

# The Current State of Medication Administration and Improving Your Organization's Dispensary Methods Through Advancing Technology



Healthcare organizations use multiple methodologies to administer medications. The utilization of more than one administration method may lead to inconsistencies in dispensing, increased costs, and may even compromise the safety of care. Combined with burdening staff workloads, the lack of secure medication administration systems has led to devastating consequences across the medical community.

Yearly in the US, about 2.2 million patients experience an adverse drug reaction (ADR), and statistically, over the past decade, more than 1 million patient deaths were attributed to incorrectly administered medication.<sup>1</sup>

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Medical errors claim 400,000 lives annually.<sup>2</sup> The need exists to implement a closed-loop medication delivery and administration system that communicates feedback internally, emphasizes patient safety, and reduces opportunities for human error by controlling both input and output. This may not only help to immediately reduce death due to misdosage, but its implementation may lead the way for improved systems and processes throughout the timeline of your organization.

## A BASIC OVERVIEW OF MEDICATION ADMINISTRATION SYSTEMS

According to Patient Safety and Quality: An Evidence-Based Handbook for Nurses, there are roughly 5 stages in the medication process<sup>2</sup>:

1. **ordering/prescribing**
2. **transcribing and verifying**
3. **dispensing and delivering**
4. **administering**
5. **monitoring and reporting**

This chain of events seems simple enough; however, research has found that most hospitals lack a universally accepted methodology when it comes to medication administration in particular.

### COMPUTER USE DURING SHIFT<sup>4</sup>

#### PHYSICIANS



#### NURSES



In fact, hospitals may deploy several different medication administration protocols across organizational lines. The one constant is that patients are universally entitled to the following when undergoing medical care and receiving medication: right patient, right drug, right time, right route, and right dose.<sup>2</sup>

When examining the medication administration process in these organizations, the high-level system most typically used is a hybrid method combining both automated drug cabinets (ADCs) and the pharmacy.

The general process is as follows:

**Step 1: Pharmacy will provide medications to hospital caregivers.**

**Step 2: Hospital caregiver will fill the ADC with various medications.**

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**Step 3: Medication administrator will hand-deliver medication from the ADC to the bedside of the patient.**

Medication administrator usually means nurse, and for good reason: this particular function is 40% of their job. But administrators can also be physicians, certified medical technicians, family members and — in some cases — the patients themselves.<sup>2</sup>

**MEDICATION ADMINISTRATION:  
A PERFECT STORM**

What is meant to be a safe and straightforward system becomes more complicated with the addition of external issues; chief among them: a stressful work environment. Working as a health professional is shown to be one of the toughest jobs in the US.

Comparisons between nursing and other physically taxing professions (eg construction workers) reveal that nurses are 200% more likely to suffer from work-related injuries and have a rate of musculoskeletal disorders at 7 times the national average.<sup>3</sup>

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Long hours, shift work, and fatiguing tasks are compounded by an influx of new technology and requirements for usage.

Skilled caregivers who already have high demands on their time are now required to spend as much time on computers as the average office professional, while still seeing high numbers of patients.

A recent US study found that physicians now use computers for an average of 5.1 hours per shift, with nurses reaching an average of 5.8 hours.<sup>4</sup>

As a result, multiple studies show that as many as 90% of nurses are working with discomfort.<sup>3</sup>



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Combined with other variables such as staffing inadequacies, fatigue, illegible prescriptions, flawed dispensing systems, and drug labeling issues,

- Nurses are continually challenged to ensure that their patients receive the right medication at the right time.<sup>2</sup>
- In one study, nurses were interrupted eight times per hour during their shift, and most interruptions occurred during medication administration.<sup>5</sup>
- Research shows that drugs with complex dosing regimens given in specialty areas such as intensive care units, emergency departments, and diagnostic and interventional areas, are associated with increased risk of an ADE.<sup>2</sup>
- Reason for error also occurs as a result of improper training. It is critical that staff is properly trained when implementing a new system. When surveyed, 66% of nurses reported insufficient training on point-of-care computing solutions as one of the biggest issues they face.<sup>3</sup>

These challenges play out in the real world every day, and create life or death scenarios for patients that pose serious consequences for caregivers.

There is evident need for a closed-loop system. The system should ensure that the right medication gets administered to the right person at the right time with the right level of documentation. We as designers, IT, ergonomists, facility managers, EHS, nurses, planners and others in the health care field must consider our responsibility in this system to:

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- Understand and minimize causes of errors
  - Make it possible to reverse actions and harder to perform irreversible actions
  - Permit users to discover and correct errors with ease
  - Change organizational attitude towards “human error”
  - Enforce safety functions and accurate automation

Medication administration presents a complex set of challenges for us as human beings, and there will always be the probability of error. The safest option is to “engineer out” potential errors and injuries by utilizing best practices for design and technology, using power to improve process, and selecting protocols that employ automation and safeguards.

## ACT NOW AND BUILD A STRONG FOUNDATION FOR THE FUTURE

Now is the time to take steps towards modernizing your medication administration process for a safer, more cost-effective healthcare environment. One thing is clear: there are many risks associated with incomplete and inefficient systems. The path to growth is through technological advancement of your organization’s end-to-end process and tools. According to the Institute of Medicine (IOM)

If health care institutions want to ensure safer, higher-quality care, they will need to, among other things, redesign systems of care using information technology to support clinical and administrative processes.<sup>2</sup>

The benefits of improving your medication administration system will ripple throughout your organization and will lay a strong foundation for changes to come in a quickly evolving industry.

## REFERENCES

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