Medication Administration Risks

Medication administration has been identified as one of the highest risk tasks a nurse can perform. Safeguards are needed all along the delivery system. In fact, the vast majority of medication errors are multifaceted and happen as a result of a cascade of failures within the system in which all clinicians work. A well-publicized case in the mid 1990’s in Denver involved the death of a newborn after being administered a tenfold dose of penicillin in error. A systems analysis identified more than 50 different failures which contributed to the error occurring. Many unsafe practices were found along the medication delivery chain (Apden, et al., 2007).

Medication Delivery Systems

The Agency for Healthcare Research and Quality (AHRQ) identified the elements listed in Table 1 as necessary components of a medication delivery system (Hughes & Blegen, 2008). This list depicts how complex the delivery of medication is, with integrated and inter-dependent steps, each with potential to fail.

Table 1

Elements of Medication Delivery Systems

- Prescribing
- Order Communication
- Product labeling, packaging, and nomenclature
- Compounding
- Dispensing
- Distribution
- Administration
- Patient Education

Medication delivery is a high volume and high risk activity. The Institute of Medicine (IOM) reported in 2006 that medication errors are estimated to be the reason for 19% of all adverse patient safety events and that prescribing and administration account for about 75% of all medication errors. Medication is a primary tool used in prescribed treatment and self-care. Four out of five American adults take at least one medication a day while a third take at least five different medications daily (IOM, 2006). The IOM estimated that a hospitalized patient is subject to at least 1 medication error every day (2006).

In the general community, health care organizations are required to address medication safety by accrediting and regulatory agencies. Correctional healthcare experts are also addressing this issue. The Expert Panel on Patient Safety in Correctional Settings recommended several specific measures to increase medication safety in 2009 (Stern, Greifinger, & Mellow, 2010). The American Correctional Association and National Commission on Correctional Health Care also require attention to medication safety as part of their accreditation standards.
Medication administration is the last step before the medication reaches the patient and is where many errors are identified. The traditional ‘5 Rights of Medication Administration’ have been expanded to include several other important principles.

As you can see from Table 2, at least three more ‘rights’ have been added to the original five. They are right documentation, right reason and right response. As the importance of nursing surveillance in preventing errors at the point of administration has been recognized, more ‘rights’ have been proposed. These rights also have evolved from simply statements about individual practice to recognition of the organization’s responsibility to establish procedural expectations to accomplish each of the ‘rights’. For example, staff members can only be held accountable for following the procedural rules set by organizations to achieve the eight ‘rights’ as listed here. A facility’s policies, procedures, and protocols should be reviewed when identifying areas that could contribute to a medication error. In addition, materials and supplies available to the nurse must also be considered.

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<td><strong>Eight Rights of Medication Administration</strong></td>
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(Bonsall, 2011)

The first of these medication administration principles is to ensure that the *right patient* receives the medication. Giving medication to the wrong patient is a common error in all settings, including corrections. Factors such as aliases, inmates with similar names, and purposeful misrepresentation of identity have all been associated with medication errors. Many correctional systems have put in place procedures that require two patient identifiers for medication administration. The patient may be asked to identify themselves verbally by name and identification number. The nurse may also visually check an ID card or wristband. The nurse compares this information with the medication administration record and, if patient-specific packaging is being used, the medication itself. Technology, such as picture identification and bar coding, has vastly improved the ability to ensure that medication is administered to the right patient.

The second right is that of *right medication*. Giving a patient the wrong medication is a common error. Contributing to these errors are drug names and/or packaging that look-alike, illegible handwriting of the order itself, transcription of the order on the medication administration record (MAR), and use of stock medication or packaging that is not patient-specific.

When preparing the medication to be administered, nurses can help prevent wrong medication errors by checking the order first, selecting the medication, comparing the medication to the order, and then checking the medication against the order again before administering it to the patient. When a patient is receiving medication for the first time, nurses should also check to see if the patient knows what the medication is for and if they have any allergies that might contradict giving it to the patient.
A third or more of medication errors involve the incorrect dose being administered (Elliott, M. & Liu, Y. (2010). There can be many factors involved in an error of this type. A confusing decimal point, for example, can result in either one tenth or ten times the correct dose being given. Certainly there are common sense checks on an overdose in many situations. For example, if the dose works out to 20 tablets, a prudent nurse would question whether the order was correct. Unit dosing has been a great help in reducing wrong dose errors.

A trustworthy medication administration record (MAR) system increases certainty that the dose listed on the MAR is the dose ordered. If unlicensed individuals are transcribing orders, be sure there is a double-check in the system. For example, a common practice is for a licensed staff member to check transcription and initial the MAR.

