

**Analysis of Costs to Dispense Prescriptions in Independently Owned  
Long Term Care Pharmacies**

A final report submitted to the National Community Pharmacists Association

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## Executive Summary

The need for accurate calculation of long term care (LTC) pharmacies' costs to dispense (CTD) has become more critical as payers have moved toward reimbursement models that more closely reflect the pharmacies' actual acquisition cost for the drug product and the Centers for Medicare and Medicaid Services (CMS) has implemented requirements that LTC pharmacies must dispense prescriptions for branded drugs in 14-day-or-less quantities. The purpose of this project was two-fold: First, to calculate the average cost that the typical independently owned closed-door LTC pharmacy currently incurs to dispense and deliver a prescription to the resident of a client LTC facility. Second, to estimate how CMS-mandated changes to a 14-day-or-less dispensing cycle would affect the typical LTC pharmacy's average CTD.

The data requirements and measurement model used in this study were developed by a team of experienced academic researchers assisted by an industry advisory committee consisting of independent LTC pharmacy owners. A survey instrument was constructed to collect financial and operating data required by the measurement model to calculate the CTD. Surveys were distributed via three dissemination channels to approximately 1,000 independently owned, closed-door LTC pharmacies. NCPA mailed the survey directly to their LTC members; three major national wholesalers distributed the survey instrument to their LTC customers through their respective newsletters; and three LTC group purchasing organizations distributed the survey instrument to their members through emails, newsletters, mailings, and / or regional meetings.

Each pharmacy's CTD was calculated by dividing total LTC dispensing-related costs by the total number of prescriptions dispensed. Dispensing-related costs included not only the costs related to physically dispensing prescriptions (e.g., dispensing pharmacist and technician salaries and costs of medication containers) but also costs related to supporting the dispensing function (e.g., salaries of delivery and medical records personnel). To examine the potential effect that requiring 14-day-or-less dispensing cycles would have on LTC pharmacies' average CTD, we classified all dispensing-related expenses as fixed, variable, or semi-variable costs, then developed a model to predict the effects of increased prescription volume resulting from the conversion to a shorter dispensing cycle on the CTD. The model assumed an increase in volume of 19%. This was based on converting only oral, solid, branded drugs to short-cycle dispensing.

A diverse sample of 64 pharmacies returned usable surveys. Respondents indicated that they currently dispensed about 23% of total doses in 14-day-or-less cycles; about 76% were dispensed in 28-31 day cycles. Sales from dispensing to LTC facilities accounted for over 98% of total sales. Most pharmacies used automated medication packaging technology, heat and cold package sealers, bar code systems, sterile compounding hoods, LTC printers or labelers, and electronic prescribing.

The median CTD for the sample was \$13.54 with an interquartile range (25<sup>th</sup> to 75<sup>th</sup> percentiles) of \$10.51 to \$17.66. Over half of dispensing-related costs were from personnel expense of which pharmacists and managers accounted for over 40%. The results of our fixed and variable cost modeling suggested that converting oral, solid brand-name drugs from 30-day to 14-day dispensing cycles would lower the median per prescription CTD to between \$11.63 and \$12.54, a maximum decrease of \$1.91. However, this decrease in per prescription dispensing cost is dwarfed by an increase in total dispensing cost incurred by pharmacies that results from doubling the monthly volume of prescriptions dispensed and delivered to residents of client facilities.

In other words, the typical LTC pharmacy incurs a median CTD of \$13.54 if the medication is dispensed in a 30-day cycle or \$23.26 if the medication is dispensed in two 14-day cycles (a cost of \$11.63 for each cycle dispensed).

## Introduction

Long term care (LTC) facilities have become a crucial part of the health care system. These facilities provide care to patients who need continuing care and supervision because they are no longer able to live on their own. The two most common types of LTC facilities are skilled nursing facilities and assisted living facilities.

Assisted living facilities are designed to serve the “frail older person who is impaired and needs 24-hour monitoring or assistance with activities of daily living, such as dressing, bathing, and meal preparation and medication reminders.” (1) Residents typically live in their own rooms or small apartments. The facilities provide meals, housekeeping and laundry services. Most provide assistance with prescription medications, either by having nursing staff to actually administer residents’ medications or by reminding residents when it is time to take their medications (1). In 2007 there were 38,373 assisted living facilities in the U.S. serving 974,585 residents (2).

Skilled nursing facilities serve patients with more substantial care needs. They provide “medical, nursing, social and rehabilitative services for older persons that require 24-hour nursing care and supervision.” (3) They also provide and administer prescription drugs to residents. Almost half of skilled nursing facility residents take 9 or more medications daily; only about 13% take less than 5 medications daily (4). As of 2010, there were 1.4 million residents in 15,960 skilled nursing facilities in the U.S. (5).

The pharmacies that serve LTC facilities are classified as either combination retail/LTC (combo shops) or closed-door. Combination retail / LTC pharmacies serve both walk-in (retail) patients and those residing in LTC facilities. Closed-door pharmacies are closed to the general public; they serve only patients in LTC facilities and similar settings. Closed-door pharmacies are more similar to institutional pharmacies, such as those found in hospitals, than to retail pharmacies. There are approximately 1,200 closed-door pharmacies in the U.S. (6). Within the closed-door category, pharmacies may be independently owned or part of large chains. The focus of this report is on independently owned closed-door pharmacies.

Most public and private prescription benefit programs pay pharmacies on the basis of an estimated ingredient cost plus a flat dispensing fee. The ingredient cost is typically calculated as a discount on a published index value such as average wholesale price (AWP) and is intended to approximate the pharmacy’s acquisition cost for the drug product. The dispensing fee is intended to cover all operating costs incurred by the pharmacy to dispense the medication to patients in full compliance with all state and federal laws and provide a fair return on investment.

## LTC Pharmacy Dispensing Costs

A retail community pharmacy's cost to dispense a conventional prescription to an ambulatory patient includes the following:

- Costs of ordering, stocking, packaging, labeling and dispensing the medication;
- Costs incurred to perform all legally required administrative and professional services, including drug utilization review (DUR) and patient counseling, and;
- Appropriately allocated indirect and overhead costs including the cost of carrying accounts receivable from third party prescription insurance programs.

