

# Medication Vial Safety

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Thousands of patients have been adversely affected by the misuse of single use and multiple-dose medication vials, causing infections which include bacteremia, hepatitis, meningitis, and epidural abscesses.<sup>1,2</sup> From 2007 through 2012 the CDC was aware of 19 outbreaks associated with single-use medication vials.<sup>2</sup> Single-use vials typically lack preservatives and using these vials more than once carries substantial risks for contamination and infection.<sup>1,2</sup> Unsterile double dipping can occur when a previously used needle and/or syringe is used to get more of the medication, which can potentially contaminate the vial.

A survey of 5,446 healthcare providers<sup>3</sup> (the majority being RNs) found that: 6.0% sometimes or always used single-use vials for more than one patient. 0.9% sometimes or always reused a syringe but changed the needle for use on a second patient. 15.1% reused a syringe to enter a multi-dose vial. 6.5% of that group or 1.1% of the total surveyed, saved that vial to use on another patient.

## Single-Use Vial Recommendations

- Use a single-use vial in a single patient for a single procedure or injection.
- Disinfect the vial's rubber diaphragm by wiping with sterile 70 percent isopropyl alcohol, or other approved antiseptic, and allowing it to dry before inserting the needle.
- If a single-use vial must be entered more than once, use a new needle and new syringe for each entry.
- Single-use vials should be discarded after one usage.<sup>1,2</sup>

## Multiple-Dose Vial Recommendations

- Only vials labeled by the manufacturer for multiple-dose use, and which contain preservative should be used more than once.
- Disinfect the diaphragm each time needle entry is made. Use a new needle and syringe

for each entry.

- To avoid contamination, do not leave needles in the entry diaphragm between uses.
- After puncturing the diaphragm of a multiple-dose vial, mark the vial with an expiration date. Unless otherwise specified by the manufacturer, the standard expiration date for a multiple-dose vial is 28 days.
- Use and store multiple-dose vials outside the immediate patient treatment area to avoid unsterile double-dipping into the vial and prevent contamination from a dirty procedure.
- Limit the use of a multiple-dose vial to *one* patient whenever possible.

While the majority of healthcare workers practice correct medication vial safety, a significant minority do not, which can lead to serious morbidity in patients. We should all ensure that everyone in the workplace uses medication vials correctly to avoid causing inadvertent harm.

*Editor's note:* When using either a single-use vial or a multi-dose vial, consider changing the needle after drawing up the medication or vaccine. This might decrease the risk of injection-site reaction either due to latex allergy or other idiosyncratic reaction due to any material left in the needle.

## References

<sup>1</sup>Preventing infection from the misuse of vials. Sentinel Event Alert, Joint Commission. Issue 52, June 16, 2014. Retrieved from [https://www.jointcommission.org/assets/1/6/SEA\\_52.pdf](https://www.jointcommission.org/assets/1/6/SEA_52.pdf) .

<sup>2</sup>Protect Patients Against Preventable Harm from Improper Use of Single–Dose/Single–Use Vials. Centers for Disease Control and Prevention. Updated: August 30, 2016. Retrieved from <https://www.cdc.gov/injectionsafety/cdcposition-singleusevial.html> .

<sup>3</sup>Pugliese G, et al: Injection practices among clinicians in United States health care settings. American Journal of Infection Control, December 2010;38(10):789-797.