

## There Is More to Medication Storage Than Meets the Eye

Aug 25, 2021

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**Pharmacy Times Oncology Edition**

August 2021

Volume 3 Issue 4

*Technicians play a key role in this vital element of pharmacy operations, protecting drug efficacy and against errors.*

Over the past 20 years, the expectations and roles of pharmacy staff members have changed drastically to meet the ever-changing demands of health care.

Pharmacists have taken on a greater role providing direct patient care as clinicians, resulting in greater reliance on pharmacy technicians. Among the many areas traditionally overseen by pharmacists where technicians have assumed responsibility, medication storage may be one of the most important. Medication storage is a vital element in pharmacy operations that affects many areas, from clinical practice to regulatory compliance. Improper storage of medications can result in a decrease in drug efficacy and may also lead to medication errors.

According to the World Health Organization, "Unsafe medication practices and medication errors are a leading cause of injury and avoidable harm in health care systems across the world," and because pharmacies are usually the last stop in the drug supply chain, technicians play an essential role in ensuring medication quality, from procurement through dispensation to patients.<sup>1</sup>

There is more to medication storage than meets the eye. Too often, the detail and effort that technicians put into complying with medication storage requirements are overlooked. Technicians are expected to understand proper medication handling, monitoring, and storage requirements, and without their expertise, pharmacies would lack crucial knowledge. Technicians face many challenges when storing medications, including environmental factors, hazardous material handling, identifying high-alert medications, legal requirements, location limitations, and specific manufacturer precautions. Without the commitment and dedication that technicians put into every aspect of their job, otherwise avoidable incidents might occur.

"One of the most easily overlooked factors that can directly impact the quality of a drug product is the condition in which medications are stored," wrote Dantuma et al in a recent article in *Pharmacy Purchasing & Products*.<sup>2</sup>

Not all medications are stored in the same manner, and environmental conditions, such as light, moisture, and temperature affect drug quality. Storage temperatures vary from medication to medication and range from room temperature to subzero temperatures. Humidity, light, and moisture can accelerate product degradation and affect a medication's stability. Generally, proper identification and management of storage requirements will result in appropriate pharmacy practices. However, pharmacies face many challenges every day, and technicians must be prepared to tackle any crisis to ensure medication integrity and mitigate any potential medication loss. Not only do environmental conditions affect proper medication storage, but specific storage requirements can create challenges as well.

With the continued development of medications and new vaccines, pharmacies face storage issues every day. The COVID-19 pandemic has created many challenges for pharmacies, but the biggest hurdle technicians have faced is the specific storage requirements for these new vaccines. Not only are there stringent guidelines that must be followed, but each vaccine has its own specific requirements. This places an emphasis on both proper storage and being knowledgeable about proper storage.

With Pfizer Inc the first to get emergency approval for its vaccine, demand was extremely high. Pharmacies not only faced the challenge of obtaining the vaccine, but also complying with its storage requirements. With a new vaccine of such importance, maintaining its integrity is paramount. Technicians must ensure that vaccines are stored in subzero temperatures and that there are minimal interruptions in the cold chain from procurement to administration. They are required to document and monitor every dose that enters and leaves the pharmacy.

Every day, technicians must keep these medications secure, upholding their integrity and managing any issues that may result in improper storage. The biggest hurdle created by the Pfizer vaccine is the extremely low temperature at which it must be stored. With many pharmacies lacking the subzero freezers necessary to store the vaccines, reusable shipping containers were offered as a solution. Although this allowed for more pharmacies to obtain the vaccine, it created additional responsibilities—and monitoring that fell on technicians.

Technicians are expected to be aware of, and follow, the different guidelines for each vaccine. The approval of the Moderna vaccine allowed for greater distribution while having less stringent storage conditions. Like Pfizer, the Moderna vaccine must be stored frozen until use. However, it does not require subzero temperatures. Vaccines vary when it comes to stability, whether for long-term storage, thawing for administration, or after it has been brought to room temperature.

For all vaccines, timing is critical—from preserving the cold chain when replacing dry ice in reusable containers to documenting beyond-use dating and timing for those brought to room temperature. The efficacy of the vaccine is dependent on the allotted time set by the manufacturer. Timing may seem like a minuscule detail, but when pharmacies started receiving vaccines, they were sent the vaccines that were available, resulting in shipments containing multiple manufacturers. Even though this practice provided greater public accessibility to the vaccine, it created additional responsibility and stress for pharmacy staff members. With so many critical standards for each vaccine and variables among these standards, technicians must be detailed and precise when it comes to proper storage and monitoring.

The added stresses of the pandemic, coupled with the shortage of vaccines, made proper storage even more critical. If vaccines were compromised because of a break in the cold chain or inaccurate storage, individuals' lives could be affected. Without technicians stepping in and taking responsibility for assuring that proper precautions were followed from procurement through administration, thousands of vital doses could have been lost. Technicians are, undoubtedly, a key factor in many of the day-to-day operations within pharmacies, especially when it comes to storage, to maintain the integrity and safety of medications.

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*The National Healthcareer Association (NHA) is honored to partner with Pharmacy Times to educate and to advocate for pharmacy technicians. To learn more about NHA's resources for techs, visit <https://info.nhanow.com/onepartner>.*

## REFERENCES

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