LTC pharmacies incur additional dispensing-related costs for a variety of services that are not routinely provided by retail pharmacies to their ambulatory patients (7, 8, 9). These include:

- Specialized packaging – prescriptions for LTC residents are typically dispensed in unit-of-use packaging, punch (aka, “bingo”) cards, cassettes, unit dose or other special packaging required by facilities.
- Delivery services – LTC pharmacies make regular deliveries to LTC facilities several times a day most (or all) days of the week and may make additional deliveries for medications needed in emergency situations.
- Medication carts – LTC pharmacies deliver medications to facilities in packaging which is sized to fit into medication carts that are usually purchased by the pharmacy.
- 24-hour on-call pharmacy services – LTC pharmacies must have a pharmacist on call 24 hours a day or provide for emergency service through an outside contractor.
- Parenteral medications – LTC pharmacies must be able to provide medications for parenteral administration to facilities. This requires that pharmacies have access to specialized facilities, such as clean rooms and sterile hoods, for the preparation of IV prescriptions or provide for this service through an outside contractor.
- Custom compounding – LTC pharmacies must be able to compound specialized drug formulations to meet the needs of patients who may not be able to take conventional oral dosage formulations.
- Emergency medications – LTC pharmacies must provide “emergency” supplies of medications as well as systems for recording and charging medication used from emergency stock.
- Reports, forms and prescription ordering supplies – LTC pharmacies must provide reports, forms and prescription ordering supplies to the facility. These include provider order forms, monthly management reports to assist the LTC facility in managing orders, medication administration records, and treatment administration records.
- LTC staff education and training – LTC pharmacies are required to provide ongoing in-service education and training programs to LTC facility staff.

The requirements to provide these additional services mean that LTC pharmacies incur a number of costs over and above those required of retail pharmacies to dispense prescriptions.

For a number of reasons, accurate calculation of, and payment for, LTC pharmacies' costs to dispense (CTD) has become more critical. In the past, most third party payers underpaid the dispensing fee component and made up the difference by overpaying for product cost. Typically, product cost reimbursement was based on the average wholesale price (AWP). The AWP can be higher than what pharmacies actually pay for products. But there is now a move to eliminate use of AWP and provide reimbursement that is closer to pharmacies' actual acquisition costs for the drug product. This makes payment of an accurate and fair dispensing fee that is reflective of the pharmacies' CTD much more important.

Another reason that accurate calculation of LTC pharmacy CTD has become increasingly urgent is that the Centers for Medicare and Medicaid Services (CMS) now requires LTC pharmacies to dispense prescriptions for oral, solid, branded drugs in 14-day-or-less quantities rather than the previous standard of a 30-day supply. CMS bases the new requirement on the belief that dispensing in smaller quantities will significantly reduce waste - and cost - from unused medications. While this may or may not occur, a certain effect of this change will be to increase the number of prescriptions that must be processed, dispensed and delivered by LTC pharmacies. This will significantly increase the cost of dispensing a month's supply of medications. Because branded drugs represent about 20% of LTC prescriptions dispensed, this could substantially increase total LTC pharmacy volume. If the dispensing fee is paid as a fixed monthly fee, rather than a per prescription fee, then the monthly dispensing fee must be established at a level that recognizes the incremental costs LTC pharmacies incur to provide medications in shorter cycles.

The purpose of this project was to calculate the average cost that the typical independently owned closed-door LTC pharmacy incurs to dispense and deliver a prescription for a LTC facility resident. There were two major objectives:

- Estimating the level of the CTD before the CMS changes were implemented, and;
- Estimating the extent to which the CMS-mandated change to a 14-day-or-less dispensing cycle will affect the CTD.

CMS had also proposed to require LTC pharmacies to record and report prescription returns (10). CMS has since decided not to implement this requirement (11). However, at the time this study was planned the requirement was scheduled to be implemented on January 1, 2013. Consequently, as part of our study, we examined the costs associated with recording and reporting prescription returns. The methodology and results are included in Appendix I.

## Methods

### Measurement Model and Survey Instrument:

Numerous community pharmacy CTD studies have been conducted and published by academic and industry analysts for public and private sponsors over the past several decades. As a result, broad consensus exists regarding the data that are required and the measurement model that should be used to accurately calculate the costs incurred by community pharmacies to dispense conventional prescriptions. Indeed, the calculation of a community pharmacy's CTD is sufficiently standardized that there is an Internet-based software application that can be used by pharmacy owners and managers to calculate their pharmacy's average cost to dispense a prescription (12).

Much less agreement exists regarding the data and measurement model required to accurately calculate the per-prescription operating costs incurred by LTC pharmacies to dispense medications to residents of LTC facilities. This lack of consensus is partly the result of a dearth of published studies that have been conducted in LTC pharmacies and partly as a result of thorny definitional and methodological questions that have yet to be definitively answered including a consensus definition of what constitutes a "prescription" in LTC pharmacy practice.

The data requirements and measurement model used in this study were developed by a team of experienced academic researchers who are recognized experts in community pharmacy financial analysis and supply chain cost accounting. The research team was assisted by an industry advisory committee consisting of 10 independent LTC pharmacy owners.

A survey instrument was constructed to collect financial and operating data required by the measurement model to calculate CTD among LTC pharmacies. A pilot test of the resulting survey instrument and instructions was subsequently conducted among members of the industry advisory committee and several modifications were made before it was distributed to the study sample. Final copies of the survey instrument and instructions are shown in Appendix II and III.

### Distribution of the Survey Instrument:

Surveys were distributed via three dissemination channels to approximately 1,000 independently owned, closed-door LTC pharmacies beginning in May, 2012. Because of the methods used to distribute the survey instrument, it was not possible to obtain a precise count of the pharmacies to which it was distributed. First, NCPA mailed the survey directly to their LTC members. Second, three national wholesalers distributed the survey instrument to their LTC customers through their respective newsletters. Third, three LTC group purchasing organizations (GPOs) distributed the survey instrument to their members through emails, newsletters, mailings, and / or regional meetings.

LTC pharmacists were also urged to complete and return the survey through a variety of communications from NCPA including e-mail reminders, articles about the survey in NCPA's LTC newsletter and e-News, and at the town hall at the 2012 NCPA annual meeting. Surveys were also distributed at the regional meetings of one of the GPOs. In addition, several companies with LTC pharmacy interests shared information about the survey with their LTC pharmacy customers. Members of the NCPA LTC Division Advisory Board and members of the industry advisory committee also personally contacted peers to encourage participation. Finally, an iPad lottery was used to encourage participation.

### Estimating the Current Level of the CTD:

A LTC pharmacy's cost to dispense a prescription is calculated as the total costs incurred to process, package, dispense and deliver prescription medications to the residents of client LTC facilities divided by the total number of prescriptions dispensed to LTC facilities for the same 12-month operating period. For the purpose of this study, a LTC prescription was defined as "each occurrence of a medication that is dispensed and delivered to a LTC facility for use by a designated patient, irrespective of the dispensing cycle or number of doses that are contained in the packaging." For example, four 7-day cycles of a medication dispensed and delivered to a LTC resident during the month would equal four prescriptions and two 14-day cycles dispensed would equal two prescriptions.