Every medication delivery station, whether a cart or a room, should have available an easy-to-read drug reference for consultation on those drugs that are unfamiliar or uncommon. Encourage staff to consult references; especially new staff who may be intimidated by the speed in which they are expected to administer medications.

Medications with increased ramifications for error should require a second nurse to confirm calculation. Some examples include insulin and drugs that do not come as a unit dose. The extra time taken to validate calculated dosage is an investment in patient safety.

The right route of medication administration can also be missed. Every medication order should clearly state the route of administration so that no assumptions need to be made. There have been many wrong route errors that have stemmed, in part, from an unclear order. Of course, faulty administration practices also play a part in wrong route errors.

Here are some examples of significant wrong route errors that could have been avoided with safeguards in place (Institute for Safe Medication Practices, 2009).

- 0.5 mgs of epinephrine was ordered for an allergic reaction in a busy ER. The route of administration was not specified and the patient incorrectly received the epinephrine IV instead of IM – leading to a cardiac event.
- Yogurt was drawn into a parenteral syringe to administer via enteral tube for diarrhea. The medication was instead delivered via IV through a PICC line.
- Versed syrup intended for oral administration was withdrawn into a parenteral syringe for oral administration but was administered intravenously to an 11 year old child.

The Nurse Service Organization's (2009) Nurses Claims Study analyzed ten years of claims. Wrong route medication error claims represented the highest average paid indemnity and accounted for 25% of total amounts awarded. Average paid indemnity for wrong route claims was $214,250. Practices to minimize wrong route errors can reduce cost and also improve patient safety.

The fifth right, that of the right time, is important so that the therapeutic purpose of the medication is accomplished. The administration of medications in a correctional setting must take into account the security schedule; for example, timing of meals and administration of insulin. Other timing challenges can include giving HS medications in the late afternoon or early evening and giving TID or QID medications at irregular intervals, either too close or too far apart because of the medication line process.
Medication Administration

A frequent nursing practice in corrections, pre-poured medications, can contribute to medication error and loss. Some medications lose therapeutic effectiveness when prepared in advance. More pragmatically in the correctional setting, pre-pouring ties up nursing time to maintain the integrity of the preparation until the medication is administered. Correctional systems need to seek solutions to medication administration issues in order to reduce the need for pre-poured medications. This may include reviewing procedures, selecting better medication packaging options, or adjusting staffing patterns.

*Right documentation* is the first safety principle added to the original ‘5 rights of medication administration.’ Two practices that nurses sometimes adopt, perhaps because of time pressure, are to document before or after all medications are given. Signing before medication has been administered creates risk that medication was documented as given when in fact the patient declined the medication or was a “no show”. Signing after all medications have been given relies on the nurse’s memory or some form of duplicate recording and risks that documentation is incomplete or incorrect. Inaccurate documentation puts the patient at risk and may affect the subsequent decisions of other care providers.

Another addition to the five rights of medication administration is *right reason*. Nurses administering a medication need to understand the reason a medication is ordered. This includes an understanding of the patient history and the expected outcome for the medication. In some cases, a patient might be on a long-term medication for which, over time, they no longer need. A regular review of medication and patient need is helpful because when unnecessary medication is eliminated the risk associated with drug-drug interactions is decreased. Eliminating unnecessary medications also reduces the burden of side effects experienced by the patient and may increase adherence. As a rule, when administering a medication, the nurse should state the action of the medication and the reason it was prescribed to the patient. This helps with patient self-care and can reduce wrong patient and wrong medication errors. Of course, privacy considerations need to be maintained in the correctional setting. It would not be a good idea to announce in pill line that the patient is receiving HIV medications.

The eighth and final ‘right’ is *right response*. Patients need monitoring for effects and side effects of medication, especially at the start of administration. The nurse’s role and responsibility in ensuring medication safety does not cease once the right medication has been administered. In a 2003 study in two very large academic long term care facilities, 36% of adverse drug events were tracked to inadequate patient monitoring after medication administration (Gurwitz, et al., 2003).

**Best Practices for Medication Administration**

Best practices in medication administration in the correctional setting involve people, processes and places. By focusing in these three areas, it is possible to reduce risk in administering medications. Here are some suggested practices to implement.

Focusing on the *people* involved in medication administration can reduce risk. One way to increase safety is to maximize patient involvement and responsibility for self-care. When possible, have patients administer their own medication as keep-on-person. When that is not possible, a patient should know what medications they should be receiving and be encouraged to question any new medication. Continually educating patients about the effects, side effects and any food interactions for prescribed medications will also decrease error risk.

Even in a staff-controlled administration process, the patient may be able to self-administer. For example, in some facilities inmates are able to draw up and give their own insulin under supervision. In correctional settings the decision about self-medication involves weighing the relative risks and benefits related to the goals of therapeutic effectiveness, security, cost and time. Often this deliberation weighs in favor of patient involvement.

