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# Best Practices for MANAGING MEDICAL EQUIPMENT AND SUPPLIES Stored in a Vehicle

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Home care clinicians often have to transport supplies to patients' homes, and remove and transport items from the home after care is provided. This article will provide guidelines and best practices for the proper methods of managing and storing infection prevention and control supplies and regulated medical waste in a home care clinician's personal vehicle.

One of the unique characteristics of providing care in the home setting is the need for home care clinicians to bring equipment and supplies with them to the home. Typically, patients don't have all of the necessary medical supplies in their homes. As such, the home care clinician stores equipment and supplies that may be needed to provide patient care in their nursing bags and in their vehicles. After a visit



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The principles for a product's shelf life assume that as long as a product has been stored properly, has not exceeded its expiration date, and the packaging for a sterile product and its contents have not been compromised, the products and supplies may continue to be used in patient care.

the home care clinician may need to remove items from the home and temporarily store and transport them in their vehicles for final cleaning or disposal (e.g., regulated medical waste). It's important that the equipment and supplies in the home care clinician's possession be stored in a manner that protects the integrity of the products and supplies in order to prevent a home care-onset healthcare-associated infection. Home care clinicians may drive to home visits in a vehicle that is either an automobile, a multipurpose van, a sports utility vehicle, or a pick-up truck and store their medical supplies, nursing bag, and medical waste in a closed compartment, usually in the rear of the vehicle. The term "trunk" will be used generically to address the interior, rear storage area of the vehicle. This article will provide guidelines and best practices for the proper methods of managing and storing infection prevention and control supplies and regulated medical waste in a home care clinician's personal vehicle.

### Time-Related Shelf Life and Event-Related Shelf Life

The length of time that products and supplies may remain "in use" and be stored in the home care clinician's vehicle is based on the "time-related shelf life" or an "event-related shelf life." A time-related shelf life is the time when the product expires, according to the manufacturer's expiration date, and can no longer be used. Examples of infection prevention and control items that can expire and be stored in the home care clinician's vehicle include: alcohol-based hand hygiene products, some wound care supplies, and disinfectants. An event-related shelf

life is an event that would cause the medical supply package to become contaminated, such as if a package becomes wet or torn, or a seal is broken, and the contents inside the package can no longer be used. The Centers for Disease Control and Prevention (CDC) also recommends that medical supplies be stored in a well-ventilated area that provides protection against dust, moisture, temperature, and humidity extremes (CDC, 2008). The medical supplies stored in the trunk can be protected from becoming wet or torn, and from dust and moisture by storing the supplies in a clean, covered plastic container (not a cardboard box), which is now a common practice by home care clinicians. The principles for a product's shelf life assume that as long as a product has been stored properly, has not exceeded its expiration date, and the packaging for a sterile product and its contents have not been compromised, the products and supplies may continue to be used in patient care.

### Vehicle Stock Inventory Management

Event-related factors that contribute to the contamination of a product include humidity and temperature extremes. Protecting sterile supplies from temperature and humidity extremes can be very difficult when storing them in a nontemperature-controlled portion of the vehicle (e.g., trunk of an automobile). The home care clinician should review the inventory of supplies stored in the vehicle to determine which products and supplies have a manufacturer-specified storage temperature range. Examples of infection prevention and control supplies that may be stored in the home care clinician's vehicle include: alcohol-based hand

**Table 1. Best Practices for Storing Patient Care Supplies and Other Items in the Vehicle**

1. Maintain a standardized inventory of products and supplies in minimal quantities based on the patient population served.
2. Identify which products and supplies must be stored with a manufacturer-specified temperature range.
3. Identify which products and supplies contain a manufacturer-specified expiration date.
4. Store the inventory of supplies and items in a covered plastic container(s).
5. Organize the supplies and other items separately in the vehicle by:
  - a. Those with a manufacturer-specified expiration date;
  - b. Those with a manufacturer-specified storage temperature range;
  - c. Product type and/or use in patient care; and
  - d. Soiled equipment or regulated medical waste being transported to a designated location for final cleaning and/or disposition.

