

# JoVE: Science Education

## Safety Checks for Acquiring Medications from a Medication Dispensing Device --Manuscript Draft--

Manuscript Number:	10235
Full Title:	Safety Checks for Acquiring Medications from a Medication Dispensing Device
Article Type:	Manuscript
Section/Category:	Manuscript Submission
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## Clinical Skills Education Title

Safety Checks and Five Rights of Medication Administration for Acquiring Medications from a Medication Dispensing Device

## Overview:

According to the 1999 Institution of Medicine (IOM) report titled *To Err is Human: Building a Safer Health System*, medication errors are significant contributors to avoidable patient deaths in the hospital environment. Therefore, to maintain patient safety and avoid medication errors, it is important that every nurse adheres to at least “five rights” of safe medication administration. These “five rights” refer to the right patient, right medication, right medication dose, right time of administration, and right route of administration. The nurse should check for these “five” rights” at three different checkpoints in the medication administration process: 1) while comparing the Medication Administration Record (MAR) when withdrawing medications, 2) while comparing the MAR to acquired medications, and 3) while comparing the MAR to both the medication and patient identifiers at the bedside. This video will demonstrate the acquisition component of medication administration consisting of performing the “five rights” during the first and, second, and third checkpoints. The third medication safety check - using the associated “five rights” - will be provided in the specific medication administration route demonstrations.

Prior to acquiring medications from a medication-dispensing system (MDS), the nurse must consider if the medication is appropriate given the patient’s medical conditions, medication allergies, current clinical status, and when previous doses of the medication have been administered. In addition, certain medications may need preparation prior to administering and prior to the second medication safety check. NOTE: Different electronic Medication Administration Record (MAR) software including hard copy MAR’s exist, as well as different types of medication-dispensing systems (MDS). The general steps for each system are the same and although this video illustrates steps performed using one of these software tools the safety checks highlighted in this section are universally applicable.

## Procedure and representative findings

1. General medication administration considerations (review in the room, with the patient, see preparation and administration medication videos).

1.2 Wash hands with soap and warm water, and vigorous friction for at least 20 seconds. Hand sanitizers may be used if the hands are not visibly soiled.

2. Go to the Medication Preparation area (this is may be in a secured room or in a secured portion of the nurses' station) and complete the first safety check using the 5 rights of medication administration.

2.1 At the medication administration computer, log into the patient's electronic health record, pull up the Medication Administration Record (MAR), and determine the medications to administer, for example in this case Acetaminophen 800 mg every 6 hours prn will be withdrawn.

2.1 Log into the medication dispensing system (MDS) with user name and password

2.2 Select your patient from the list of patients provided by the MDS.

2.3 Verify the patient's name from the MDS with the patient information provided on the electronic MAR from the computer. At this point the "Right Patient" step has been completed for the first safety check. (Figure 1)

2.4 On the screen in the MDS, select the patient medication administration list by choosing the "remove meds" button on the right.

2.5 From that list, select the medication you would like to administer and select the green "OK" button.

2.6 Select the "remove now" button. Stand back and look for the drawer or door with the green flashing light and open. Note: some drawers are programmed to open automatically while others will flash a green light and will need to be opened manually.

2.7 Once open, select the appropriate bin and remove the medication. Note: Some systems will have flashing lights to indicate the appropriate bin while others may indicate the bin number on the screen.

2.8 Remove the medication from the medication drawer, and hold the medication package next to the computer MAR and compare the medication name with the medication listed on the MAR. At this point the "Right Medication" step is complete.

2.9 Holding the medication package next to the computer, compare the medication dose (amount and units) listed on the label with the dose (amount and units) listed on the electronic MAR on the computer screen. At this point the "Right Dose" step is complete. Note: for some items listed on the MAR, you may need to remove more than one medication package to achieve the correct dose.

2.10 Holding the medication package next to the computer, compare the medication route listed on the medication package label with the route listed on the MAR. At this point the "Right Route" step is complete. Note: some medications routes may not be listed on the label and the nurse must determine the appropriateness of the form provided for the administration route (i.e. tablet = oral administration).

2.11 On the computer screen, review the electronic MAR and identify the time for the specific medication to be administered and compare the time to the time on the clock in the secured medication administration preparation room. At this point the “Right Time” step is complete. Note: Medications may safely be given up to thirty minutes prior or thirty minutes following the identified medication time unless otherwise specified by institutional policy.

2.13 Close the drawer or door in the MDS and hit the “exit” button to log out of the MDS.

3. In the medication preparation area, prepare the medication according to best practice and procedures. (Refer to videos for preparing and administering different types of medications and medication routes.)

4. In the medication preparation area complete the second safety check using the 5 rights of medication administration.

4.1 Hold the labeled medication next to the computer screen. Compare the patient name on the pharmacy label with the patient in the electronic Medication Administration Record (MAR) on the computer screen. At this point the “Right Patient” step has been completed for the second safety check.

4.2 Hold the labeled medication next to the computer screen. Compare the medication name on the label of the syringe to the medication name provided on the MAR in the electronic health record (on the computer screen). At this point the “Right Medication” has been completed for your second safety check.

4.3 Hold the labeled medication next to the computer screen. Compare the medication dose listed on the syringe preparation label with the dose listed on the electronic MAR. At this point the “Right Dose” step of the second safety check is complete.

4.4 Hold the labeled medication next to the computer screen. Confirm the medication administration route listed on the electronic MAR is listed as the route intended (i.e. oral, gastric tube, subcutaneous injection, intramuscular injection, rectal, intravenous, or topical). At this point the “Right Route” step of the second safety check is complete.

