Executive Summary

Undoubtedly, one of the biggest impacts of Health Care Reform to the Long-Term Care (LTC) industry will be the requirement for LTC pharmacies to adopt dispensing techniques, “such as weekly, daily, or automated dose dispensing” by January 1, 2012. The Patient Protection and Affordable Care Act, signed into law by President Obama on March 23, 2010, includes the following language:

SEC. 3310. REDUCING WASTEFUL DISPENSING OF OUT PATIENT PRESCRIPTION DRUGS IN LONG TERM CARE FACILITIES UNDER PRESCRIPTION DRUG PLANS AND MA–PD PLANS.
(a) IN GENERAL.—Section 1860D–4(c) of the Social Security Act (42 U.S.C. 1395w–104(c)) is amended by adding at the end the following new paragraph:

“(3) REDUCING WASTEFUL DISPENSING OF OUTPATIENT PRESCRIPTION DRUGS IN LONG-TERM CARE FACILITIES.—The Secretary shall require PDP sponsors of prescription drug plans to utilize specific, uniform dispensing techniques, as determined by the Secretary, in consultation with relevant stakeholders (including representatives of nursing facilities, residents of nursing facilities, pharmacists, the pharmacy industry (including retail and long-term care pharmacy), prescription drug plans, MA–PD plans, and any other stakeholders the Secretary determines appropriate), such as weekly, daily, or automated dose dispensing, when dispensing covered part D drugs to enrollees who reside in a long-term care facility in order to reduce waste associated with 30-day fills.”

(b) EFFECTIVE DATE.—The amendment made by sub-section (a) shall apply to plan years beginning on or after January 1, 2012.

This provision is guaranteed to have a major impact on LTC pharmacies, facilities, and the industry as a whole. As a result, LTC pharmacies are extremely concerned about the effort and costs associated with making the transition from traditional 30-day dispensing. Therefore, it is vital for LTC pharmacy operators to understand the various dispensing models, technology, and automation in order to prepare for when the legislation goes into effect.

This white paper details each of the two main LTC pharmacy distribution models, centralized and decentralized (facility-based) dispensing. Advantages and disadvantages, implementation considerations, supporting automation, available products, and current providers using these models are provided. In addition, this white paper attempts to expose LTC pharmacies to the important billing and regulatory issues related to “7-day or less” dispensing. Next, waste-reducing alternatives to “7-day or less” dispensing, and the possible reasons why they are not currently being considered, are explored. And finally, several recommendations are given to LTC pharmacy operators on how to be prepared and take action.

Background on Medication Waste

Medication waste has been a concern in Long-Term Care before Medicare Part D, when Medicaid was the primary payer of medications. As a result, several states currently require pharmacies to employ...
techniques to reduce waste, such as reduced dispensing quantities. Since the inception of Part D, CMS has been investigating methods to reduce waste for Part D beneficiaries residing in LTC facilities. With the Obama Administration’s focus on Healthcare Reform, Centers for Medicare and Medicaid Services (CMS) has recently put significant emphasis on eliminating fraud, waste and abuse in Medicare and Medicaid. This prompted CMS to get the medication waste provision added to the legislation. Now, as a result, LTC pharmacies will be required to adopt these new methods by 2012.

Everyone recognizes that medication waste in Long-Term Care has both economic and environmental repercussions. In December of 2009, The Congressional Budget Office (CBO) determined that medication waste in Long-Term Care would cost Medicare $5.7BB over the next 10 years. While the accuracy of this figure can be debated, it is clear that medication waste costs taxpayer money. The concern is whether the investment required to reduce the waste will exceed the cost savings. One of the nation’s largest LTC pharmacies does not believe so. In a recent meeting organized by the National Council of Prescription Drug Plans (NCPDP), the company said they believe it would cost an additional $7 just to save $1.