Every patient should be provided information about each of the medications that they are taking to include the name of the drug, its purpose, how long it is prescribed for, the dosage, how often it is to be taken, what the adverse reactions could be, and any side effects.

Facility policy and procedure should indicate what medication dosing needs an independent double check by another nurse. Although practices vary, independent double checks should be considered for high alert medications and medications used infrequently. The procedure should explicitly list the circumstances when double checks are to take place.

Best practices for medication administration *processes* also reduce error risk. One important process is medication labeling including alerts.
to unusual circumstances. Many corrections pharmacy services label and unit dose the majority of medications. However, unusual or rare medications may not arrive in convenient packaging. In this situation, additional alerts added to the MAR help nurses administer these medications safely.

Discontinued medications should be returned to the dispensing pharmacy and not stored in the medication delivery area. In addition, reduce available strengths to decrease chance of using the wrong concentration of medication. No need to have additional opportunities to deliver a wrong dose or medication left from a previous order. This is true for documentation, as well; clearly indicate discontinued medications on the MAR.

If a dose is unusual or includes partial tablets, have a pre-made dosing chart available. Even a simple calculation included with the MAR may prevent a wrong dose error. Why leave the calculation to each nurse when a prepared and reviewed calculation can be created and kept available for staff use.

Some drugs look or sound alike, leading to error risk. When these medications are ordered for the same patient, confusion potential is increased. Use a color code or enlarge the font on medication names to emphasize the difference in the MAR and on packaging.

Finally, preprinted MARs and single dose dispensing help reduce risk at the time of administration. In addition, the use of pre-printed orders and flow sheets can be helpful. Computerized Provider Order Entry (CPOE) systems reduce errors in interpretation of handwriting.

The final category of best practices is place. Best practices in this category involve making information available at the point of care. Allergy information is generally put on the medication administration record and in the health care record. With automation, allergy information may be published on every page of the health record, on every medication label put in the MAR and on the patient’s specific package of medication. This makes it easy for every member of the health care team from the provider, the pharmacist, the nurse, the specialist and so on to consider the patient’s allergies at every step in the delivery of care.

Several kinds of reference materials may be helpful at the point of care. A wall poster on high alert medications or a simple protocol or fact sheet on concentrated oral solutions can be made available. Another suggestion is to encourage nurses to review reference materials when they are new to an assignment; when there is a new, unusual, or high risk medication to be given; or when there is a patient condition that is unusual or high risk. Consider the location of medication reference materials. For example, placing a drug reference book directly on the medication cart may increase convenience and therefore use.

Summary

Medication administration is a complicated and time consuming process. When nurses have to read, calculate and draw up a medication, the potential for error increases with each step, especially with the high level of interruption or distraction in a clinical unit. Reduce professional liability risk by considering all elements of the medication delivery system and evaluating the people, processes, and places of medication administration.

**Tips to Reduce Risk During Medication Administration**

- Regularly monitor all the elements of medication delivery in your system. Be proactive about finding and reducing risk.
- Have clear policies and procedures which don’t leave openings for assumption or misinterpretation about roles and responsibilities in the process.
- Standardize medication ordering. Be sure all providers know and use complete information for medication including the patient, drug, dose, route, and time.
- Reduce distractions during medication administration. Help nurses by giving them protected time to concentrate on what they are doing.
- As much as possible involve the patient in the process to enhance safety.
- Arrange the environment to assist with safe delivery: resources available, extra medications minimized supplies handy.
Medication Safety Resources & References

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References


Catherine Knox, MN, RN, CCHP-RN is a Correctional Health Care Consultant from Portland, OR, with over 2 decades of experience in correctional health care. She is an independent consultant with nursing and leadership experience in the Oregon Department of Corrections and as Statewide Director of Nursing for the Washington Department of Corrections, and Assistant Statewide Chief Nurse Executive for the California Prison Health Care Services. Catherine has a master’s degree in psychiatric mental health nursing and has both administrative and clinical experience in this field. She is a recipient of the "Distinguished Service Award" from the American Correctional Health Services Association (ACHSA) and the "Bernard Harrison Award of Merit" from the NCCHC.

Lorry Schoenly, PhD, RN, CCHP-RN has more than 25 years in nursing experience and currently specializes in correctional health care risk reduction. Prior to joining the OmniSure consulting team, Dr. Schoenly was the Clinical Education Manager and Director of Staff Development for Correctional Medical Services, one of the largest companies providing healthcare services to jails and prisons across the country. In addition to her work with OmniSure, Dr. Schoenly consults with the NCCHC, writes clinical and educational articles, and manages the CorrectionalNurse.net blog and the Correctional Nursing Today radio talk show.