

# Cause, Effects, and Solution to Medication Waste in Long-Term Care

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*Leveraging Remote Dispensing to Eliminate Waste, Reduce Cost, and Improve Patient Safety in Long-Term Care.*

## **Executive Overview**

The U.S. Health Care System loses billions of dollars annually manufacturing, distributing, and disposing of unused medications in Long-Term Care (LTC) facilities. The acuity level of LTC residents continues to rise, the number of medications per patient is increasing, and the demand for LTC services is projected to dramatically rise due to the aging population. As a result, the problem will only continue to grow, compounding the already skyrocketing costs of health care. Medicare, which accounts for roughly one-fifth of national spending on LTC (Georgetown University Long Term Care Financing Project, 2007, p. 2), is facing serious financial trouble. Medication distribution systems in LTC have not fundamentally changed in decades, yet the U.S. taxpayer can no longer afford the status quo. Luckily, advances in technology have made possible a new medication distribution model that has proven to eliminate waste and significantly reduce the costs of dispensing and distributing medications in LTC. Remote Dispensing provides waste-free, patient specific, on-demand medication dispensing, right at the LTC facility. Widespread adoption has the potential to save the U.S. tax payer billions of dollars over the next decade.

The purpose of this paper is to explore the root cause, effects, and solutions to the serious and growing problem of medication waste in LTC. This paper describes the current medication distribution processes in LTC and identifies the primary reasons for medication waste. The direct costs, environmental consequences, safety issues, and other impacts of unused medications are outlined. Next, the advantages and disadvantages of the current solutions being proposed and adopted, including Remote Dispensing, are presented and explored. Finally, recommendations are given that will help eliminate the costs and other consequences of medication waste in LTC.

## **Why Medications Go Unused in LTC**

There have not been any significant advances in the medication distribution systems in LTC in decades. The growing demands of residents in LTC facilities have far outpaced these conventional distribution systems. These outdated models are a primary cause of unused and wasted medications in LTC. In addition, the current Medicare Part D policies do not incentivize LTC pharmacies to reduce medication waste, exacerbating the issue. The following is a look at how the current distribution models, combined with the Medicare Part D payment system, have created an environment that generates and promotes excessive amounts of medication waste in LTC.

### **Local/Regional Pharmacies**

A majority of the approximately 17,000 LTC facilities in the U.S. (Knowledge Source, Inc., 2008) receive medications in punch cards, cassettes, and/or unit-dose packaging that are delivered on a daily basis by a local or regional offsite LTC pharmacy. In most states, these pharmacies are classified “closed-door” retail pharmacies and are not open to the public. Local LTC pharmacies are generally located within a 2-4 hour driving distance of each facility they service, in order to provide medications in a timely manner. The most prevalent type of packaging is disposable 30-day punch cards, often referred to as “bingo-cards,” which are sent when the prescription is ordered and every time it is refilled. However, when a prescription is discontinued or the patient is transferred, discharged, or expires before the supply is exhausted, the unused medications are either destroyed onsite or sent back to the pharmacy. Some states require LTC pharmacies to provide a credit on returned medications for Medicaid residents, and allow the medications to be reclaimed and reused. However, the labor required is often not worth the cost of the medication, so many times medications that go unused become waste. Furthermore, the Drug Enforcement Administration (DEA) does not allow the return and reuse of any controlled substance, regardless of the resident’s prescription plan payer, including Medicaid. Therefore, these unused controlled substances, which are classified as the most dangerous and in many cases are very costly medications, are always wasted. As a result, many pharmacies deliver controlled substances and medications for Part A residents in 7 or 14-day supplies to help reduce diversion and the amount of unused medication. However, this can more than double labor costs for filling (and refilling) prescriptions at the pharmacy. The costs can be much higher if the pharmacy is delivering medication on different dispensing cycles based on the resident’s payer, type of drug, or other factors. Therefore, LTC pharmacies still send 30-day supplies for the majority of residents in LTC facilities.

### **Hub and Spoke Pharmacies**

Some larger LTC pharmacies are developing “hub-and-spoke” models, which are a slight modification to the traditional local/regional pharmacy distribution system. In a hub-and-spoke model, much of the operations are centralized at one or more centrally located “hub” pharmacies in order to gain economies of scale. Generally, automated packaging equipment is used to pre-pack commonly dispensed medications in 30-day bingo cards that are then delivered to the satellite “spoke” pharmacies. The “spoke” pharmacies act very similarly to the traditional local/regional pharmacies, but their operational costs are much lower due to the reduction in labor. However, because medications are generally packaged in 30-day supplies, excessive medication waste is generated. Using shorter dispensing cycles to reduce waste can be inefficient and simply not economically viable in a “hub-and-spoke” distribution model.

### **Licensed In-House Pharmacies**

Some larger LTC facilities can justify the costs of having a pharmacy onsite. In this scenario, the facilities have a fully operational onsite pharmacy that provides services in a model similar to the hospital setting. Medication waste can be minimized, since delivery is not required and shorter dispensing cycles are possible. However, operating an onsite pharmacy is typically far too cost-prohibitive for most LTC facilities. And, in many cases, the onsite pharmacies still dispense medications in 30-day bingo cards in order to reduce labor and meet the 30-day dispensing requirement by payers under the Medicare Part D

program. As an example, a 580-bed LTC facility with an in-house pharmacy in New York state uses 30-day bingo cards for all of its residents. The facility estimates drug expenditures on wasted medications for its Part A residents is \$400 to \$550 per month, per resident. Taking into account lower acuity levels and less medication turnover for the rest of the population, a conservative estimate would still exceed \$2 million spent annually on medication waste for that single facility. So, while in-house pharmacies have the potential to reduce medication waste, they are not widely adopted and are often just as responsible for generating unnecessary medication waste.