However, recent research has shown that Part D plans save over $1,200 per resident per year by dispensing medications daily, instead of in 30-day supplies. Extrapolating this data across the approximately 1 million Part D beneficiaries residing in LTC facilities, dispensing in daily supplies would save Part D plans $1.2BB annually. On the other hand, other research has shown as high as 95% utilization of Part D medications dispensed to LTC residents in 30-day supplies. Still, assuming an average of 10 prescriptions per resident at $50 per 30-day prescription, 95% utilization equates to $300 annually per resident in waste. Even using these conservative estimates, medication waste costs the Part D plans at least $300 million per year or $3BB over 10 years. The follow chart shows the estimated annual cost of medication waste for Part D beneficiaries residing in LTC facilities. While more research and analysis is needed, these figures clearly indicate that medication waste in LTC has a significant economic impact.
Furthermore, CMS has indicated that cost is not the only issue. The Environmental Protection Agency (EPA) expressed serious concerns about the medication disposal practices of LTC facilities that can lead to contaminated water supplies. The Associated Press (AP) recently released a study concluding that over 250 million pounds of pharmaceutical waste is generated annually by U.S. hospitals and LTC facilities (Donn, Mendoza, & Pritchard, 2008). The unused medications are often flushed directly into the wastewater, polluting the water supply and causing significant harm to plant and animal life. The Drug Free Water Act, Safe Drug Disposal Act, and Secure and Responsible Drug Disposal Act were all introduce into the U.S. House of Representative in 2009 to address the issue. As a result, CMS is looking for solutions that address both the economic and environmental impacts of medication waste in LTC.

Since the legislation has passed, CMS is now working on the regulations and rule making that will provide the ultimate guidelines to the LTC pharmacies and Part D plans. Now is the time for LTC pharmacy operators to get smart about their options.

What Are the Options?

This white paper breaks down the LTC pharmacy distribution systems into two main categories: Centralized Dispensing and Decentralized (Facility-Based) Dispensing. Within each category, several types of automated systems that support “7-day or less” dispensing are analyzed on several factors, including operational efficiency, pharmacy dispensing costs, capital requirements, and timeliness and accuracy of medications.

Centralized Dispensing

Centralized dispensing involves a local or regional pharmacy, generally located within 2-4 hours from the nursing facilities they service. These pharmacies dispense medications at the pharmacy and deliver to each facility twice or more per day. LTC Pharmacies that operate using a centralized distribution model have three basic options for dispensing systems: manual dispensing, punch card automation, and multi-dose strip packaging. Centralized dispensing is the most common medication distribution model used in Long-Term Care today.
**Manual Dispensing**

When faced with the requirement to reduce dispensing quantities, most LTC pharmacies will opt to manually dispense 7-day supplies. Of all the distribution models, this has the lowest barriers to entry and there are no capital requirements for technology or infrastructure. Furthermore, most LTC pharmacy operators, especially the small, independent “mom-and-pops,” believe that they cannot afford automated dispensing systems or are simply unaware of their alternatives. Therefore, these pharmacies will simply reduce the supply from 30 to 7 days and dispense medication more often.

However, dispensing the same prescription more than 4 times as often will significantly increase the pharmacy’s dispensing costs. As an example, approximately 60% of the cost to fill a prescription, including wages and supplies, are directly tied to each dispense. Therefore, if the cost to dispense a 30-day supply is $12.50 per script, 60% of that cost would be incurred 3 more times per month when going to a 7-day supply. As a result, the pharmacy’s dispensing costs would increase by $22.50 per script per month. One option to avoid the increase in labor is to outsource to a third-party re-packager and receive medications in pre-packed 7-day quantities. However, this comes at an additional expense and would likely increase inventory carrying costs.

In addition, the nursing facility would be receiving and storing four times the number of punch cards, cassettes, or other packaging. This increase in volume will significantly raise the facility’s costs for handling medications. Furthermore, refills would need to be requested much more often, adding to the expense. In order to help reduce that effort, many pharmacies would convert to automatic cycle fills, rather than requiring refills to be requested. Doing so would further increase the pharmacy’s dispensing costs and would likely result in additional waste. Furthermore, the volume of packaging waste, which has its own environmental impacts, would grow considerably. And finally, increasing the number of times a medications is handled by a human, increases the likelihood of an error.