The CTD for LTC pharmacies includes both the costs of dispensing prescriptions and costs of activities that support dispensing – such as manager salaries, billing personnel, and rent. The survey instrument asked pharmacies to report both the costs of operating the pharmacy and the total number of prescriptions dispensed for their most recent fiscal year. The costs of dispensing a prescription include both direct and indirect costs. Direct costs of dispensing are those which arise directly as a result of the dispensing activity and include costs such as medication carts, medication containers and labels, professional liability insurance, and dispensing-related equipment and automation. Indirect costs are costs that support dispensing to LTC facilities as

well as other activities in which the pharmacy is involved. Examples include rent, utilities, insurance and salaries. All direct dispensing-related costs were allocated to the calculated CTD in full.

The percentages of salary expenses that were allocated to the CTD were based on the reported percentage of total work time that each personnel type spent in dispensing-related activities. The personnel types included in the study were managers, dispensing pharmacists, technicians, delivery personnel, billing personnel, medical records personnel, other dispensing support staff, and consultant pharmacists. The percentage of building mortgage or rent payments, utilities, maintenance and repair and insurance costs was based on the ratio of the square footage that supported dispensing to total square footage of the pharmacy. The percentage of other indirect expenses was based on the ratio of sales of prescriptions to LTC facilities to total pharmacy sales.

The mean CTD for LTC facilities was calculated for each pharmacy by dividing the total direct and indirect costs allocated to dispensing LTC prescriptions by the total number of prescriptions dispensed for the same 12-month period. Using the mean cost-to-dispense that was calculated for each pharmacy we then calculated the mean and median CTD across all pharmacies.

A CTD analysis is based on a number of assumptions. Our analysis was based on assumptions commonly used in the industry. However, we varied some of these assumptions in a sensitivity analysis to test their effects on the calculated CTD. The variations included the following:

- All salaries in the base case analysis were allocated to the costs of dispensing based on the ratio of hours worked in dispensing (or in support of dispensing) to total hours worked. In the sensitivity analysis, we based the allocation on the ratio of LTC prescription sales to total pharmacy sales for managers, medical records personnel, billing personnel, and other dispensing staff.
- In the second sensitivity analysis, we dropped the pharmacies with the highest and lowest CTD from the analysis.
- In the third sensitivity analysis, we used the salary allocation based on the sales ratio and dropped the pharmacies with the lowest and highest CTD.

Correlation analyses and one-way analyses of variance were used to examine relationships between CTD and possible explanatory independent variables.

## Estimating the Effect of Conversion to a 14-day-or-less Dispensing Cycle on the CTD:

To examine the potential effect that requiring 14-day-or-less dispensing cycles would have on LTC pharmacies' average CTD, it is necessary to understand the distinction between different kinds of dispensing-related costs.

Briefly, a pharmacy's operating costs may be broadly divided into two types; direct and indirect. Direct costs are those that are directly traceable or attributable to (i.e., caused by) the service or activity in question, in this case medication dispensing. As such, direct costs would not be incurred by the pharmacy if the service were not performed.

Indirect costs are those that would be incurred in the practice even if the service in question were not performed. In cost accounting, a fair share of these overhead costs must be absorbed by each revenue-producing activity in the business. This is accomplished by allocating indirect costs in the practice to each activity using some reasonable criterion. In most cases the criterion used to allocate indirect costs to a service is based on one of three rules: the proportion of hours personnel spend providing the service; the proportion of physical space required to provide the service; or the proportion of total sales the service accounts for in the business.

Costs may be further distinguished as either fixed or variable. Importantly, this distinction is not based on whether the cost varies *per se*, since all costs in a pharmacy will vary over time. Rather, what makes a cost variable in the accounting sense is that it varies in direct proportion to the volume of service being delivered, typically on a one-to-one basis. That is, for each additional unit of service or product that is produced, a variable cost will likewise increase. This concurrent variance typically results from a causal relationship that exists between the cost in question and delivery of the service. A familiar example of a direct variable cost in community pharmacy is the cost of prescription containers or packaging. The cost of this resource represents a direct variable cost of dispensing prescriptions because one of each is typically consumed each time a prescription is dispensed. Similarly, any materials or supplies that are routinely consumed during the delivery of a service would be considered a direct variable cost of service delivery.

In contrast, fixed costs are those for which the cost does not vary over the relevant range of volume. Returning to our prescription dispensing example, the most significant direct fixed cost of dispensing a prescription is personnel cost. Since pharmacy staff that are scheduled to work on a particular day will cost the practice the same amount of money whether an additional prescription is dispensed that day or not, their cost (e.g., wages, benefits, etc.) are generally considered to be a fixed cost of dispensing. Likewise, the cost of capital equipment that is used to deliver the service would be an example of a fixed cost.

Naturally, if dispensing volume increased enough, a pharmacy would be forced to increase staff. Under such conditions, personnel could be considered to be a semi-variable cost, a hybrid between fixed and variable costs which has characteristics of each. Like the fixed cost, a semi-variable cost does not typically increase with changes in volume. However, given a sufficiently large change in volume a semi-variable cost will be affected. To continue the example with personnel cost, if prescription volume continues to increase, at some point it will be necessary to hire additional staff.

As we have already discussed, the full cost of delivering a service is equal to the sum of variable, fixed, and semi-variable costs. That is: **Total Cost = Variable Costs + Fixed Costs + Semi-Variable Costs**. To examine the effects of moving to a 14-day-or-less dispensing cycle we classified LTC pharmacies' costs as fixed, variable, or semi-variable and then modeled the projected effect of increasing prescription volume on pharmacies' costs to dispense. In classifying costs, it was necessary to consider the specific situation that pharmacies are in now that short-cycle dispensing is mandatory. In this situation, the volume of prescriptions dispensed will increase, but the number of facilities and patients served will not change. For our model, we assumed that the typical LTC pharmacy would experience a 19% increase in volume resulting from transitioning solid, oral, doses of branded drugs to a 14-day cycle. This is based on the fact that the typical LTC pharmacy in our sample dispensed about 19% of prescriptions with oral, solid, brand-name drugs and the assumption that only these products would be converted to short-cycle dispensing.

For purposes of the model, we classified costs into three categories as described previously. Fixed costs consisted of costs that would not be likely to increase as a result of the increase in prescription volume resulting from a conversion to short-cycle dispensing. Examples included professional liability insurance, delivery expenses, and consultant pharmacist costs. In the case of delivery services, we assumed that most LTC pharmacies are already making frequent deliveries to client facilities for such things as starter doses or new residents so a conversion from 28-31 day supply to 14-day supply would not require additional delivery costs. Variable costs included those costs that would be likely to increase in direct proportion to the increase in prescription volume. Examples included medication containers and labels and third party expenses. The third category, semi-variable costs, includes costs that would probably not increase in response to a small increase in volume, but would increase in response to large increases in volume. Examples include dispensing pharmacist salaries, technician salaries, and waste reducing technologies. A complete list of costs in each category is shown in Figure 1.

