were “highly effective” in “lowering the possibility of latent errors/conditions in medication administration,” and 26% deemed their organizations as being “highly effective” when it came to “standardizing medication management workflow processes across the enterprise.”

On the positive side, in the same 2017 survey⁸ conducted by HIMSS, respondents from organizations that have eliminated more than 90% of medication errors cited closed-loop medication management tools (63%) as a key factor of their success. These enterprise wide medication management systems incorporate or connect to a variety of technologies like CPOE, pharmacy information systems, BCMA, automated medication dispensing, electronic medication administration and EHRs.

Hundreds of U.S. hospitals have adopted BD technologies to help solve their medication management challenges. And while progress has been made, many hospitals are looking to BD to help them further address their safety and efficiency challenges.

The BD HealthSight™ platform is a unique combination of common infrastructure, workflow applications, advanced analytics and services for managing medications across the health system. The BD HealthSight™ platform connects core BD products with each other and with the EMR in an effort to simplify and enhance medication management for health systems.

BD is one of the largest global medical technology companies in the world and is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. The company supports the heroes on the frontlines of health care by developing innovative technology, services and solutions that help advance both clinical therapy for patients and clinical process for health care providers. BD and its 65,000 employees have a passion and commitment to help enhance the safety and efficiency of clinicians' care delivery process, enable laboratory scientists to accurately detect disease and advance researchers' capabilities to develop the next generation of diagnostics and therapeutics. BD has a presence in virtually every country and partners with organizations around the world to address some of the most challenging global health issues. By working in close collaboration with customers, BD can help enhance outcomes, lower costs, increase efficiencies, improve safety and expand access to health care.

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Resources

1 Wachter, Robert. *The Digital Doctor: Hope, Hype, and Harm at the Dawn of Medicine's Computer Age*, 1st ed. New York City: McGraw-Hill; 2015: 128-129. **2** Vogenberg, F. Randy and Benjamin, David. "The Medication-Use Process and the Importance of Mastering Fundamentals. *Health Care and Law*," *Pharmacy and Therapeutics*. 2011;36(10):651-652. **3** California Hospital Patient Safety Organization Patient Safety News, October 2012; 4(9). **4** "Missed Connections: A Nurses Survey on Interoperability and Improved Patient Care," Harris Poll and West Health, March 2015. **5** "The Costs of Adverse Drug Events in Community Hospitals," *The Joint Commission Journal on Quality and Patient Safety*, March 2012. **6** 2017 Patient Safety and Medication Management Study. This survey polled 153 physicians, nurses and pharmacists, as well as 1,131 patients and their family members. Survey conducted by HIMSS and sponsored by BD. **7** HIMSS Medication Management Technology Index Webinar. The webinar, conducted by HIMSS analytics, was sponsored by BD and based on the results of an online survey with data collection conducted during the first quarter of 2019. **8** 2017 HIMSS Analytics Medication Management & Safety Study. The survey, conducted by HIMSS Analytics, was sponsored by BD. **9** Husch, M., et al. "Insights from the sharp end of intravenous medication errors: implications for infusion pump technology," *Quality and Safety in Health Care*, 2005 Apr;14(2):80-86. **10** Amanda E. Prusch, Tina M. Suess, Richard D. Paoletti, Stephen T. Olin, Starann D. Watts, Integrating technology to improve medication administration, *American Journal of Health-System Pharmacy*, Volume 68, Issue 9, 1 May 2011, Pages 835-842, <https://doi.org/10.2146/ajhp100211>

