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Multi-Dose Vials
FactFinder

Committed to providing helpful information to our members about key patient safety issues, the International Spine Intervention Society's Patient Safety Committee has developed a FactFinder series. FactFinders will explore and debunk myths surrounding patient safety issues. The intent of this FactFinder is to address questions that have been raised by Society members seeking guidance about the appropriate use of multi-dose vials for multiple patients.

Myth #1: "During injection procedures, we currently use multi-dose vials for multiple patients. In order to comply with CDC guidelines, we must discontinue this practice."

Fact: The current CDC guidelines discourage, but do not prohibit, the use of multi-dose vials for multiple patients; rather they provide guidance regarding the importance of following safe injection practices to prevent contamination.[1]

Multi-dose vials are labeled as such by the manufacturer and typically contain an antimicrobial preservative that inhibits the growth of bacteria. The preservative has no effect on viruses and does not protect against contamination when healthcare personnel fail to follow safe injection practices. CDC indicates that although multi-dose vials should be dedicated to a single patient whenever possible, if multi-dose vials must be used for more than one patient, the vial should not be kept or accessed in the immediate patient treatment area, and both the needle or cannula and syringe used to access the multi-dose vial must be sterile. This is to prevent inadvertent contamination of the vial through direct or indirect contact with potentially contaminated surfaces or equipment that could then lead to infections in subsequent patients. If a multi-dose vial enters the immediate patient treatment area, it should be dedicated to that patient only and discarded after use.

Myth #2: The use of a multi-dose vial protects patients from infection or a potential outbreak.

Fact: While the multi-dose vial contains an antimicrobial preservative that inhibits the growth of bacteria, if there is a breach in sterile technique and the contents become contaminated, patients are at risk for developing a bacterial infection. In the event of viral or fungal contamination, there is no protection offered from a multi-dose vial and patients are at significant risk for infection.[2-4]

The investigation of four large outbreaks of Hepatitis B (HBV) and Hepatitis C (HCV) among patients in ambulatory care facilities in the United States (which included a pain clinic) found breaches in safe injection practices.[2] The primary breaches that

contributed to these outbreaks were reinsertion of used needles into a multi-dose vial or solution containers, and use of a single needle or syringe to administer intravenous medication to multiple patients. In one of these outbreaks, the sharp container was in the same workspace where the preparation of medications occurred.

An outbreak of HCV was identified and linked to contamination of a multi-dose saline vial in the hospital setting.[3] Three of four patients who received saline flushes from a multi-dose saline vial had acute HCV infection, whereas none of the nine patients who did not receive saline flushes had HCV infection (P = .01). A cluster of four patients with HCV infection was identified in a surgery clinic, and all cases were linked to a multi-dose vial of fentanyl contaminated by reused injection materials.[4]

These and other outbreaks of viral hepatitis could have been prevented by strict adherence to aseptic technique for the preparation and administration of medications, including use of single-use, disposable needle and syringe for each injection given. Whenever possible, the use of a single dose vial is preferred over multi-dose vials, especially when medications are administered to multiple patients.

Myth #3: Multi-dose vials should be refrigerated in order to deter bacterial growth.

Fact: While most multi-dose vials contain preservatives that allow for refrigeration, some antimicrobial preservatives are less effective at lower temperatures.[5-8] Since refrigeration of vials containing those preservatives actually reduces their antimicrobial effectiveness, vials should be stored in accordance with the manufacturer's recommendations and discarded if sterility is compromised.

References:

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