Our model assumed that an increase in prescription volume would have no effect on fixed costs and would induce a proportional one-to-one change in variable costs. The effect that an increase in volume may have on semi-variable costs will vary across pharmacies. Pharmacies that are operating close to capacity will realize increases in semi-variable costs at relatively small

increases in volume; those that have excess capacity will not realize increases in semi-variable costs until they experience larger increases in volume. Due to the indeterminate effect that an increase in volume may have on semi-variable costs, we applied a sensitivity analysis to the model that allowed for scenarios in which a 19% increase in prescription volume resulted in increases in semi-variable costs of between 0% and 19%.

## Results

### Responding Pharmacies:

A total of 64 usable surveys were completed and returned. Surveys were returned from 30 different states (Table 1 and Figure 2) representing all geographic regions of the country, and from rural (12.5%), small town (29.7%), suburban (35.9%), and urban locations (21.9%). Of the 64 respondents, 35 (54.7%) were part of multi-pharmacy organizations. Of these, 26 (74.2%) had a central office. The median and mean numbers of pharmacies in a multi-pharmacy LTC organizations were 4 and 20. The 25th and 75th percentiles were 3 and 20 pharmacies.

The typical LTC pharmacy occupied 7,644 square feet of space, had been open for 12.8 years, operated 6.2 days and 68.9 hours per week, and delivered 6.2 days per week. The typical LTC pharmacy serviced 81 facilities and 2,975 beds. A break-down of facilities and beds served by type and rural/urban location is shown in Table 2.

### Prescriptions and Dispensing:

The typical responding LTC pharmacy dispensed 406,386 prescriptions during the most recent fiscal year (Table 3). Of these, 23.0% were for branded products, 67.1% were for generics, and 9.9% were for non-prescription drugs. A total of 81.8% were for solid oral dosage forms, 3.8% were for compounded prescriptions, and 14.4% percent were for other dosage forms (e.g., topical, ophthalmic, otic, etc.).

About 21% of total doses were dispensed in 14-day-or-less cycles. About 77% were dispensed in 28-31 day cycles and the remainder in other cycles (Table 4). The majority of doses were dispensed in single dose blister (65.5%) or multi-dose blister (10.9%) packaging (Table 5).

The typical pharmacy in our sample had annual sales of \$16,638,363. Sales from dispensing to LTC facilities accounted for over 98% of total sales (Table 6). Medicare Part D was the largest payer, accounting for an average of 47% of all prescriptions dispensed (Table 7).

A majority of pharmacies used automated package-filling technology, heat and cold package sealers, barcode systems, sterile compounding hoods, LTC printers or labelers, and electronic prescribing. Remote automated dispensing cabinets, automated infusion technology, and integrated voice response systems were used by less than 25% of respondent pharmacies (Table 8).

#### Cost to Dispense:

The median CTD was \$13.54 and the 25<sup>th</sup> and 75<sup>th</sup> percentiles were \$10.51 and \$17.66. The mean CTD was \$14.05 with a range of \$2.08 to \$37.39. Over half (53.2%) of dispensing-related costs were from personnel expenses (Table 9). Dispensing pharmacists and managers accounted for over 40% of personnel expenses.

The results of the sensitivity analysis indicated that the estimated CTD values were not sensitive to the assumptions we made. Across the base case and the three variations we performed, the mean CTD ranged from \$14.05 to \$13.76 and the median was \$13.54 in all cases (Table 10).

The cost to dispense was significantly related to a number of variables (Table 11). The variable with the strongest correlation was total prescription volume. Other variables with correlations above 0.35 included use of a 14-day-or-less dispensing cycle, percent of doses dispensed in single-dose strip packs, use of automated package filling machines, and use of barcode technology.

#### Effects of Converting to 14-day Cycle:

The median CTD for the base case was \$13.54. The results of our model based on fixed and variable costs indicated that a 19% increase in prescription volume would lower the median CTD to \$11.63 if there were no increases in semi-variable costs and to \$12.55 if semi-variable costs increased by 19% (i.e., in direct proportion to the change in prescription volume). The interquartile ranges were \$9.13 to \$15.08 assuming no increase in semi-variable costs and \$9.58 to \$16.05 assuming the change in semi-variable cost was proportionate to the change in prescription volume.

## Discussion

The purpose of this study was to estimate the current CTD for a prescription in a LTC pharmacy and to estimate the effects that implementing a mandatory 14-day-or-less dispensing cycle for oral, solid, branded drugs would have on this cost.

The median CTD for LTC pharmacies in our sample in their most recent fiscal year was \$13.54. Fifty percent of responding LTC pharmacies' CTD values were within \$4.12 of the median. We examined the effects on the CTD of changes in a number of assumptions on which our dispensing calculation was based. To do this, we re-calculated the CTD after (i) dropping outliers, (ii) using a different basis for assigning personnel costs to dispensing costs, and (iii) making both of these changes simultaneously. These changes had no effect on the calculated median CTD. This increases the confidence that one can place in our results.

A model based on fixed and variable costs indicated that a 19% increase in prescription volume resulting from the switch of oral, solid, branded products from a 30-day to a 14-day dispensing cycle would lower the median CTD per prescription from \$13.54 to between \$11.63 and \$12.54, a maximum decrease of \$1.91. The size of the decrease depends on the extent to which an increase in prescription volume increases semi-variable costs. The increase in volume would reduce the pharmacy's CTD because the CTD is an average, or per prescription, cost and because the typical LTC pharmacy has a substantial amount of fixed and semi-variable costs. In calculating the CTD, the numerator is total dispensing-related costs and the denominator is the total number of prescriptions dispensed. A 19% increase in prescription volume would increase the number of prescriptions dispensed by 19%. The pharmacy's variable costs, such as the costs of prescription labels and containers, would also increase by 19%. However, fixed costs, such as insurance and management salaries, and semi-variable costs, such as pharmacist and technician salaries, would not increase. As a result, the denominator of the CTD calculation would increase by 19% while the numerator would increase by less than 19%. This would result in a lower CTD. The greater the pharmacy's fixed costs (compared to variable costs), the greater the decrease in CTD. To put it more simply, as prescription volume increases, the pharmacy is able to operate more efficiently; it can fill more prescriptions without a proportionate increase in its costs. However, the decrease in per prescription dispensing costs that results from switching to a 14-day supply is dwarfed by the increase in total dispensing costs incurred by LTC pharmacies that result from doubling the volume of prescriptions they dispense and deliver to residents of client facilities.

As discussed earlier, increases in volume would not affect the CTD in exactly this way across all possible increases in volume. At some point, pharmacies would have to add dispensing pharmacists and technicians to handle the increase in volume. At sufficiently large increases in

volume the pharmacy might even have to hire additional managers or move to a larger physical space.

