Chapter 11
Medication Management

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Management of medications in the OR is a topic of special interest that has surfaced in recent years. Historically, pharmacists seldom had much interaction with anesthesiologists and frequently “relinquished” control of most medications used by anesthesiologists. Controlled substances, defined as Schedule II–V by the US Drug Enforcement Agency (DEA), have been controlled in different ways at different institutions, with no standardized system established across the country. Other medications used in the OR were typically stored as “floor stock,” a method of maintaining a stock of medication vials that was replenished when the stock ran low. Pharmacy (and occasionally anesthesia) technicians simply filled a bin of medications when it needed replenishing. These systems had limited inventory control, frequently inaccurate methods of billing and tracking, no automatic reordering, and few internal safeguards. Anesthesiologists retrieved the medications that they intended to administer, recorded what they gave on handwritten anesthesia records, and wasted excess drug, with no pharmacist review of the order, dispensing, or administration of the medication.

Recent advances in medication management have allowed anesthesiologists and pharmacists to work together as a team. Current systems allow pharmacists to control certain medications, track medications given, reorder stock more accurately to reduce overall inventory costs, bill accurately for medications used, and build safeguards into the system to prevent or reduce medication error and adverse drug events.

One by one, hospitals are abandoning nonstandardized, manual, medication-management systems and are looking to automation to help with the challenges faced in managing medications in the OR. Anesthesiologists are the only physicians who prescribe/order a medication, dispense the medication, and administer the medication without pharmacist review of orders before dispensing. Even a final “check” in the medication process is eliminated in anesthesia, as the prescriber (rather than a nurse, as in most other specialties) actually administers the medication. This lack of pharmacist review and nurse check results in the loss of an inherent safety feature built into most medication-administration systems, and may make medication errors and adverse drug events more likely in anesthesia. Because of the nature and potency of the medications frequently used by anesthesiologists, these errors can result in significant harm or even death.
The “Five Rights” of Medication Administration

The Joint Commission has defined “five rights” of medication administration, as listed below. The expected outcome of following the five rights would be that the correct results are achieved. It is the responsibility of each individual involved in patient care to adhere to the “five rights” to reduce the risk of medication error:

1. Right patient
2. Right dose
3. Right medication
4. Right time
5. Right administration route

This chapter will include a discussion of the goals of medication management and solutions to the problems encountered. The goals include:

- Management of controlled substances that meets DEA requirements and reduces diversion
- Control of high-cost medications
- Reduction of medication error and avoidance of inadvertent administration of incorrect drugs or doses
- Automated alerts to notify the practitioner of an error about to be made
- “Hard stops” that prevent an incorrect medication, if selected inadvertently, from reaching a patient
- Accurate billing, inventory control, and cost reduction
- Automated reordering of medications from wholesalers

Solutions to the problems in medication management use various components of automated products, including the automated anesthesia electronic record, automated anesthesia medication-dispensing carts, barcoding technology, automated recording of medications administered, and AIMS. We will first consider the Joint Commission standards on medication management and the extent and nature of the problem of medication error and adverse drug events.

Joint Commission Standards

In 2004, The Joint Commission issued new standards for medication management in the healthcare setting that place a greater emphasis on medication safety than did the previous standards. Since 2004, Joint Commission surveys have included a 1-hour review of medication-management practices with key members of the medication-management team, which typically includes pharmacists, hospital administrators, a representative from the pharmacy and therapeutics committee, a representative from the medication safety committee (if one exists), the medication safety officer (if one exists), and nursing representatives. Anesthesiologists are frequently asked