### **Emergency Dispensing Kits (EDK) and Limited License Pharmacies**

Some LTC facilities have a limited-license pharmacy on the premises. Limited-license pharmacies have a part-time pharmacist that comes to the facility once or twice a week to manage the pharmacy and reconcile inventory and billing. Nurses have controlled access to bulk medications in a secure medication room within the building. However, many states' Boards of Pharmacy do not allow limited license pharmacies because of the lack of pharmacist oversight during the dispensing process. On the other hand, the DEA and most state Boards of Pharmacy permit the storage of controlled substances and medications for emergency use at the LTC facility without special licensing. Therefore, the standard practice for LTC pharmacies is to provide Emergency Dispensing Kits (EDK) for immediate "STAT" and first doses. Because EDKs and limited-license pharmacies are not used for continuous dosing, these models have a very limited impact on waste. Furthermore, because the nurse is dispensing the medications without direct pharmacy oversight, there is a high potential for costly medication errors.

### **Medication Punch Cards**

Compliance packaging in the form of a medication punch card, or "bingo-card," was introduced into LTC over 35 years ago as an alternative to the traditional bottle and vial packaging, and to assist the nurse with medication management. Prior to the bingo-card, it was common for nurses to pre-pour medications into trays or patient-specific envelopes before each medication pass. This process was time consuming and extremely error prone. Intended to reduce labor and errors, the bingo-card was the first big innovation in medication packaging in LTC. At that time many regional "closed-door" pharmacies began to emerge to service the needs of the LTC facilities. Over time new distribution models, such as the Hub and Spoke, became popular in order to centralize operations and gain economies of scale. In addition, many advances in technology and automation helped speed up the process of filling and distributing medication in bingo-cards. Companies like Medi-Dose®, Rx Systems, Inc.®, and MTS® Medication Technologies all have product-lines centered on the automation, packaging, and storage of bingo-cards. Today, the bingo-card, along with its related distribution systems, automation and technology, is the most commonly used method of dispensing and delivery medication in LTC.

However, while the original goal was to reduce labor and errors, bingo-cards simply replaced one time-consuming, error-prone process with another. The following is an excerpt of a blog entry from a LTC nurse regarding bingo-cards (Colombo, 2006):

Nurses paw through drawers of meds, looking for the right one and waste time documenting information in several places, lots of repetition. The med carts are from the dark ages. Right now, it would be easier if I could use a very old system which consisted of going into a med

room and using cards that slip into a med tray that allows you to pre-pour meds in silence, without interruption, and then go and deliver. Fewer errors would be made.

Furthermore, bingo-cards, which are most commonly dispensed on 30-day cycle fills, contribute significantly to medication waste in LTC. While bingo-cards don't necessarily cause medication waste, they do little-to-nothing to reduce or eliminate it. The smallest package is generally a 14-dose card. Therefore, bingo-cards are unfit and impractical for shorter cycle fills that would minimize the waste.

### **Medicare Prescription Drug Coverage (Part D)**

On December 8, 2003, the United States adopted into law the Medicare Prescription Drug Improvement and Modernization Act of 2003. This legislation provides people over the age of 65 and those with disabilities federal prescription drug benefits under Medicare. While some residents are considered dual-eligible, meaning they qualify for both Medicare and Medicaid, Part D replaced Medicaid as the primary payer of prescription drugs for most residents in LTC facilities. Today, a majority of LTC residents receive prescription drug benefits through Medicare Part D. However, since LTC represents small percentage of Part D expenditures, the program policies were developed primarily for the retail setting, and the nuances and exceptions of LTC have been largely ignored.

One of the biggest issues with Part D in LTC is that there is no electronic claim transaction for crediting the prescription drug plans (PDPs) for the unused medications. This is because the PDPs do not have a way to process return-for-credit prescription claims. Generally PDPs have processes in place to handle retail pharmacy claims, and retail pharmacies do not take unused medications back for credit and reuse. Many LTC patients have multiple payers with no process to determine which portion of the credit gets applied to which payer, since some payers only pay the co-pay. In order to curtail waste, some states require mandatory return of unused medications to the LTC pharmacy for Medicaid institutionalized patients. So, prior to Part D, when Medicaid was the primary payer for most LTC residents, waste was less of an issue. However, the ability to return and credit unused medications was not addressed when Medicare Part D was created. And, because no electronic claim crediting process is available, pharmacies must bill upfront by dispensing the entire supply of medications, up to 30 days, with any unused medications becoming waste. Most PDPs do allow claims to be reversed within a period of time. However, when the prescription is discontinued, the original claim typically would have been submitted too far in advance to back it out and re-bill for the actual amount dispensed. Therefore, in order to bill for the actual amount used, the pharmacy must wait until a 30-day supply has been consumed or the prescription has been discontinued, to submit the claim for payment. This method is referred to as post-consumption billing.

Post-consumption billing practices eliminate the need for a credit, since the PDP is not billed until the medications are consumed. However, pharmacies must pay a price for this billing practice. Rather than getting paid up front, pharmacies are forced to carry the liability on the dispensed medications. And, since PDPs are unwilling to pay multiple dispensing fees per month, the pharmacy must carry that liability for up to 30 days in most cases. This has a high negative cash-flow impact on an already cash-sensitive business. Furthermore, in order to verify coverage for payment and perform the necessary drug utilization review (DUR) requirements prior to dispensing as outlined by the Part D program, the

pharmacy must submit and reverse a “test claim” and incur additional costly transaction charges. Unnecessary transactions, and the risk of unpaid claims due to not obtaining prior authorization for certain dispensed drugs, erode the pharmacy’s already narrow profit margins. So, while post-consumption billing eliminates the need for a credit mechanism, it can be extremely cost-prohibitive to the pharmacy.

Furthermore, because pharmacies are not required to provide a credit, they are able to collect revenue for medications whether they are used or not. The administrative cost to process the unused medication for credit and reuse is usually not compensated by the Medicaid programs. As a result, LTC pharmacies have very little incentive to eliminate waste, because it would reduce top-line revenue without any additional compensation. And, even if the unused medications could be reclaimed and reused, any reused medication must be credited or destroyed since billing for the same medications twice would be considered fraud.