In considering these estimates it should be noted that there was wide variability in the CTD among sample pharmacies. While the median CTD was \$13.54, the 25th and 75th percentiles were \$10.51 and \$17.66. Further, our model of the effects of increased volume was made for a typical pharmacy and was based on a number of assumptions. Different pharmacies have different cost structures and, therefore, will be affected to different degrees by increases in volume.

Our estimates assume that the CTD is incurred for every dispensing event. The median CTD is \$13.54 per prescription. We have estimated that if prescription volume increased 19% as a result of transitioning oral, solid, branded prescriptions to 14-day cycles the CTD would decrease to \$11.63. But the CTD would be incurred twice per month for maintenance medications. To state it another way, if the patient's monthly supply of the drug is dispensed as one 30-day cycle then the pharmacy's total cost of dispensing the drug for the month is \$13.54. However, if the patient's monthly supply is dispensed as two 14-day cycles, then the total cost of dispensing the drug would be \$11.63 for *each prescription dispensed*, or a total of \$23.26.

A limitation of our study is that the response rate was low. This is balanced to some extent by the fact that we received responses from pharmacies from 30 states; from all geographic regions of the country; from rural, urban, suburban, and small town locations; and from pharmacies dispensing relatively small and large numbers of prescriptions.

Another limitation of the study is that a LTC pharmacy's CTD can vary over the course of the year. Because the CTD is an average, or per prescription, cost and because the typical LTC pharmacy has a substantial amount of fixed and semi-variable costs, the CTD is very sensitive to changes in volume. LTC pharmacies, unlike retail pharmacies, can realize significant changes in volume during any given year as a result of losing or adding facilities. This means that the CTD is likely to change over the course of the year. The extent to which the CTD changes depends on how many facilities the pharmacy gains or losses over the year. This situation makes measurement of the CTD for LTC pharmacies less precise than it is for retail pharmacies.

## **Conclusion**

Our results, based on a diverse sample of 64 closed-door LTC pharmacies, indicated a median CTD of \$13.54. The effects of moving to a shorter cycle, by increasing the number of prescriptions dispensed, would reduce pharmacies' average per-prescription CTD. Our results indicated that the median CTD would be \$11.63 if pharmacies only transitioned oral, solid, branded prescriptions to shorter cycles. However, this decrease in per-prescription dispensing costs is more than overcome by the increase in total dispensing costs that result from dramatically increasing the volume of prescriptions that must be dispensed each month to service clients. As a result, the typical LTC pharmacy would incur a median CTD of \$13.54 for dispensing a month's supply of a medication, or \$23.26 if the medication were dispensed in two 14-day cycles (a median CTD of \$11.63 for each cycle dispensed).

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**Figure 1. Costs Assigned to Fixed, Variable, and Semi-Variable Cost Categories**

**Fixed Costs**

Central office expense  
Delivery personnel salaries  
Billing personnel salaries  
Medical records personnel salaries  
Consultant pharmacist salaries  
Other consultant pharmacy costs (e.g., mileage, meals)  
After hours pharmacy services  
Professional liability insurance  
Licenses, fees, and permits  
Dues and subscriptions  
Postage and delivery  
Delivery vehicles  
Telephone  
Depreciation on leasehold improvements  
Depreciation on delivery vehicles  
Depreciation on medication carts  
Insurance  
Bad debt  
Advertising  
Office supplies  
Bank and credit card fees  
Accounting and legal  
Security  
Taxes  
Inventory carrying costs  
Accounts receivables carrying costs  
Manager salaries  
Computer hardware and software  
Depreciation on computer hardware and software  
Building rent  
Building mortgage  
Maintenance and repairs  
Utilities  
Depreciation on building

**Variable Costs**

Medication containers and labels  
Miscellaneous expenses  
Third-party related expenses

**Semi-Variable Costs**

Dispensing pharmacist salaries  
Technician salaries  
Other dispensing staff salaries  
Waste reducing technologies  
Depreciation on waste reducing technology  
Other equipment  
Depreciation on other equipment



**Figure 2. Geographic Distribution of Responding Pharmacies**

**Table 1: Distribution of Sample Pharmacies by State**

<b>State</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
<b>AL</b>	2	3.13	2	3.13
<b>AZ</b>	2	3.13	4	6.25
<b>CA</b>	4	6.25	8	12.50
<b>CO</b>	1	1.56	9	14.06
<b>DE</b>	1	1.56	10	15.63
<b>FL</b>	4	6.25	14	21.88
<b>GA</b>	1	1.56	15	23.44
<b>IA</b>	3	4.69	18	28.13
<b>ID</b>	2	3.13	20	31.25
<b>IL</b>	4	6.25	24	37.50
<b>IN</b>	3	4.69	27	42.19
<b>KS</b>	1	1.56	28	43.75
<b>LA</b>	2	3.13	30	46.88
<b>MA</b>	2	3.13	32	50.00
<b>ME</b>	1	1.56	33	51.56
<b>MN</b>	6	9.38	39	60.94
<b>MO</b>	2	3.13	41	64.06
<b>NC</b>	3	4.69	44	68.75
<b>ND</b>	1	1.56	45	70.31
<b>NY</b>	1	1.56	46	71.88
<b>OH</b>	1	1.56	47	73.44
<b>OR</b>	2	3.13	49	76.56
<b>PA</b>	1	1.56	50	78.13
<b>SC</b>	1	1.56	51	79.69
<b>TN</b>	2	3.13	53	82.81
<b>TX</b>	2	3.13	55	85.94
<b>VA</b>	1	1.56	56	87.50
<b>WA</b>	4	6.25	60	93.75
<b>WI</b>	3	4.69	63	98.44
<b>WV</b>	1	1.56	64	100.00

<b>Table 2: Mean Number of Beds Served (64 pharmacies reporting)</b>		
	<b>Mean Number</b>	<b>Standard Deviation</b>
<b>Skilled Nursing Facilities</b>	15	19
<b>Assisted Living Facilities</b>	40	78
<b>Other Facilities</b>	27	71
<b>All Facilities</b>	82	124
<b>Skilled Nursing Facility Beds</b>	1565	2136
<b>Assisted Living Facility Beds</b>	989	1312
<b>Other Facility Beds</b>	422	798
<b>Total Beds</b>	2976	3392
<b>Rural Skilled Nursing Facilities</b>	6	13
<b>Rural Assisted Living Facilities</b>	9	23
<b>Rural Other Facilities</b>	8	25
<b>Total Rural Facilities</b>	23	46
<b>Rural Skilled Nursing Facility Beds</b>	406	770
<b>Rural Assisted Living Facility Beds</b>	216	468
<b>Rural Other Beds</b>	132	439
<b>Total Rural Beds</b>	754	1306