Therefore, without the use of automation, adopting “7-day or less” dispensing methods will be extremely costly. Both the pharmacy and facility operators would experience significant cost and labor increases and the cost savings on the waste would not likely make up the difference. And perhaps most importantly, it puts residents at a higher risk of danger because of the additional opportunity for error. As a result, the Long Term Care Pharmacy Alliance (LTCPA) is very opposed to the legislation, outlining their issues in detail in [their response to the medication waste provision](#).

**Punch Card Automation**

The first option to consider when automating a centralized pharmacy is the use of punch card automation. These systems automate the process of filling, sealing, and labeling punch cards. There are a wide variety of systems, features, functions, and price points available on the market. These systems range from basic heat sealers that resemble a t-shirt press or pizza oven to fully automated “just-in-time” systems that can produce 600 patient-specific punch cards per hour. And, since 90% or more of the volume of doses dispensed in Long-Term Care are oral solids, most of the focus is on those medications. Therefore, considerations for handling the other medications must also be taken into account.
The most common type of punch card automation is pre-packing systems. Pharmacy technicians operate these systems by filling a large number of punch cards, one medication at a time. Because these systems are not designed to quickly switch between medications, they are used to pre-pack high-volume medications. Pharmacies would certainly see increased accuracy and labor efficiency as a result of this type of automation. However, without enough volume, the time spent switching between medications would exceed the time saved filling each card. Therefore, there is a break-even point where pre-packing systems begin to capture significant economies of scale. However, small, independent, mom-and-pops generally do not have enough volume to see any real benefits.

On the other hand, “just-in-time” systems are capable of handling large and small volumes for a wide variety of medications. These systems produce patient-specific punch-cards and can be easily configured to dispense in quantities of 7-days or less, although the punch cards are typically designed for 14 or 30-days. Some of the systems can even dispense medication in multi-dose punch cards, which have shown to reduce medication errors. And, because these systems are capable of easily switching between medications, significant labor savings can be realized. Furthermore, these “just-in-time” systems are capable of reducing inventory and improving the pharmacy’s cash flow. However, these systems can be extremely capital intensive and, as a result, many pharmacies cannot afford this type of automation. Although that is changing, as more economical “just-in-time” solutions are just beginning to emerge in the marketplace.

Pharmacies that have already invested in punch card automation will be able to adopt “7-day or less” dispensing much faster and more cost effectively, putting them at a distinct advantage over pharmacies that still use manual processes. However, these pharmacies will still see increased dispensing costs, simply due to the sheer volume of punch cards required. And, this method presents the same issues as manual dispensing in regards to the additional labor required at the facility and the increase in packaging waste.

Centralized Strip Packaging
Over the past decade many LTC pharmacies have adopted pharmacy automation technology that dispenses medications in strip packaging. This fairly proven technology, which originated in the hospital pharmacy market, enables pharmacies to dispense medications in 7-day or less quantities. In fact, over 40% of LTC pharmacies that service more than 2000 beds operate automated strip packaging systems to some extent. However, while capable of dispensing patient-specific multi-dose packets, these systems are primarily used for drug-specific unit-dose packaging. In hospitals, and some LTC and Correctional settings, the systems are designed to replenish automated medication cabinets located in the nursing units. They are also used to restock medication carts in a cart exchange model, which is very rare in Long-Term Care.

However, many LTC pharmacies are using the systems to dispenses patient-specific multi-dose medications in 7-day or less quantities. Centralized strip packaging systems are commonly used for dispensing medications to residents in assisted, residential, or independent living facilities because the multi-dose packaging has shown to improve adherence and reduce errors. They are also used to dispense medications to higher acuity residents in skilled nursing facilities whose drugs are covered...
under Medicare Part A. This is typically done to reduce medication waste when the facility is responsible for the resident’s drug costs. And, because the packaging is easier to use, many nursing facilities prefer it over traditional punch cards. Preliminary analysis of multi-dose packaging has shown a 50% reduction in preparing and administering medications, giving nurses more time to provide care to the residents. Therefore, most pharmacies that utilize centralized strip packaging system do so in order to attract and capture new business by promoting the time and costs savings they can provide to the facility.