### **Conclusion**

LTC pharmacies and facilities generate an excessive amount of medication waste every year. Outdated medication distribution models are a primary driver and are being outpaced by the growing demands of residents in LTC. Bingo-cards, the most common form of medication compliance packaging in LTC, are time-consuming, error-prone, and contribute significantly to the issue of waste. Moreover, LTC pharmacies have very little incentive to reduce the amount of unused medications and in some ways are rewarded for generating waste. Medicare Part D was ultimately designed for the retail setting, and as a result the current policies have contributed greatly to the issue. Without changes in federal policy, medication waste will continue to be a very costly problem in LTC.

### **Impacts of Unused Medications in LTC**

The United States spends an estimated \$1.25 billion annually on direct cost of wasted medications in LTC. The labor, distribution, and other operations costs incurred by the facilities, pharmacies, wholesalers, and manufactures to distribute and dispose of the unused medications are expected to be an additional quarter billion or more annually. In February of 2009, The American Society of Consultant Pharmacists (ASCP) surveyed their membership, pharmacists that work in the LTC industry, on the topic of unused medications. The top 3 concerns of respondents were preventing diversion, developing cost effective disposal procedures, and reducing the overall amount of pharmaceutical waste. The Environmental Protection Agency (EPA) has expressed concerns about the medication disposal practices of LTC facilities that can lead to contaminated water supplies. Most importantly, however, are the direct costs of unused medications to the U.S. Health Care System, and in particular Medicare. The Associated Press (AP) recently reported that Medicare would start losing money within a year and would be insolvent by 2017 (Crutsinger, 2009). Medicare simply cannot afford to allow and encourage LTC facilities and pharmacies to continue flushing money, literally, down the toilet.

### **Direct Costs of Unused Medications**

In 2001, the U.S. Department of Health and Human Services (HHS) reported that nursing home residents averaged over 9 medications per month at a cost of approximately \$250 per person per month (Stuart,

Simoni-Wastila, & Shaffer, 2007). A recent ASCP survey showed that at least 17% of those medications go unused (McSpadden, 2009a). Due to the increased adoption of shorter cycle fills (number of days between refills) for Part A residents, whose medications are paid for by the LTC facility, the percentage of waste is expected to be much higher for Part D. Some facilities in states where returns are not allowed or enforced estimate that their drug expenditures on unused medications can exceed \$10,000 monthly just on their Medicare Part A residents, which are typically less than a quarter of the facility's population.

The estimated cost of unused medications for the more than 2.5 million residents in nursing homes and other LTC facilities (Adler, 1995) is estimated to be more than one billion dollars annually. On average, annual medication expenditures for residents in LTC are \$3,000, based on the HHS estimate of \$250 per patient per month. Since ASCP estimates 17% of medications are unused, the average cost of medication waste per resident is over \$500 per year. Reducing medication waste for the 2.5 million residents in LTC would result in approximately \$1.25 billion in savings annually. Talyst and the University of Maryland are conducting a study to measure the cost of medication waste in LTC. A similar study is underway with the ASCP Foundation and Advanced Pharmacy.

### **Environmental Impacts**

Millions of tons of pharmaceutical waste are being dumped down the drain, polluting our nation's water supply and creating some very serious environmental hazards. 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 problem is a serious one, as the article states:

One thing is clear: The massive amount of pharmaceuticals being flushed by the health services industry is aggravating an emerging problem documented by a series of AP investigative stories -- the commonplace presence of minute concentrations of pharmaceuticals in the nation's drinking water supplies, affecting at least 46 million Americans.

The primary method of unused drug disposal in nursing home and other LTC facilities is to flush them down the toilet and/or pour them down the sink. In the recent ASCP survey, approximately 50% of facilities dispose of medications using these methods (McSpadden, 2009b). These unused medications are going directly into the wastewater, polluting the water supply and causing significant harm to plant and animal life. Medication waste in LTC has a very negative and potentially dangerous impact on the environment, and it must be addressed.

### **Diversion of Controlled Substances**

Diversion of medications, especially of narcotics, depressants, and stimulants that are subject to abuse, continues to be a huge issue in LTC. As a result, the Drug Enforcement Administration (DEA) has very strict regulations on the handling, distribution, and use of these "controlled substances" in LTC and other health care settings. The DEA's Office of Diversion Control is devoted to ensuring that these potentially dangerous medications "are readily available for medical use, while preventing their

distribution for illicit sale and abuse.” The following is their stance on the return of unused controlled substances from the LTC facility (LTCF) to the pharmacy (DEA Office of Diversion Control, 2009b):

There are no provisions in the Controlled Substances Act for a DEA registrant (i.e., retail pharmacy) to acquire controlled substances from a non-registrant (i.e., resident of an LTCF). Most LTCFs are not licensed by their respective state to handle controlled substances and, therefore, are not registered with DEA. LTCFs act in a custodial capacity, holding controlled substances that, pursuant to a prescription, have been dispensed to and belong to the resident of the LTCF. Federal laws and regulations make no provisions for controlled substances that have already been dispensed to patients, regardless of the packaging method, to be returned to a pharmacy for further dispensing or disposal.

This creates an enormous opportunity for diversion, especially when the facility receives the standard 30-day supply of medications. As a result, nurses are required to count and record all of the controlled substances at every shift change in order to prevent diversion. This has proven to be ineffective extremely time consuming. Shorter cycle fills would minimize the potential for diversion while reducing unnecessary labor at the facility for handling controlled substances. However, due to the issues with the Part D payment system, not much can be done without significantly impacting operation costs at the pharmacy and facility.