<b>Table 3: Mean Prescription Volume (64 pharmacies reporting)</b>		
	<b>Mean</b>	<b>Standard Deviation</b>
<b>New Prescriptions</b>	125,186	132,507
<b>Refill Prescriptions</b>	281,200	32,355
<b>Total Prescriptions</b>	406,386	436,566
<b>Prescriptions Returned (reported)</b>	35,688	209,939
<b>Prescriptions Returned (credited)</b>	36,941	255,380

**Table 4: Percent of Total Doses Dispensed by Type of Dispensing Cycle  
(64 pharmacies reporting)**

<b>Dispensing Cycle</b>	<b>Percent</b>
<b>Less than Seven Days</b>	5.6
<b>Seven Days</b>	11.7
<b>Fourteen Days</b>	5.0
<b>One Month (28 to 31 Days)</b>	76.5
<b>Other Dispensing Cycle</b>	1.2

**Table 5: Percent of Total Doses Dispensed by Type of Packaging  
(64 pharmacies reporting)**

<b>Packaging Type</b>	<b>Percent</b>
<b>Single Dose Strip</b>	7.8
<b>Multi Dose Strip</b>	5.2
<b>Single Dose Blister</b>	65.5
<b>Multi Dose Blister</b>	10.9
<b>Manufacturer Unit Dose</b>	1.8
<b>Reusable Cassettes</b>	3.4
<b>Reusable Organizers</b>	0.5
<b>Bottles</b>	4.9

**Table 6: Sales by Line of Business  
(64 pharmacies reporting)**

	<b>Mean</b>	<b>Standard Deviation</b>
<b>Total Sales Revenue</b>	\$16,638,363	\$14,171,111
<b>Sales From Dispensing to Long Term Care Facilities</b>	\$16,338,691	\$13,857,815
<b>Consulting Revenue</b>	\$99,436	\$142,357
<b>Other Revenue</b>	\$200,236	\$632,280

**Table 7: Percent of Total Prescriptions Dispensed by Payer  
(64 pharmacies reporting)**

<b>Payer</b>	<b>Percent</b>
Medicare Part A	15.0
Medicare Part B	1.7
Medicare Part D	46.9
Medicaid Fee For Service	12.2
Medicaid Managed Care	4.9
Private Insurance	10.3
Private Pay	6.9
Other Payer	2.1

**Table 8: Pharmacies Reporting Technology Used In LTC Pharmacies  
(64 pharmacies reporting)**

<b>Technology</b>	<b>Number Reporting Use</b>	<b>Percent of Pharmacies</b>
Automated Infusion Technology	7	11
Automated Package Filling	36	56
Automated Tablet Counters	20	31
Barcode Systems	55	86
Digital Scales	30	47
EMR, eMAR, HER Systems	32	50
Electronic Prescribing	47	73
Heat Cold Package Sealers	53	83
Integrated Voice Response	11	17
Long Term Care Packaging Printers or Labelers	52	81
Remote Automated Dispensing Cabinets	15	23
Sterile Compounding Hoods	34	53

**Table 9: Cost to Dispense (CTD) Cost Components  
(64 pharmacies reporting)**

	<b>Percentage of Total Cost to Dispense</b>
<b>Personnel Expenses</b>	53.2
<b>Indirect Expenses<sup>a</sup></b>	31.4
<b>Direct Expenses<sup>b</sup></b>	8.4
<b>Other Consulting Pharmacist Costs</b>	0.2
<b>Inventory Carrying Costs</b>	0.5
<b>AR Carrying Costs</b>	1.2
<b>Corporate Overhead</b>	5.1
	<b>Percentage of Personnel Expenses</b>
<b>Managers</b>	13.0
<b>Dispensing Pharmacists</b>	29.1
<b>Technicians</b>	28.1
<b>Delivery Personnel</b>	7.7
<b>Billing Personnel</b>	8.0
<b>Medical Records Personnel</b>	2.7
<b>Consultant Pharmacists</b>	4.7
<b>Other Dispensing Staff</b>	6.7

<sup>a</sup>Indirect expenses included the allocated portions of annual costs of computer hardware and software, postage and delivery, telephone, other equipment, depreciation on the building and leasehold, depreciation on computer and other equipment, building rent or mortgage payments, utilities, maintenance and repairs, insurance, bad debt, advertising, office supplies, bank and credit card fees, accounting and legal expenses, security, taxes, and miscellaneous.

<sup>b</sup>Direct expenses included after hours pharmacist services, medication containers and labels, professional liability insurance, pharmacy licenses and permits, dues and subscriptions, expenses related to participation in third party prescription programs, and depreciation on med carts, delivery vehicles, and waste reducing technologies. Other consultant pharmacist costs included non-personnel expenses such as mileage, meals, and insurance.

**Table 10. Sensitivity Analysis for Cost to Dispense (CTD)**

<b>Variation</b>	<b>Mean</b>	<b>Median</b>
<b>Base Case</b>	<b>\$14.05</b>	<b>\$13.54</b>
<b>Salary Allocation Changed<sup>a</sup></b>	<b>\$13.95</b>	<b>\$13.54</b>
<b>Outliers Dropped<sup>b</sup></b>	<b>\$13.76</b>	<b>\$13.54</b>
<b>Salary Allocation Changed and Outliers Dropped<sup>c</sup></b>	<b>\$13.86</b>	<b>\$13.54</b>

<sup>a</sup> All salaries in the base case analysis were allocated to the cost of dispensing based on the ratio of hours worked in dispensing (or in support of dispensing) to total hours worked. In the sensitivity analysis, we based the allocation on the ratio of LTC prescription sales to total pharmacy sales for managers, medical records personnel, billing personnel, and other dispensing staff.

<sup>b</sup> We dropped the pharmacies with the highest and lowest CTD from the analysis.

<sup>c</sup> We used the salary allocation based on the sales ratio and dropped the pharmacies with the lowest and highest CTD.

**Table 11: Variables Significantly Correlated ( $p < 0.05$ ) with Cost to Dispense**

<b>Variable</b>	<b>Correlation</b>
<b>Size of Pharmacy (square feet)</b>	-0.30
<b>Days Open Per Week</b>	-0.28
<b>Days Per Week Deliveries Made</b>	-0.26
<b>Total Prescription Volume</b>	-0.52
<b>Use of a 14-Day-or-Less Dispensing Cycle</b>	-0.38
<b>Percentage of Prescriptions Dispensed in Single Dose Strip Pack</b>	-0.36
<b>Percentage of Prescriptions Dispensed in Reusable Cassettes</b>	0.26
<b>Percentage of Prescriptions Reimbursed by Medicare Part A</b>	-0.33
<b>Pharmacy Uses Automated Package Filler Technology</b>	-0.36
<b>Pharmacy Uses Barcode Technology</b>	-0.37
<b>Pharmacy Uses Digital Scales</b>	-0.29

## **Appendix I. Estimation of Cost of Reporting Prescription Returns**

CMS originally proposed to require LTC pharmacies to report the quantity of unused medications as part of the 14-day-or-less dispensing regulation. CMS subsequently decided not to implement this requirement. However, at the time we submitted our research proposal to NCPA, the requirement was scheduled to be implemented and so we examined the cost of reporting returns.