Due to their popularity in the hospital market, several centralized strip packaging solutions exist from a number of pharmacy automation vendors. As a result, costs are fairly competitive and features are similar. These systems are generally less expensive than the “just-in-time” punch card systems and tend to be less labor intensive to operate. However, the process can be extremely time-consuming when dispensing a high volume of medications, since a pharmacist must visually inspect every packet. Visual imaging systems that automate this process are being developed. Additionally, in large volumes, the medication packets can be very difficult to handle and transport. And, multi-dose packaging does not work well in a high acuity environment, because drug regimens are in constant flux. As a result, centralized strip packaging systems are best suited for 2-2-3-day or 3-4-day dispensing cycles. Several pharmacies have successfully adopted this model for all of the residents and facilities they service.

**Decentralized (Facility-Based) Dispensing**

When an LTC pharmacy operates in a decentralized model, medications are dispensed, often in daily or unit-dose supplies, onsite at the nursing facility. This is generally accomplished through the use of automated dispensing systems located at the facility. However, some nursing facilities operate a fully licensed in-house pharmacy, employing a full or part-time pharmacist. However, since less than 3% of the nursing facilities in the U.S. are large enough to support an in-house pharmacy, that model is not addressed here.

Decentralized (facility-based) dispensing provides two distinct benefits over a centralized model: elimination of medication waste and timely access to medications. Automated dispensing systems located at the nursing facility allow pharmacies to dispense only the medications that are needed at the time they are needed. However, LTC pharmacies simply cannot be expected to bear the cost of investing in automation at every nursing facility. Fortunately, as a result of the tremendous benefits realized by the facility, the residents, and care givers, many nursing home operators are sharing in the costs of these systems.

**Automated Medication Cabinets**

Most state pharmacy boards permit the storage of controlled substances and other medications for emergency use at the LTC facility without special licensing. Therefore, a standard practice for LTC pharmacies is to provide Emergency Dispensing Kits (EDK) for immediate “STAT” and first doses. EDKs range from simple tackle boxes to more sophisticated automated medication cabinets. Automated medication cabinets typically include a limited formulary of unit-dose medications that the nursing staff can access in emergency situations. The inventory in the automated medication cabinet is monitored and regularly replenished by the pharmacy.
Automated dispensing cabinets help prevent issues with diversion and improve dispensing accuracy over traditional EDKs. However, some states have yet to recognize and allow the use of automated dispensing cabinets in Long-Term Care facilities. And, in other states, because of regulatory limitations, these systems must have a limited formulary and can only be used for emergency purposes. Although, automated dispensing cabinets would not be practical for handling the volume of all medications, not just emergency doses, especially with larger resident populations. Therefore, ongoing doses must be fulfilled via another distribution model. However, several LTC pharmacies are beginning to combine the use of automated dispensing cabinets in the nursing facility with automated strip packaging in the pharmacy. Together, these systems make for a very compelling hybrid distribution model, especially for smaller facilities.

**Drug-Specific Medication Carts**

Drug-specific medication carts are a relatively new concept that was introduced by the LTC pharmacy automation leader, MTS. MTS MedTimes combines an electronic medication cabinet, medication cart, and electronic Medication Administration Record (e-MAR) into one system. Announced in 2006, it is the only known system of its kind on the market. Medications are stored in the cart in drug-specific punch cards. During the medication pass, nurses use the e-MAR to identify the patient, and locate the medications with pick-to-light and barcode technologies. However, because it was so recently introduced into the market, the system has only been approved for use in two of states, Ohio and Indiana. Yet, in concept, it is very capable of eliminating medication waste. Though, not all formulary items could be stocked onsite, so some medications would still need to be dispensed centrally. And, these systems cost considerably more than traditional medication carts. Plus, they would not provide the same nurse time savings as systems that dispense multi-dose packaging. However, because most medications are dispensed onsite in unit-dose quantities, waste is reduced and medications are more available, improving the quality of care. And, since these systems use standard punch cards, pharmacies that have a significant investment in punch card automation should consider them as an option for “7-day or less” dispensing.