### **Labor, Distribution, and Other Costs**

The labor, distribution, and other operational costs of distributing and disposing of unused medications in LTC is estimated to be over a quarter billion dollars annually and is expected to dramatically rise as a result of new regulations for proper disposal of unused medications. According to the Long Term Care Pharmacy Alliance (LTCPA), approximately \$5.52 per prescription, more than 50% of the dispensing costs, was spent on pharmacy labor and wages in 2001 (BDO Seidman, LLP, 2002). Delivery and supplies made up another 19%, an additional \$2.03 per prescription. With patients averaging over 9 prescriptions per month (Stuart et al., 2007), an estimated 300 million prescriptions are written each year in LTC. Therefore, reducing labor and distribution costs by a mere 10%, or \$0.755 per script, as a result of eliminating waste, would reduce overall expenditures on dispensing costs by more than \$225 million per year. Generating excessive amounts of unused medications has a direct correlation to these costs. Furthermore, the labor incurred by the LTC facility for collecting, recording, destroying, and returning unused medications costs hundreds of dollars per month. In the survey, one ASCP member expressed concern about “using highly paid professional to break down, record, and actually destroy or dispose of the large volume of unused medication” (McSpadden, 2009a). Furthermore, with many of the proposed regulations aimed at proper disposal of waste, these costs are expected to rapidly increase in the coming years. In the same survey, one pharmacy reported spending over \$10,000 per year in disposal costs alone for non-controlled medication waste. Another reported that 5% of their workforce was devoted to processing and restocking returned medications. Reducing labor, distribution, and other operational costs by eliminating medication waste in LTC would have an overall estimated economic benefit of more than a quarter billion dollars annually.

## Patient Safety

Medication errors are rampant in LTC settings. The cost of these errors is immeasurable. Many of these errors are a result of continuing to administer medications after the prescription has been discontinued. Most nursing facilities remove the discontinued prescription from the resident's Medication Administration Record (MAR), most often by crossing it out on a paper-based MAR, an extremely error-prone process. However, in many cases medications will remain in the medication cart and can easily be administered inadvertently. Sometimes, in the most severe cases, these medications may be expired, further magnifying the issue. And, in the event of a manufacturer drug recall, medications can be extremely difficult to locate due to the excess supply of inventory at the facility. The potential safety risk of medication errors occurs by having an excess supply of medications available for the nurse to administer, lack of proper inventory control, and manual processes and procedures at the facility.

## Existing Solutions Do Not Work

### Returns and Reuse

Returning and reusing medications has proven to be the most effective measure for reducing medication waste in LTC to date. Some states have adopted return laws, and when possible pharmacies credit back the payer for the unused medications. This has helped to reduce the cost of the medications to some payers, including the LTC facilities for their Part A residents. However, it can be extremely cost-prohibitive to the pharmacy. In the February 2009 ASCP study, one respondent reported that 5% of the pharmacy's workforce was devoted to processing and restocking returned medications. And, 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 and credited, they are wasted at the expense of the LTC pharmacy.

Some states still do not require pharmacies to take back non-controlled medications or allow crediting, while others have tight restrictions on the packaging and potential for reuse. Many states do not allow medications dispensed in multi-dose packaging or packaging that has been opened to be returned for credit to the pharmacy. Furthermore, the DEA does not allow controlled substances to be returned or reused. And since no electronic credit process is available with PDPs, reusing used medications is not an acceptable practice for third-party payers managing a Part D patient. So, even in states that allow unused medications to be returned, credited, and reused, the majority of the unused medications are still wasted in LTC.

### Federal Regulations

The Environmental Protection Agency (EPA), the Drug Enforcement Administration (DEA), the Food and Drug Administration (FDA), and many others are becoming extremely concerned with how nursing homes and other LTC facilities are disposing of medications (Smith, 2009). An entire bevy of new government regulations are being introduced to reduce costs, environmental impacts, diversion of controlled substances, and medication errors related to unused medications. The Drug Free Water Act, Safe Drug Disposal Act, and Secure and Responsible Drug Disposal Act were all introduced into the U.S.



House of Representative in 2009. The EPA is conducting a mandatory study for the disposal of unused pharmaceuticals in the health services industry. Institutions that do not respond within 60 days may be subject to criminal fines, civil penalties, and/or other sanctions. The EPA is also proposing to add pharmaceuticals to the Universal Waste Rule, which would encourage take-back programs and work to improve pharmaceutical waste management. In addition, the DEA recently solicited input on the disposal of controlled substances dispensed to individual patients and LTC facilities. ASCP responded with concerns about clear, consistent, cost effective, and operationally efficient disposal programs. While these regulations may help to curtail some of the diversion and environmental issues, they are likely to be costly, inefficient, and cumbersome for LTC facilities and pharmacies to follow. Eliminating waste from the onset would reduce the importance and necessity of costly, complicated, and potentially conflicting federal regulations

### **Disposal and Take-Back Programs**

Currently, a majority of LTC facilities and pharmacies are either not required by their state to properly dispose of unused medications or are unaware of the regulations, if they exist. ASCP attributes the lack of awareness to the “multitude of varying laws / regulations / rules / guidance from different national, state, and local organizations and agencies and confusion about which to follow” (McSpadden, 2009a). Furthermore, ASCP believes that because of the large volumes of unused medications in LTC, take-back programs are not feasible or practical. In addition, ASCP has recommended that the DEA allow LTC facilities to deliver unused controlled drugs to qualified reverse distributors. However, the facilities will likely have to bear the costs of this type of program. Finally, many for- and not-for-profit organizations are creating public awareness campaigns and developing programs to help institutions and consumers properly dispose of unused medications. While these new regulations and programs are thoughtful and well intentioned, they are far too impractical and cost-prohibitive for the LTC industry to implement. Eliminating medication waste would reduce the need for costly and ineffective disposal and take-back programs.