To determine the costs of reporting returned prescriptions, we surveyed respondent LTC pharmacies that routinely accept and process prescription returns in various packaging options. We asked these pharmacies to collect the following data: (1) the number of LTC prescriptions returned; (2) the amount of personnel time (in minutes) required to process returns and return to stock or destroy medications and packaging by personnel type (e.g., pharmacist, technician, clerk, etc.); and (3) the hourly salary or wage of each personnel type inclusive of benefits.

A total of 28 LTC pharmacies (44.4% of our total sample of pharmacies) reported that they processed and reported prescription returns from some of their LTC facility clients. The median percent of prescriptions returned and reported (as a percent of total prescription volume) for these 28 pharmacies was 3.2%. The 25th and 75th percentiles were 0.8 and 7.7%.

Thirty-four pharmacies (54.0%) reported that they processed and credited prescription returns. The median percent of prescriptions returned and credited (as a percent of total prescription volume) for these 34 pharmacies was 1.1%. The 25th and 75th percentiles were 0.2 and 3.5%. (For these two questions, only 63 pharmacies provided usable information.)

We surveyed respondent LTC pharmacies that routinely accept and process prescription returns from clients in various packaging options and requested one day of observations to collect the following data to determine the incremental cost that processing returns adds to the average CTD: (1) the number of LTC prescriptions returned; (2) the amount of personnel time (in minutes) required to process returns and return to stock or destroy medications and packaging by personnel type (e.g., pharmacist, technician, clerk, etc.); and, (3) the hourly salary or wage of each personnel type inclusive of benefits.

The results were as follows:

1. Processing returns for multi-dose packaging appears to be very rare because the medications have been co-mingled. In addition to representing a challenge for positive identification, co-mingling also represents a potential threat to patients as a medication that has been returned may have been in contact with other medications to which they are allergic (e.g., sulfas).

2. For single-dose strip packs, the average cost to process returns (count, record, punch, destroy or return to stock and destroy packaging) was \$0.26 per prescription from one respondent.
3. For manufacturer's unit dose, the average cost to process returns from one respondent was \$0.36.
4. For single dose blister packs, the average cost to process returns was \$0.31 from one respondent and \$0.45 from another.

There were no responses from pharmacies that used reusable cassettes or reusable pill organizers. However, there were very few pharmacies that used those packaging options and even fewer that reported processing returns – probably for the same reasons that there were few returns from multi-dose packaging.

Our estimate of the incremental cost that processing returns adds to the average CTD was calculated as the mean of the four values above. This came to \$0.35, with a range of \$0.26 to \$0.45. We did not have an estimate of how many prescriptions may have been returned under the new legislation. If we assume that half may have been returned, then this would add \$0.17 to the CTD.

## **Appendix II. Final Survey Instrument**

## LTC Pharmacy Cost-of-Dispensing Survey

(Please refer to 'LTC Pharmacy Survey Instructions')

### Section 1: General Information

Name of Pharmacy: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Pharmacy NCPDP/NABP: \_\_\_\_\_ Pharmacy NPI: \_\_\_\_\_

Information supplied in this survey is from the fiscal year **ending**: \_\_\_\_MM\_\_\_\_DD\_\_\_\_YY

Preparer's Name: \_\_\_\_\_

Title or Position: \_\_\_\_\_

### Section 2: Pharmacy Information

#### 1. Location of pharmacy: (check one)

- \_\_\_\_\_ **Urban** (downtown in a city with population of 150,000 or more)
- \_\_\_\_\_ **Suburban** (outlying suburb or shopping center location in urban area)
- \_\_\_\_\_ **Small Town** (city with a population of 10,000 to 149,999)
- \_\_\_\_\_ **Rural** (in a city or area with a population less than 10,000)

2. Total Pharmacy Size: \_\_\_\_\_ sq. ft.

3. Percentage of floor space dedicated to LTC dispensing activities: \_\_\_\_\_ %

4. Years pharmacy has been in operation under current ownership: \_\_\_\_\_ yrs

5. Days pharmacy is open per week: \_\_\_\_\_ days

6. Hours pharmacy is open per week: \_\_\_\_\_ hours

7. Days per week that pharmacy dispenses and delivers meds to clients: \_\_\_\_\_ days

**8. Which of the following technologies does your pharmacy use?** (check all that apply)

- a. \_\_\_\_\_ Remote Automated Dispensing Cabinets
- b. \_\_\_\_\_ Automated Package Filling
- c. \_\_\_\_\_ Heat/Cold Package Sealers
- d. \_\_\_\_\_ Barcode Systems
- e. \_\_\_\_\_ Compounding Hoods (e.g., laminar flow)
- f. \_\_\_\_\_ EMR / eMAR / EHR Systems
- g. \_\_\_\_\_ Automated Infusion Compounding Technology
- h. \_\_\_\_\_ Integrated Voice Response (IVR)
- i. \_\_\_\_\_ Automated Tablet Counters
- j. \_\_\_\_\_ LTC Packaging Printers or Labelers
- k. \_\_\_\_\_ Digital Scales
- l. \_\_\_\_\_ Electronic Prescribing

**9. The building in which the pharmacy operates is:** \_\_\_\_\_ Owned \_\_\_\_\_ Leased

**Section 3: Client Information**

	Skilled Nursing	Assisted Living	Other	TOTAL
<b>10. Number of LTC <u>facilities</u> to which you deliver medications</b>				
<b>11. Number of LTC <u>beds</u> for which you deliver medications</b>				
<b>12. Number of LTC <u>facilities</u> in Rural or Super Rural Zip Codes<sup>1</sup></b>				
<b>13. Number of LTC <u>beds</u> in Rural or Super Rural Zip Codes<sup>1</sup></b>				

<sup>1</sup>A list of Rural and Super Rural Zip Codes in your state may be found in the Instructions. Rural and Super Rural Zip Codes for other states may be found at [www.ncpaltc.org/zipcodes](http://www.ncpaltc.org/zipcodes)

**Section 4: Medication Information**

**14. Number of prescriptions dispensed during the fiscal year:**

See Instructions. Each medication dispensing and delivery “event” is considered a separate prescription. EXAMPLE: if a patient is dispensed four cycles of 7 days therapy it would be considered four prescriptions.