Source: McGoldrick, M. (2015). Storage of patient care supplies in a vehicle. Cleaning and disinfection. In *Home Care Infection Prevention and Control Program* (p. 24). Saint Simons Island, GA: Home Health Systems, Inc. Used with permission.

hygiene products, some disinfectants, and prefilled venous access device flushing syringes, such as heparin. A liquid alcohol-based hand hygiene product can be visually identified when it has been exposed to high temperatures, as the container will swell in diameter. Other products can be difficult to visually identify if the temperature storage range has been exceeded. Gloves stored in boxes exposed to high temperatures can result in a breakdown of the glove material, leading to the gloves not functioning as a protective barrier as intended. The gloves “sticking together” when removed from the box can identify this and the gloves should not be used.

To avoid having the products and supplies that must be stored within a manufacturer-specified storage temperature range being improperly exposed to temperature and humidity extremes while being stored in the trunk of a vehicle, it is recommended that the products and supplies be stored:

- In separate storage containers in the vehicle in minimal quantities to support frequent stock rotation.

- Primarily in the nursing bag to lessen the product and supplies’ exposure time to temperature extremes.
- In manner that supports temperature monitoring, during certain months of the year based on the organization’s geographical location, such as by a thermometer that simultaneously displays the current temperature and daily minimum and maximum readings and automatically clears and updates the minimum and maximum temperatures daily. When used, the home care clinician should visually check the temperature displayed on the thermometer daily and take the necessary actions to assure that the temperature range is not exceeded (e.g., moves the container to a temperature-controlled portion of the vehicle, etc.).
- In another location and not in the vehicle if the manufacturer-specified temperature range cannot be maintained (McGoldrick, 2015a).

The quantity of all supplies stored in the vehicle, not just those that must be maintained within a manufacturer-specified storage temperature range, should be limited to that which is essential to provide care based on the patient population served. Some home care clinicians, primarily nurses, store a myriad of medical supplies in their vehicle in very large quantities “just in case they are needed,” yet others keep a “lean,” well-organized, standardized inventory. Table 1 contains recommended best practices for storing patient care supplies and other items in the staff’s vehicle.

### Vehicle Inventory Inspection Time Frame

It is the home care clinician’s responsibility to independently check supplies stored in their trunk to make sure that items are properly stored and have not expired. There are no standards or guidelines for the frequency with which the home care clinician’s “car stock” or inventory should be inspected. Each home care and hospice organization should define in policy the frequency with which the supplies stored in the vehicle need to be checked for expired products and for products that have had their integrity impaired. The suggested frequency for

inspecting the supplies stored in the vehicle is monthly, sometime during the end of the last week of each month. Products and supplies that have an expiration date, expire on the last day of the month. Therefore, if the trunk inventory inspection occurs at the end of the month, the products and supplies that will go “out-of-date” can be removed and replaced. Also, if the products and supplies that contain an expiration date are kept in one specified area or plastic container (instead of being disbursed throughout the supplies stored in the plastic containers), then the home care clinician can quickly check their inventory for expired items.

### Storage Container Cleaning

There are no standards or guidelines for the frequency with which the home care clinician’s vehicle storage containers need to be cleaned. Each home care and hospice organization should define in policy the minimum time frame for how often the storage containers should be cleaned. A suggested frequency for cleaning the storage containers would be on a periodical basis (e.g., quarterly) or at the same time that the stock of supplies is checked, sometime during the end of the last week of the month. Table 2 contains the steps to properly maintain and inspect the inventory of supplies and other items stored in the vehicle.