**Remote Dispensing**

Remote Dispensing is another exciting and innovative concept recently introduced to Long-Term Care. Secure, automated remote dispensing systems are located onsite at the nursing facility, making medications immediately available to the nursing staff. Medications are dispensed in patient-specific multi-dose packages that have shown to reduce nursing time and reduce medication errors. As a result, nurses have more time to spend providing care to their residents. Because the medications are dispensed only as needed, unused medications are not dispensed and therefore never wasted. Analysis has shown that on-demand dispensing is almost twice as effective as 7-day dispensing at reducing waste. The process is automated, accurate, and remotely monitored by the pharmacy to ensure safety and prevent diversion. The systems quickly packages pharmacist-approved medications before each medication pass, or on-demand to facilitate new admissions, STAT orders, Leaves of Absence (LOAs), and PRN medications. Since a majority of medications are located onsite and delivered in bulk, pharmacy dispensing costs are dramatically lower compared to a centralized dispensing model. Medication canisters can be filled and processed in the same amount of time as a standard punch card.
However, since canisters hold 10 times the volume, pharmacy labor costs are dramatically reduced. And, since the medications are immediately available, STAT and backup delivery costs are practically eliminated.

However, regulations do not allow Remote Dispensing in all states. These systems have only been approved for use in LTC facilities in the following states: Texas, Maryland, Florida, New York, Indiana, and Pennsylvania. Many state boards of pharmacy, including those in Wisconsin, Maine, North and South Dakota, Minnesota, and Kansas are all considering the adoption of remote dispensing language into their pharmacy regulations. Furthermore, in August of 2009 the National Association of Board of Pharmacy (NABP) introduced language into their model rules regarding “Remote Dispensing” and the use of “Automated Pharmacy Systems” in institutional facilities, including Long-Term Care facilities, which do not require an onsite pharmacist. Even in states that do allow Remote Dispensing, a few require pharmacy personnel to restock the medication canisters. According to the NABP model rules, restocking can be performed by an employee of the nursing facility, as long as they are a licensed healthcare professional and have completed the required training.

What About the Billing Issues?
Under the current system, LTC pharmacies have no financial incentive to reduce medication waste. Prescription Drug Plans (PDPs) cover the cost of unused medications but have very little control over reducing waste. LTC pharmacies, on the other hand, directly affect the amount of medication waste by the dispensing techniques they utilize. However, LTC pharmacies are not currently required, incentivized, or even able to provide a credit for unused medications under Part D. As a result, LTC pharmacies have a direct economic penalty for reducing medication waste. Until pharmacies are equitably reimbursed for the lost revenue as a result of eliminating waste, they will have very little incentive to change.

Furthermore, simply mandating LTC pharmacies to dispense in smaller quantities does not address the entire problem. Billing processes and reimbursement models must be addressed as well. As a result, the NCPDP LTC Billing Issues and Task Group will be responsible for developing standardized billing processes and transactions to support the legislative change. This task group is open to current NCPDP members and participation is welcomed and encouraged. Over the next several months, the task group will identify issues and provide recommendations for billing processes, including options for prospective and retrospective billing. However, this group will not be responsible for determining any changes to the reimbursement structure.

In a recent NCPDP meeting, CMS Deputy Director of the Medicare Drug Benefit, Tracey McCutcheon recognized that LTC pharmacies should be compensated for their efforts to reduce waste. She also acknowledged that methods that do more to reduce waste should be reimbursed at higher rates. One way to accomplish this is to require the Part D plans to pay higher dispensing fees based on the dispensing methods utilized. However, CMS has not indicated exactly how LTC pharmacies will be reimbursed for reducing waste.
Do Alternatives Exist?
There are alternatives to “7-day or less” dispensing that address both the economic and environmental impacts of medication waste in Long-Term Care. So, why are they not being considered? These alternatives, along with possible explanations as to why CMS is not considering them, are provided here. These conclusions are based upon the combined knowledge of several LTC industry experts and do not reflect the opinions of CMS.