## **Traditional Automation is Not Effective**

### **Punch Card Automation**

As bingo-cards became more and more popular, automation and technology naturally began to emerge. Today, there are a multitude of automated systems that fill, label, store, and distribute medications. Systems even exist that automate the removal of medications from bingo-cards. MTS Technology is the inventor and market leader of automated medication packaging machines for bingo-cards, servicing over 9000 institutional pharmacies, according to their website (MTS Technologies, 2009). This type of automation offers huge benefits to the pharmacy by dramatically reducing labor, but it does nothing to reduce or eliminate medication waste. Quite the contrary, as these automated systems actually encourage the production of waste. Since much larger volumes can be produced more easily, additional inventory, and thusly waste, is unnecessarily produced. Furthermore, the more sophisticated systems are capitally intensive and are usually only justified in hub-and-spoke distribution models. As a result, bingo-card automation has only intensified the amount of medication waste in LTC.

## Electronic Emergency Dispensing Kits (EDK)

Electronic EDKs started to gain popularity in the 1990's, and experienced widespread adoption in hospitals and other acute care settings. Cardinal Health Pyxis®, Omnicell®, and MedDispense all have secure medication cabinets that can be used as electronic EDKs in LTC facilities. However, the industry has been slow to adopt the technology. Officially considered Remote Dispensing Systems, electronic EDKs were the first automated dispensing technology to be utilized in LTC facilities. The systems are placed in nursing homes and other LTC settings and are stocked with unit-dose medications by the pharmacy. However, the slow adoption has been a primary result of a lack of return on investment (ROI) across the supply chain. Several years ago the DEA, in an attempt to alleviate the diversion potential and waste of unused controlled substances, ruled to allow retail pharmacies to install automated dispensing systems in LTC facilities.

This final rule permits the installation of automated dispensing systems at long term care facilities by retail provider pharmacies, so long as State regulations permit such installation. The use of automated dispensing systems by long term care facilities provides another alternative to address the problem of accumulation of surplus controlled substances at long term care facilities. DEA believes that persons choosing to utilize this method of dispensing controlled substances to patients at long term care facilities may realize cost savings. More importantly to DEA, the use of such systems should reduce the accumulation of excess controlled substances at these facilities, thereby reducing the potential for diversion of these controlled substances. (DEA Office of Diversion Control, 2009c)

However, the DEA discovered in its proposed rule-making process that “Reimbursement rules under Medicare and Medicaid and other third party payers, however, make daily dispensing financially unattractive for pharmacies; pharmacies are allowed a limited number of dispensing fees plus the calculated cost of the medication per month. Consequently, pharmacies routinely dispense the entire prescription to the patient at once; the LTCF maintains the drugs and ensures that they are taken as prescribed” (DEA Office of Diversion Control, 2009c). The American Society of Consultant Pharmacists has stated, “These systems are currently cost-prohibitive for most individual facilities and/or pharmacies” (McSpadden, 2009a) and has encouraged federal funding of research to further measure the economic benefits.

Due to limitations in this technology, nurses have to manually “pick and pull” each medication from the secure drawers in the cabinet. Because the medications do not have patient-specific labeling, there is still a potential for medication errors. For this reason and because electronic EDKs are extremely labor intensive, they are generally used for STAT and first doses and are not used for continuous dosing of medications. Pharmacies and facilities benefit by having medications onsite, increasing medication availability and eliminating unscheduled and emergency deliveries. However, the same results can be achieved through the use of standard EDKs, which are far more cost effective. Electronic EDKs do provide some benefits over standard EDKs, such as increasing the number of onsite medications and reducing the potential for diversion and complications in billing that often result in unpaid claims. However, despite these benefits, electronic EDKs simply do not have enough economic value to justify

their costs. And, since they cannot be used for continuous dosing, they do very little to reduce medication waste.

### **Centralized Strip Packaging**

In order to accommodate shorter and variable cycle fills that produce less waste, some LTC pharmacies are beginning to adopt automation that packages medications into strips of unit- or multi-dose medications at the pharmacy. A variety of options are available, from single-medication, manual, tabletop packagers to automated systems that can dispense over 500 different medications at less than a second per dose. Medi-Dose, Medical Packaging Inc., AutoMed®, Parata, Talyst, and TCGRx all have centralized strip-packaging automation products and solutions for the LTC market.

Due to the extremely high volume of medications, tabletop systems are far too labor intensive to be effective in the LTC setting. However, the high-speed automated packaging systems have tremendous potential for reducing waste. This type of automation has been widely adopted inside of hospital pharmacies, but has yet to gain major penetration in LTC. Despite being able to package medications for much shorter dispensing cycles, the current issues with Part D render these systems ineffective, since 30-day supply billing cycles are still preferred. And, because multi-dose packaging can lead to medication errors when excess inventory is present, centralized strip packaging systems are most often configured to dispense medications in unit-dose packaging. When drug regimens change, nurses must compromise the packaging to remove the discontinued medications, opening up opportunities for errors. Therefore, shorter dispensing cycles of multi-dose strip packaging are not common, even though it has the potential to significantly reduce waste and nursing labor during a medication pass.

Some pharmacies that use centralized automated packaging systems generally use post-consumption billing methods to get around the issues with Part D billing. However, these methods are costly and have a seriously negative cash flow impact. And, since these systems are located at the pharmacy, not the facility, medications cannot be dispensed on-demand, which would potentially eliminate waste and reduce labor without introducing errors. Furthermore, centralized strip packaging solutions do not readily accommodate medication availability for STAT orders, late admissions, and leaves of absence. Therefore they must still be supplemented with expensive and time-consuming EDKs and manual dispensing processes. While centralized strip packaging systems have a tremendous potential to reduce waste, they are often impractical and do not address the key issues facing LTC today.

