**Key Element VI: Medication Device Acquisition, Use, and Monitoring**

The potential for human error is mitigated through careful procurement, maintenance, use, and standardization of devices used to prepare and deliver medications.

Sanitary practices are followed when using devices and equipment to store and prepare medications.

**Background**

Appropriate safety assessment of drug delivery devices prior to their purchase and during their use is key to safe medication administration. Competency in using drug delivery devices is paramount. For example, error reports from ISMP MERP indicate that a frequent cause of medication errors during drug administration is unfamiliarity with devices by both healthcare professionals and patients. When the variety and type of drug delivery devices are kept to a minimum, it is easier for staff to maintain the necessary expertise to safely administer medications. However, as new devices come to the market, it is essential that training tools for proper use and potential hazards be available to the trainers and to the patients.

**Errors with Medication Device Acquisition, Use, and Monitoring causative factors**

**Example VI-1:** ISMP has received reports of medication errors that have occurred when using pen injectors. Problems reported with the devices include error-prone device design, dispensing errors due to look-alike names, and mistaking multi-dose devices as single dose.

**Recommendations**

**Example VI-1:** Patient education with face to face counseling and actual demonstration of the device is crucial when prescribing or dispensing pen injectors. Some injectors come with a “demo” device for the patient to practice correct technique. Pharmacies should make sure they have “demo” devices to use for patient training.

**Error-prone device design:**

*Figure VI-1* Pen is marked in mL but the drug is actually dosed in mg
Figure VI-2  The black end (left) shields the needle. The grey safety cap (right) must be removed before use – not an intuitive design for patients

Figure VI-3  Notation that the pen contains a 28-day supply is small and has been overlooked resulting in the entire contents being delivered as a single dose

Errors with Medication Device Acquisition, Use, and Monitoring causative factors

Example VI-2:  A mother discovered she had been incorrectly measuring her child’s dose of ranitidine syrup. The mother had been given a MONOJECT oral syringe (Tyco/Kendall) with metric and apothecary (minim) scales and had been measuring 3.5 minim (0.22 mL) using the apothecary scale on the syringe, rather than the correct dose of 3.5 mL.

Recommendations

Example VI-2:  Tyco/Kendall has agreed to remove the minim scale from any syringes where it remains. They are also removing a terminal zero (1.0) on the syringe’s metric scale. Pharmacists should provide a hands-on demonstration of how to measure liquid doses and require a return demonstration by the patient to ensure understanding of proper use of oral syringes.

VI. Common Contributing Factors Involving Medication Device Acquisition, Use, and Monitoring

| Measuring device not dispensed with oral liquid medication |
| Automated dispensing devices not calibrated, maintained or cleaned |
| Compounding equipment not cleaned after use, resulting in next compounded product being contaminated or adulterated |
| Written instructions from manufacturer to patient/user limited or incomplete |
| Samples of devices not available for pharmacists to use for patient education during counseling sessions |
## VI. Medication Device Acquisition, Use, and Monitoring Suggested Risk Reduction Strategies

### Onsite Staff Implementation

- **Using the “teach back” method, teach patients how to use measurement and monitoring devices**
- **Perform manufacturers’ suggested maintenance, calibration and cleaning schedules on all automated dispensing devices**
- **Ensure newly cleaned equipment and measuring devices are used for each compound**
- **Staff members use gloves or proper hand washing when handling individual loose oral solid products (e.g., capsules, tablets, etc.)**
- **Staff members use appropriate hand washing procedures prior to compounding any prescription products (e.g., liquids, ointments, capsules, etc.)**
- **Dispensing devices (e.g., counting trays, mortar and pestle, etc.) are washed after being used to prepare chemotherapy, penicillin, sulfonamide, opiate, or NSAID prescriptions**
- **Only clean (washed) measuring devices are used for compounding liquids, ointments and capsules**

### Corporate/Owner Action

- **Institute policy to dispense all oral solutions with appropriate measuring device**
- **Perform failure mode and effects analysis (see glossary, FMEA) on all automated dispensing devices and computer systems before purchase or implementation**
- **Institute hand washing policies prior to and during shifts as needed**
- **Obtain sample devices from manufacturers to be used for patient education/demonstration**

### Quick Check Question: Medication Device Acquisition, Use, and Monitoring

1. Pen injectors that deliver medication in specified doses are error-proof.

   A. True  
   B. False

   **Answer:** B. Pen injectors that deliver medication in specified doses are far from error-proof. The wide variety of pen injector designs makes it difficult for healthcare practitioners to learn how to use them properly and maintain competency. In fact, there have been many medication error reports describing misuse of pen injectors. For example, unintentional epinephrine injections from epinephrine pen injectors have occurred many times in patients, health care
professionals, and innocent bystanders.\textsuperscript{16} Pharmacies should make sure they have “demo” devices to use for staff education and patient training, and, of course, any healthcare practitioner who is prescribing or dispensing these injectors should be familiar with their use. Providing patient education for all medical devices and utilizing the “teach back” method are ways to minimize the risk of error with these injectors.