### “Clean Side of the Trunk” Versus the “Dirty Side of the Trunk”

One of the “myths” regarding the home care clinician’s trunk storage area is that there should be a designated “clean side” and “dirty side” of the trunk to place the “dirty” equipment. Typically, equipment, such as vital sign equipment that was dedicated to a patient during care that requires additional cleaning and disinfection and removal from the home, and regulated medical waste are the common types of “dirty” or “soiled” equipment or supplies that would be stored in a home care clinician’s personal vehicle. Dedicated vital sign equipment should be placed in a plastic bag before being removed from the home and then placed in the designated plastic container with a cover in the vehicle for the storage of “soiled” equipment or supplies and regulated medical waste. There does not need to be a “clean side” and “dirty side” of the trunk, but there must be a

**Table 2. Inspecting and Maintaining Patient Care Supplies Stored in a Vehicle**

1. Check the expiration date on a monthly basis for the products with a manufacturer-specified expiration date; discard items as indicated.
2. Check the temperature daily (during the organization-designated timeframes, if any [set based on temperature extremes for the geographic area served]) of the contents stored in the designated container(s) for products with a manufacturer-specified storage temperature range; take action as indicated to assure that the storage temperature range is not exceeded (e.g., move the container to a temperature-controlled portion of the vehicle, etc.).
3. Inspect each package’s integrity for evidence of contamination on a monthly basis for all other patient care supplies stored in the vehicle; discard as indicated.
4. Check the contents of the container designated for storage of “soiled” items pending final cleaning and disinfection (e.g., dedicated vital sign equipment) or temporary storage of regulated medical waste for final disposal. Remove all items from this designated container as soon as possible after being placed in the vehicle, except for a nonfull, “in-use” sharps container.
5. When the storage containers are cleaned, temporarily place the items from each container in a plastic bag (do not comingle an “in-use” sharps container with the medical supplies). Clean the storage container(s) with a disinfectant wipe; use multiple wipes as needed to cover the surface size of the container and allow to air dry. Replace the supplies in the cleaned storage container(s).
6. Restock the inventory of supplies discarded, as needed; place new stock items behind or under the items currently stored in the vehicle.

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physical separation (which can be accomplished through the use of plastic containers or other means) and no comingling of regulated medical waste or other soiled equipment with the clean patient care equipment and supplies stored in the vehicle.

### Regulated Medical Waste Storage

Another unique aspect of providing care in the home is that the home care clinician needs to transport the regulated medical waste generated during the course of care (by the staff member and not the patient or caregiver) to a designated location for its final disposal. The regulated medical waste (e.g., an “in-use”

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The home care clinician should review the inventory of supplies stored in the vehicle to determine which products and supplies have a manufacturer-specified storage temperature range.

sharps container [a sharps container with used needles, blood discard in a syringe or a vacutainer tube when collecting a blood specimen from a central line, etc.] or less frequently, medical waste from a blood soaked, saturated dressing stored inside a red biohazard bag) may need to be temporarily stored in the vehicle for transport. The “in-use” sharps container needs to remain closed at all times during transport to prevent used equipment from falling out of the container. Other types of regulated medical waste generated in the home (e.g., pleural fluid or peritoneal fluid removed through a drainage system) should be disposed of in the home and flushed down the toilet into the sewer system (McGoldrick, 2015c).

### Nursing Bag Placement in the Vehicle

Bed bugs are notorious “hitchhikers” and can drop off of the nursing bag inside the vehicle. If there is a concern of a bed bug infestation in

the patient’s home or in the geographic area served, the nursing bag should be placed in the vehicle inside of an open plastic container with high sides. Bed bugs move by crawling and will not be able to crawl out a plastic container with smooth sides and high surfaces. Once bed bugs are inside a vehicle, they may be difficult or impossible to remove. Otherwise, the nursing bag should be placed on a visibly clean, dry surface in the vehicle (McGoldrick, 2014).

### Summary

Home care clinicians typically dread hearing the phrase “let’s go check your truck.” If the patient care supplies and soiled items are managed in the manner described in this article, the staff will never have to worry about their trunk supplies being checked during an “unannounced supervisory visit” or “survey,” as the vehicle will never contain expired products and supplies, and the products and supplies will be “ready for patient use.” 🏠

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