### **Remote Dispensing is the Answer**

Remote Dispensing is the only solution that absolutely minimizes medication waste in LTC. This innovative medication distribution system takes advantages of recent advances in automation technology to create a cost-effective solution that treats the cause of the problems, not the symptoms. For over 10 years, Dave Doane, VP of Pharmacy Services for Talyst, managed Evergreen Pharmacy, which serviced over 15,000 LTC beds in western Washington at the time. Mr. Doane says, “The industry has been talking about dispensing medications at the LTC facility for over 15 years. When I heard what Talyst and Advanced Pharmacy were doing, I didn’t believe it. But sure enough, advances in technology have made Remote Dispensing a real possibility. I firmly believe it will revolutionize long-term care and

eventually become the standard of care. You don't spend this long in the industry without developing a passion to improve the process of providing medications to the residents. And, Remote Dispensing is the best thing I've seen come along in my twenty years." Complicated federal regulations for proper disposal and costly take-back programs are unnecessary. And, unlike other less effective solutions, Remote Dispensing can save time, reduce costs, and improve patient safety.

State regulations and issues with the third-party payer Part D billing process have limited the growth of Remote Dispensing in LTC. However, some states' Boards of Pharmacy are starting to approve Remote Dispensing Systems that are used for the continuous dosing of medication. Although Remote Dispensing has yet to gain widespread adoption, two solutions are currently available and have been successfully proven in nearly 100 LTC facilities to date. Remote Dispensing is expected to revolutionize the medication delivery in LTC industry. Shelly Spiro, President-elect of ASCP, believes, "Remote Dispensing adoption will happen. In preliminary findings, it has shown to reduce waste and the return-on-investment for LTC facilities and pharmacies is there. It's only a matter of time."

### **Next Generation Distribution System**

Remote Dispensing is fundamentally different than the traditional medication distribution systems being used in LTC. Remote Dispensing systems are automated oral solid packaging and labeling systems, about the size of a refrigerator or large copy machine, that allow nurses to dispense medications immediately prior to administration. These systems are placed onsite in a secure location at the LTC facility and are remotely monitored by the pharmacy. Medications are packaged and labeled on-demand in patient-specific, multi-dose medication packets or envelopes. As soon as the prescription is approved by a pharmacy, the medications are immediately available to be dispensed from the Remote Dispensing system. And, as soon as the prescription is discontinued, the medication is no longer able to be dispensed. Medications, including controlled substances, are delivered in bulk by the pharmacy and medications are dispensed only when they are needed. The pharmacy owns and manages the inventory in the systems and remotely monitors the dispensing of medications. While studies are currently being conducted to quantify the benefits of the Remote Dispensing model in LTC, the early results are in. Remote Dispensing eliminates waste, saves time, reduces costs, and improves patient safety.

### **Enhanced Automation**

Remote Dispensing Systems are built upon the same underlying technology platform that has been successfully deployed in hundreds of hospital pharmacies over the past two decades. However, recent advances in technology have made these systems safe, secure, and easy enough to operate outside of the central pharmacy in LTC facilities. Remote Dispensing Systems have several distinctions over traditional automated solutions, such as centralized strip packaging and electronic EDKs.

Centralized solutions cannot completely eliminate medication waste. Even small amounts of unused medications, many being potentially dangerous drugs, can be costly and put patients at risk. On the other hand, unlike centralized automation solutions, Remote Dispensing Systems are located at the LTC facility. They reduce waste to a minimum, improve medication availability, and minimize labor without introducing the potential for medication errors. Centralized solutions do not make medications readily available and can increase the likelihood of errors. Not only does that jeopardize patient safety, it puts

the facility at risk of being cited with state and federal regulatory survey violations, which can be extremely costly.

Remote Dispensing Systems, unlike electronic EDKs, which are also located at the LTC facility, can be used for continuous dosing and not just STAT and first doses. Remote Dispensing Systems can package over 90% of the volume of doses at a typical LTC facility in less than an hour per day. Electronic EDKs are far too labor intensive to be practical for continuous dosing. And, because Remote Dispensing Systems completely automate the packaging and patient-specific labeling, there is less of an opportunity for human error. Electronic EDK's can only produce unit-dose packaging that does not have patient-specific labeling, so there is a much higher potential for medication errors. Therefore, when Remote Dispensing Systems are used in LTC facilities, medication waste can be eliminated without risking patient safety.

### **Eliminates Waste**

Medication waste in LTC is a serious problem. Not only do wasted medications have enormous direct costs on the U.S. Health Care System, there are environmental impacts and patient safety concerns as well. Current distribution systems do very little to reduce or eliminate medication waste and traditional automation has not been effective. Moreover, the third-party payer Part D billing process, which was developed based upon dispensing 30-day supplies in a retail setting, encourages practices that generate waste. Onsite, on-demand dispensing of medications through the use of Remote Dispensing at the LTC facility is the most effective way to eliminate medication waste, which could potentially save over one billion dollars annually in medication dispensing costs.

### **Saves Time**

Dispensing and delivering medication in 30-day bingo-cards is very labor intensive. On the other hand, Remote Dispensing significantly reduces pharmacy labor, since medications are delivered in bulk canisters rather than patient-specific packaging. A typical medication canister holds approximately 300 doses, and can be filled and processed in about the same time it takes to create a single 30-day bingo-card. Because medications are dispensed and delivered in bulk, valuable time is saved at the pharmacy.

Remote Dispensing saves time at the LTC facility as well. Because the medications are dispensed in patient-specific, multi-dose packaging, medication pass time has shown to take half the time. Nurses no longer have to thumb through numerous bingo-cards, search for the right ones, and then pop each individual dose into a soufflé cup. And, since medications are only dispensed on-demand, controlled substances no longer need to be counted, which saves valuable nursing time. Additionally, Remote Dispensing Systems have the ability to dispense medications for a leave of absence, which is also a time consuming process to the pharmacy.

Unlike other distribution models, Remote Dispensing saves time at both the LTC pharmacy and facility. And, since Remote Dispensing allows nurses and pharmacists to focus on their job, instead of counting pills, it makes for a happier workforce, which in turn reduces turnover. With significant shortages in nurses and pharmacists in the U.S., saving time and reducing turnover is a huge benefit to the industry.