Return, Credit, and Reuse
Returning and reusing medications has proven to be one of the most effective measures for reducing medication waste in LTC. In order to reduce the costs of medications dispensed to residents covered under Part A, LTC pharmacies often accept returns. The pharmacies provide a credit for the unused medications, and, when allowed by state and federal regulations, restock and reuse the medications. Since most LTC pharmacies currently support this process, it would be a great way to reduce medication waste without requiring a significant investment in technology or infrastructure.

However, returning and reusing medications that have left the controlled environment of the pharmacy introduces serious clinical concerns. Furthermore, many regulatory barriers exist to make this process truly effective on a large scale. Finally, it can be extremely cost-prohibitive to the pharmacy. In many cases, pharmacies do not reclaim and reuse medications because the cost of labor exceeds the value of the inventory. Therefore, even though the medications are returned for credit, they are wasted at the expense of the pharmacy. For more information, see ASCP’s Policy Statement on the Return and Reuse of Medications in Long-term Care Facilities. As a result, CMS has indicated that they are not considering the return, credit, and reuse of medications as an option. In their eyes, reducing the quantity dispensed is the only clinically safe method for reducing medication waste in LTC.

Take-Back Programs and Reverse Distributors
Community take-back programs, reverse distributors, and medical waste management companies eliminate the environmental impacts of medication waste. However these solutions can be costly to the pharmacy and facility, and these programs and services are not an option in some circumstances. To compound the issue, a majority of LTC facilities and pharmacies are simply unaware of what to do with the medication waste. ASCP attributes this to the “multitude of varying laws / regulations / rules / guidance from different national, state, and local organizations and agencies and confusion about which to follow” (Carla Saxton McSpadden, ASCP Comments to the DEA on Disposal of Controlled Substances, 2009). One major issue is the DEA requirement that all unused controlled substances be destroyed on site at the nursing facility. ASCP has recommended to the DEA that LTC facilities be allowed to deliver unused controlled drugs to qualified reverse distributors or medical waste management companies. This would certainly reduce the burden at the nursing home for proper disposal. However, as it stands today, the LTC providers or pharmacies would have to bear the costs of these services. And, because of the large volume of unused medications in LTC, these types of programs could be very costly. Furthermore, these programs and services do not address the cost of unused medications, which is clearly a concern of CMS. Take-back programs, reverse distributors, and medical waste management companies are a necessary component to eliminating the environment impacts of medications waste. However, these methods alone do not address the issue completely.
**Reduced First Fills**

It is estimated that 30% of Part D medications are not re-ordered. And, after a certain period of time the drug regimens of these residents tend to stabilize. Therefore, one of the recommended solutions is to simply reduce the quantity dispensed on the first fill and then dispense 30-day quantities afterwards. While this would certainly be an effective way to curb waste, there is little empirical data to prove the effectiveness of this method. Tracking and auditing the pharmacies to ensure that the appropriate quantities are being dispensed could prove to be very challenging. And, unless CMS interprets it as such, the language in the Healthcare Reform legislation does not allow for anything more than 7-day quantities. However, this concept should be explored further, as it could prove to be a cost-effective solution for reducing waste.

**Recommendations**

Now that legislation has changed and LTC pharmacies are required to adopt dispensing techniques that will shorten the dispensing cycles, pharmacies will need to make some decisions. There are many cost-effective solutions for “7-day or less” dispensing, and many LTC pharmacies are already effectively utilizing them for Part D beneficiaries. CMS has recognized that LTC pharmacies should be properly compensated for their efforts to reduce waste. We urge LTC pharmacies to stay informed, get involved, and know your options. Tap into resources and get involved in organizations, such as the American Society of Consultant Pharmacist (ASCP), National Council of Prescription Drug Plans (NCPDP), and the National Association of Boards of Pharmacy (NABP). Talk to your pharmacy operating system vendor about their capabilities for supporting “7-day or less” dispensing. Reach out to fellow pharmacy providers that are currently dispensing in less than 7-day quantities. Ask them about the technology and automation they use. Further evaluate the technology and automation products by visiting vendor websites and booth exhibits at upcoming tradeshows.
### Alternatives