4.5 Review the time listed for the medication in the electronic MAR to confirm that it is the right time for administration of the medication. Compare the administration time in the MAR with the clock at the medication preparation area. At this point the “Right Time” step is complete.

5. In the patient’s room, complete the third, and final, medication safety check adhering to the 5 rights of medication administration.

5.1 Verify the patient is wearing the correct name band by asking them to state their name and birthdate. Compare this information with what is provided on the name band.

5.2 At the bedside computer, log into the electronic health record, open the patient’s chart, and open the patient’s MAR.

5.3 Confirm that you have the correct patient through comparing the patient's name and medical record number on their wrist identification band with the patient's name and medical record number on the electronic MAR on the computer screen. At this point the "Right Patient" step has been completed for the third safety check.

5.4 Hold the labeled medication next to the computer screen. Compare the medication name on the label of the medication to the medication name provided on the MAR in the electronic health record (on the computer screen). At this point the "Right Medication" has been completed for the third safety check.

5.5 Hold the labeled medication next to the computer screen. Compare the medication dose listed on the medication label with the dose listed on the electronic MAR. At this point the "Right Dose" step of the third safety check is complete.

5.6 Review the electronic MAR to confirm the medication administration route listed on the electronic MAR is the intended route for administration. At this point the "Right Route" step of the third safety check is complete.

5.7 Review the time listed for oral medication administration in the MAR to confirm that it is the right time for administration of the subcutaneous medication. Compare the administration time in the MAR with the clock in the patient's room. At this point the "Right Time" step is complete for the third safety check.

6. Administration and documentation of medications will be highlighted in further videos.

## **Summary**

Acquiring medications from a medication-dispensing device involves using the 5 rights of medication safety at 2 of the 3 different safety checkpoints. The first safety check including the 5 rights occurs after acquiring the MAR and entering the medication-dispensing device. The second safety check occurs after the medication has been removed and prepared according to best practices and facility protocols. At each safety checkpoint the medication is verified with the patient's electronic medication administration record (MAR) to include the right patient, right medication, right dose, right route, and right time. The third and final safety check is completed at the patient bedside prior to medication administration. A common mistake in medication administration process is neglecting to observe the second check after the medication has been removed from the medication-dispensing device and prepared for administration. This step is critical because it will help the nurse ensure that the proper doses have been prepared. Some medications provided by pharmacy are at a dose that are below or above what has been prescribed. It is the nurse's responsibility to ensure that the correct dose has been prepared for the correct medication administration route using best practice.

## **Figures & Legends**

Figure 1: Right Patient Verification (2.3)

Comparing the EHR with the medication dispensing device

Figure 2: Right Medication Verification (3.3)

Comparing the EHR with the medication label

Figure 3 – Patient Identification Verification (5.1)

Comparison of name band with patient verbal response and MAR

## **References**

Institute of Medicine. (1999). *To err is human*. Washington, DC: Academic Press.

		Patient, John Q MRN 123456790
Reason for Visit: Congestive Heart Failure Admission Date: 5/12/14		Room/Bed: 1
Allergies: NKDA	Birthdate: 05/14/1950 Gender: Male	Height: 5'5" Admission Weight: 72.7 kg

DATE: 5/14/14

Order Start Date	Order Stop Date	Medication Name (Dose, Route, Schedule)	Day Shift 0700-1859		Night Shift 1900-0659	
			Day Shift 0700-1459	Evening Shift 1500-2259	Night Shift 2300-0659	
5/14/14	5/20/14	Regular Insulin SLIDING SCALE, SC, INJ, QAC and QHS SLIDING SCALE FOR REGULAR INSULIN Blood glucose < 140, 0 units Blood glucose 140-180, give 2 units Blood glucose 181-240, give 4 units Blood glucose 241-300, give 6 units Blood glucose 301-359, give 8 units Blood glucose 360-399 give 10 units Blood glucose > 399, give 12 units and call MD Chart dose given	0730, 1140	1730, 2100		



Local Patient List			10:47:32 05/23/08
<b>Add New Patient</b>	Ajahu, Elysiyah 1048054-9000	Type: INP	Rm#5431-A
	Allen, Paul 2111291	Type: INP	Rm#1015-A
	Bacon, Marcel 1713957-7500	Type: INP	Rm#
	Bajwa, Kerry 1795265-0000	Type: INP	Rm#5431-A
	Clark, Hal 100018-2001	Type: INP	Rm#5437-A
	Hammond, Gary 1420010-7002	Type: INP	Rm#5430-A
	<b>Patient, John Q 123456790</b>	Type: INP	Rm#5404

Select a patient from the list. To search for a patient, enter the first few characters of the last name or use the scroll bar. If the patient is not found, look in the Global List. Select Pending Patient Transfers to transfer patient meds.

[Main Menu](#)
[Global List](#)
[Local List](#)
[EXIT](#)

				Patient, John Q MRN 123456790		
5/12/14	5/19/14		Metformin 500 mg, TABLET, PO BID	0900		
5/12/14	5/19/14		Metoprolol 50 mg, 2 TABLETS, PO, BID	0900	2100	





Verify the patient has on the correct name band

Compare patient identifiers on the MAR with those on the patient's name band.

Please tell me your name and birthdate



Patient, John Q MDCN 123456789	
Admission Date: 01/01/18	Room: 101
Diagnosis: MI/Isch	Birthdate: 05/14/1955
Gender: Male	Height: 5'7"
	Insurance: Medicaid

Nursing Orders			
Order	Time	Medication	Notes
12345	08:00	Medication: Morphine 2mg IV q4h PRN	
12346	10:00	Medication: Morphine 2mg IV q4h PRN	