## **Reduces Costs**

Both the pharmacy and facility realize hard economic benefits with Remote Dispensing. Since a facility pays for the medications for its Part A residents under the prospective payment system (PPS), medication waste has a direct impact on a facility's bottom line. In states that do not allow returns, LTC facilities can easily spend more than \$10,000 per month on medications that are never used. In these cases, the Remote Dispensing System pays for itself on the Part A medication savings alone. Furthermore, since Remote Dispensing Systems help to manage formulary compliance, the amount of unpaid claims can drop tremendously. In these settings, LTC facilities that utilize Remote Dispensing Systems see an immediate ROI.

Remote Dispensing dramatically reduces pharmacy costs as well. Because medications are located at the point of care, Remote Dispensing eliminates unscheduled and emergency deliveries. Many times LTC pharmacies rely on backup pharmacies to deliver medications late at night and on weekends, which can be even more costly. Some pharmacies have been able to cut delivery costs in half through Remote Dispensing. Furthermore, with Remote Dispensing, LTC pharmacies can provide around the clock service without incurring additional operational costs. In addition, overall inventory costs can be reduced, because medications are dispensed on-demand instead of in 30-day supplies. Unlike other medication distribution systems used in LTC, Remote Dispensing reduces costs across the entire supply chain.

## **Improves Patient Safety**

Remote Dispensing improves medication availability, greatly improving patient safety. Since medications are onsite, there is no need to wait for them to be delivered. In some cases, quickly having access to medications for chronically ill, frail elderly patients can mean the difference between life and death. Tony Hughes, Associate Vice President of Manor Care, the 2<sup>nd</sup> largest nursing home chain in the U.S., recently presented a session at ASCP's 31st Midyear Conference and Exhibition on the benefits of Remote Dispensing. In this presentation, Hughes states, "As we market our services to the short term rehab patient it is extremely important that we can assure the resident and facility that prescribed medications are readily available for that resident's needs" (Hughes, 2009). Hughes agrees that Remote Dispensing provides that type of medication availability.

Furthermore, Remote Dispensing ensures the accuracy of administration by dispensing patient-specific, multi-dose medications in clearly labeled packages. Valuable nursing time is freed up, allowing nurses to provide better care for their patients. And, because the inventory is controlled and managed by the pharmacy, expired drugs and lot recalls are not an issue. In these cases, the medication canisters can simply be retrieved and returned to the pharmacy. Since medications are available onsite and dispensed on-demand, Remote Dispensing has a dramatic effect on patient safety.

## **Remote Dispensing is a Reality**

Remote Dispensing is not a concept. Two Remote Dispensing solutions are currently available on the market today and have been deployed in nearly 100 LTC facilities. Advanced Pharmacy pioneered the concept, bringing the first Remote Dispensing Systems to the long-term market in 2000. Advanced's PharmaSystem™ is available only to LTC facilities that utilize the pharmacy services they provide. In

addition, Talyst, the leader in hospital pharmacy automation, recently introduced InSite, the only Remote Dispensing available to LTC pharmacies. These two systems have been in production for a number of years and have proven to be effective at reducing waste and controlling medication costs in LTC.

## **Call to Action**

Remote Dispensing has direct and indirect cost savings to both the LTC pharmacy and facility, primarily through the elimination of medication waste. However, because of the current billing policies regarding Medicare Part D third-party payers, LTC pharmacies do not have the proper incentives to eliminate the waste. Furthermore, the majority of the economic benefits go to the private insurance companies operating under Medicare Part D. These companies would save billions of dollars over the next decade through the elimination of waste in LTC. However, current third-party payer Part D policies are preventing it from happening. A major initiative of the current administration is to “cut fraud, waste, and abuse” in Medicare in order to pay for Healthcare reform (The U.S. White House, 2009). Remote Dispensing does just that. Lisa Gables, Executive Director at ASCP Foundation, says “Remote Dispensing has the capacity to revolutionize the way healthcare is delivered in LTC facilities. Federal and state regulators as well as third-party payers should take a hard look at the advantages this type of system has to offer. The cost savings, environmental benefits, medication waste reduction, labor efficiency and overall improved patient safety aspects of Remote Dispensing far outweigh the cost of the system.” The following is a list of recommendations to promote and accelerate widespread adoption of Remote Dispensing, saving the U.S. Health Care System billions of dollars annually.

### **Credit Mechanism for Part D**

One of the primary reasons for medication waste in LTC is the lack of an electronic process for appropriately crediting third party and co-payers for unused medication under Medicare Part D program. Developing policies and claims processes that encourage LTC pharmacies to credit unused medications back to the PDPs and other payers could be very effective in curtailing waste in LTC. However, the economic impact to the pharmacies must be considered, since reducing waste would reduce overall pharmacy revenues. Therefore, changes in third party payer payment processes must be cost-effective and incentives should be in place to allow pharmacies that leverage Remote Dispensing technology to recoup some of the lost revenue.

### **Incentivize LTC Pharmacies**

The majority of the economic benefit of waste reduction will be realized by the PDPs, not the pharmacy. Therefore, PDPs should be asked to develop payment methods that allow the pharmacies to share in the cost savings. These incentives can be accomplished by adding a reimbursement model for using Remote Dispensing systems based on a per-dose or per-patient-day payment. Or, PDPs could pay higher dispensing fees to pharmacies that leverage technologies, such as Remote Dispensing, that reduce or eliminate waste. Dispensing fees add directly to the pharmacy’s net margins, making up for revenue lost due to minimizing waste, while reducing overall dispensing costs to the payer. This will help pharmacies share in the cost savings that are a result of waste elimination, allowing both sides to benefit. Providing

incentives will be the most effective way to help LTC pharmacies willingly participate in eliminating these unnecessary costs to the taxpayer.