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<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td><strong>Return, Credit, Reuse</strong></td>
<td>• No barriers to entry</td>
<td>• Reusing meds that leave the control of pharmacy is not clinically safe</td>
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<td></td>
<td>• No additional capital requirements</td>
<td>• Regulatory restrictions for returns – DEA and varying state regulations</td>
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<td>• Proven to reduce waste</td>
<td>• Cost-prohibitive for pharmacy</td>
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<td></td>
<td>• Often used with other payers, such as Part A and Medicaid</td>
<td>• Not supported by CMS</td>
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<tr>
<td><strong>Take-Back Programs and Reverse Distributors</strong></td>
<td>• Necessary component to reducing effects of medication waste</td>
<td>• Does not address economic impacts</td>
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<td></td>
<td>• Eliminates environmental impacts</td>
<td>• DEA requires narcotics to be destroyed on site</td>
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<td>• Facilities and pharmacy must bear the additional expense</td>
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<td>• Could be very costly due to large volume of waste</td>
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<td><strong>Reduced First Fills</strong></td>
<td>• Less burden on pharmacy</td>
<td>• Not currently supported in HCR bill waste language</td>
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<td>• Could potentially help curb waste</td>
<td>• Tracking/auditing complexity</td>
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## Centralized Dispensing

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<th><strong>Advantages</strong></th>
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| **Manual 7-day Dispensing** | • Lowest barrier to entry  
• No additional capital requirements  
• Proven to reduce waste  
• Often used with other payers, such as Part A and Medicaid | • Significantly increases pharmacy dispensing costs  
• Increases nursing facility costs to receive and store meds  
• Requires additional refill requests or cycle fills  
• Increases potential for medication errors  
• Increase packaging waste |
| **Punch Card Automation** | • Significant labor efficiencies  
• Increased dispensing accuracy  
• Wide variety of solutions – flexibility to meet multiple needs  
• Oral solids account for 90% or more of the volume of doses  
• More economical solutions beginning to emerge | • Requires high volume to gain economies of scale  
• Capital intensive  
• Does not address non-oral solid mediations |
| **Strip Packaging** | • Reduces medication waste  
• Often used with other payers, such as Part A and Medicaid  
• Often used in AL/IL setting for medication adherence  
• Reduces nursing time spent administering meds  
• Many solutions available  
• Less costly than “just-in-time” punch card systems | • Capital intensive  
• Does not address non-oral solid mediations  
• Very labor intensive at high volumes  
• Multi-day multi-dose not well suited for high-acuity residents |
## Decentralized Dispensing

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| **Automated Medication Cabinets** | • Provides immediate and controlled access to medications  
                           • Help with diversion and dispensing accuracy over traditional EDKs  
                           • Works well in combination with centralized strip packaging | • Capital intensive – requires investment in automation at every nursing facility  
                           • Regulations limit them to be used only in emergency situations  
                           • Not well suited for ongoing doses |
| **Drug-Specific Medication Carts** | • Capable of eliminating waste  
                           • Provides immediate access to medications  
                           • Works well with existing punch card automation and infrastructure | • Only one vendor with product on the market – limited market penetration  
                           • Capital intensive – requires investment in automation at every nursing facility  
                           • Only approved in two states  
                           • Cannot stock all formulary items – some meds still dispensed at pharmacy |
| **Remote Dispensing** | • Virtually eliminates medication waste – shown to be twice as effective as 7-day dispensing  
                           • Provides immediate access to medications  
                           • Improves dispensing accuracy and reduces administration errors  
                           • Nursing facilities willing to share in the cost of technology  
                           • Reduces delivery costs  
                           • Reduces pharmacy dispensing labor  
                           • Reduces nursing time spent administering meds  
                           • Reduces diversion  
                           • Oral solids account for 90% or more of the volume of doses  
                           • Recognized by NABP and approved by DEA for controlled substances | • Only one vendor with product on the market - limited market penetration  
                           • Approved in less than 6 states – other states are evaluating  
                           • Some states require pharmacy staff to restock inventory  
                           • Capital intensive – requires investment in automation at every nursing facility  
                           • Does not address non-oral solid medications |