### **Incentivize LTC Facilities**

LTC facilities in states that do not allow returns see an immediate ROI with Remote Dispensing, since they pay for the wasted medication under Part A. However, when LTC facilities are already being credited for the returned medications, the value of Remote Dispensing becomes much “softer.” While there are clear timesaving efficiencies and marked improvement in patient care, LTC facilities operate on already extremely thin profit margins. As a result, many facilities, most notably the for-profit institutions, cannot justify the costs of these systems on purely soft cost savings. Therefore, creating incentives for LTC facilities to use technologies that reduce waste would help significantly. For example, Medicare could provide higher reimbursement rates to LTC facilities that use Remote Dispensing Systems. These incentives would help accelerate the adoption of Remote Dispensing, which ultimately benefits the entire U.S. Health Care System.

### **Fund Research Projects**

The perception of automated systems, including Remote Dispensing Systems, in the LTC industry is that they are costly to implement. However, preliminary studies have shown that Remote Dispensing has very clear and direct economic benefits both to the pharmacy and facility. However, very little empirical evidence exists to support these assertions. The following is an excerpt from ASCP’s comments to the DEA regarding drug waste and disposal (McSpadden, 2009a):

The use of automated dispensing systems in the long-term care setting could limit the number of dispensed medication doses; however, these systems are currently cost-prohibitive for most individual facilities and/or pharmacies. In an effort to reduce waste, ASCP encourages federal funding of research and pilot programs to calculate the return on investment for new technologies such as automated dispensing systems.

State and federally funded research programs would create empirical evidence as to the direct and indirect cost saving that result from Remote Dispensing.

### **Encourage Board Approval**

Each state has a Board of Pharmacy or other regulatory body that monitors and controls the dispensing of medications in LTC. Some states have approved Remote Dispensing, others are reluctant, but most are simply unaware of the available technologies and how they benefit the entire health care system. Government acknowledgement of promoting, encouraging, and supporting the approval of Remote Dispensing in LTC to Medicare Part D beneficiaries will considerably lower some of the existing barriers to entry.

### **Conclusion**

Taking these steps to incentivize the industry to reduce and eliminate medication waste will save the U.S. Health Care System billions of dollars each year. With already skyrocketing health care costs, and the financial state of the Medicare system, the U.S. taxpayer can no longer afford the LTC industry to remain with the status quo. Solutions exist today that, if adopted, would eliminate waste, save time,



reduce costs, and improve patient safety. It is the responsibility of federal and state agencies to take action and adopt solutions that are meaningful to their beneficiaries.

## References

Adler, M. (1995). *Population Estimates of Disability and Long-Term Care*.

BDO Seidman, LLP. (2002). *Institutional Pharmacy Dispensing Cost Study*. Long Term Care Pharmacy Alliance.

Colombo, S. (2006, June 23). *Behind the times in long term care...* Retrieved August 5, 2009, from [http://www.blogsnh.com/drupal/blog\\_entry/sarah\\_colombo/behind\\_the\\_times\\_in\\_long\\_term\\_care](http://www.blogsnh.com/drupal/blog_entry/sarah_colombo/behind_the_times_in_long_term_care)

Crutsinger, M. (2009, May 12). *Social Security and Medicare finances worsen*. Associated Press.

DEA Office of Diversion Control. (2009a). Retrieved June 1, 2009, from <http://www.deadiversion.usdoj.gov/>

DEA Office of Diversion Control. (2009b). General Q&A. Retrieved June 1, 2009, from <http://www.deadiversion.usdoj.gov/faq/general.htm>

DEA Office of Diversion Control. (2009c). *Rules 2005 - Preventing the Accumulation of Surplus Controlled Substances at Long Term Care Facilities*. Retrieved June 1, 2009, from [http://www.deadiversion.usdoj.gov/fed\\_regs/rules/2005/fr0513.htm](http://www.deadiversion.usdoj.gov/fed_regs/rules/2005/fr0513.htm)

Donn, J., Mendoza, M., & Pritchard, J. (2008, September 14). *Tons of drugs dumped into wastewater*. Associated Press.

Georgetown University Long Term Care Financing Project. (2007). *Medicare and Long Term Care*.

Hughes, A. (2009). The Ghost in the Machine. *ASCP's 31st Midyear Conference and Exhibition* (p. 12). Orlando, Florida: American Society of Consultant Pharmacists.

Knowledge Source, Inc. (2008). *HealthCare BusIntell Report: Institutional Pharmacies*.

Knowledge Source, Inc. (2008). *HealthCare BusIntell Report: Long-Term Care*.

McSpadden, C.S. (2009a). *ASCP Comments to the DEA on Disposal of Controlled Substances*.

McSpadden, C.S. (2009b). *ASCP Comments to the EPA on Adding Pharmaceuticals to the Universal Waste Rule*. American Society of Consultant Pharmacists.

MTS Technologies. (2009). Retrieved from <http://www.mts-mt.com/>

Smith, C.A. (2009). To Flush or Not to Flush: Disposal of Unused Medications. *ASCP's 31st Midyear Conference and exhibition*. Orlando, Florida: American Society of Consultant Pharmacists.

Stuart, B., Simoni-Wastila, L., & Shaffer, T. (2007). *Drug Use and Spending for Medicare Beneficiaries During Part A Qualifying Skilled Nursing Facility Stays and Non-Qualifying Long-Term Care Facility Stays*. U.S. Department of Health and Human Services.

The Lewin Group. (2004). *CMS Review of Current Standards of Practice for Long-Term Care Pharmacy Services: Long-Term Care Pharmacy Primer*.

The U.S. White House. (2009). Paying for Health Care Reform: \$313 Billion in Additional Savings to Create a Deficit Neutral Plan. Retrieved August 5, 2009.  
<http://www.whitehouse.gov/MedicareFactSheetFinal/>

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