New: \_\_\_\_\_

Refill: \_\_\_\_\_

TOTAL: \_\_\_\_\_

**15. Percentage of prescriptions dispensed as:** Solid Oral Doses: \_\_\_\_\_ %  
Compounds, infusion, enteral, blood factors / derivatives: \_\_\_\_\_ %  
Other (liquids, topicals, inhalers, patches and all other dosage forms): \_\_\_\_\_ %  
TOTAL: 100 %

**16. Percentage of prescriptions dispensed as:** Brand Rx: \_\_\_\_\_ %  
Generic Rx: \_\_\_\_\_ %  
OTC: \_\_\_\_\_ %  
TOTAL: 100 %

**17. Percentage of solid oral prescriptions dispensed in:** Single Dose Strip Packs: \_\_\_\_\_ %  
Multi-dose (Co-mingled) Strip Packs: \_\_\_\_\_ %  
Single Dose Blister Cards (aka, “bingo” or “punch” cards): \_\_\_\_\_ %  
Multi-dose (Co-mingled) Blister Packs: \_\_\_\_\_ %  
Manufacturer Unit Dose: \_\_\_\_\_ %  
Reusable Cassettes (e.g., Opus): \_\_\_\_\_ %  
Reusable Pill Organizers: \_\_\_\_\_ %  
TOTAL: 100 %

**18. Percentage of solid oral prescriptions dispensed in cycles of:** < 7 days: \_\_\_\_\_ %  
7 days: \_\_\_\_\_ %  
14 days: \_\_\_\_\_ %  
28 - 31 days: \_\_\_\_\_ %  
Other: \_\_\_\_\_ %  
TOTAL: 100 %

**19. Annual number of solid oral prescriptions that are returned to the pharmacy for counting and reporting:** \_\_\_\_\_

**20. Annual number of solid oral prescriptions that are returned to the pharmacy for credit and reuse:** \_\_\_\_\_

**Section 5: Operating & Financial Information**

**21. Total sales from medication dispensing and supporting activities:** \$ \_\_\_\_\_  
(exclude sales tax)

**22. Revenue from consulting services:** \$ \_\_\_\_\_

**23. Revenue from all other sources:** \$ \_\_\_\_\_

**24. Total Operating Expenses (including personnel):** \$ \_\_\_\_\_

**25. Accounts Receivable: (end-of-year balance)** \$ \_\_\_\_\_

**26. What percent of accounts receivable are from medication dispensing and delivery activities?** \_\_\_\_\_ %

**27. Ending medication inventory for this fiscal year:** \$ \_\_\_\_\_

**28. Beginning medication inventory:** \$ \_\_\_\_\_  
(same as ending inventory from the last fiscal year)

**29. Percent of prescriptions covered by:**

Medicare A: \_\_\_\_\_ %

Medicare B: \_\_\_\_\_ %

Medicare D: \_\_\_\_\_ %

Medicaid Fee for Service: \_\_\_\_\_ %

Medicaid Managed Care: \_\_\_\_\_ %

Private Insurance: \_\_\_\_\_ %

Private pay: \_\_\_\_\_ %

Other: \_\_\_\_\_ %

TOTAL: 100 %

**30. Is this pharmacy part of a multiple pharmacy organization?** \_\_\_\_\_ Yes \_\_\_ No  
 (If 'No' skip 31-34 and proceed to question 35)

**31. How many pharmacies are in the organization?** \_\_\_\_\_

**32. Does the organization have a central office?** \_\_\_\_\_ Yes \_\_\_ No  
 (If 'No' skip 33-34 and proceed to question 35)

**33. Expenses for central office during the past fiscal year:** \$ \_\_\_\_\_

**34. Total organization's sales during the past fiscal year:** \$ \_\_\_\_\_

**Section 6: Personnel Expenses**

**35. Personnel Expenses:** (Complete all fields. If zero, enter '0'. Round to the nearest dollar)

Personnel Type	FTEs <sup>1</sup>	Total Compensation <sup>3</sup>	% of Time Spent Dispensing or Supporting Dispensing Activities <sup>4</sup>
Managers			
Dispensing Pharmacists			
Technicians			
Delivery Personnel			
Billing Personnel			
Medical Records Personnel			
Other Dispensing Support Staff			
Consultant Pharmacists			
All Other Staff <sup>2</sup>			<b>0%</b>

<sup>1</sup>Include the total number of full-time equivalent personnel employed in each classification.

<sup>2</sup>Include all remaining personnel who do NOT spend any time in medication dispensing or related supportive and administrative activities.

<sup>3</sup>Include bonuses, profit sharing; medical, life and disability insurance; pension, retirement, social security and unemployment taxes, payroll taxes and workers compensation for all employees in this classification.

<sup>4</sup>Enter the average percentage of time that employees in this classification spend engaged in dispensing or activities that directly or indirectly support dispensing and delivery of medications. Exclude time spent in activities that do not contribute in some way to the medication dispensing and delivery functions of the pharmacy.

**Section 7: Medication Dispensing Carts**

**36. Number of medication dispensing carts purchased in the past three fiscal years for placement in LTC client facilities:** \_\_\_\_\_

**37. Acquisition cost of all medication carts purchased in the past three fiscal years for placement in LTC client facilities:** \$ \_\_\_\_\_

## **Section 8: Direct Costs**

**38. After-hours and back-up pharmacy services:** \$ \_\_\_\_\_

**39. Medication packaging containers and labels:** \$ \_\_\_\_\_

**40. Professional liability insurance:** \$ \_\_\_\_\_

**41. Pharmacy licenses, permits, and fees:** \$ \_\_\_\_\_

Include pharmacist and pharmacy licenses, owner's registration and accreditation fees.

**42. Dues, subscriptions and CE programs:** \$ \_\_\_\_\_

Include dues paid to local, state and national pharmacy associations, pharmacy textbooks, journal subscriptions, registration and travel to attend professional meetings and CE programs.

**43. Third party program expenses:** \$ \_\_\_\_\_

Include third party claim forms, transmission and transaction fees, and enrollment or participation fees. Do NOT include bad debt due to third party prescription claims.

**44. Computer Hardware** \$ \_\_\_\_\_

Include purchases expensed in the current year and rent, lease and maintenance of computer hardware. Do NOT include depreciation expenses here.

**45. Computer Software** \$ \_\_\_\_\_

Include purchases expensed in the current year, licensing and user fees, database subscriptions and maintenance expenses. Do NOT include depreciation expenses here.

**46. Postage and Delivery Services** \$ \_\_\_\_\_

Include courier services such as UPS, FedEx, etc.

**47. Delivery Vehicles** \$ \_\_\_\_\_

Include rent or lease expense, insurance, fuel, maintenance and repairs of delivery vehicle(s). Do NOT include depreciation expenses or cost of delivery personnel.

**48. Telephone** \$ \_\_\_\_\_

Include all line charges, answering machine or service, and IVR system fees. Do NOT include third party claims expenses here.

**49. Dispensing Technologies to Reduce Waste** \$ \_\_\_\_\_

Include purchases expensed in the current year and rent or lease and maintenance expense of dispensing technologies that can be used to dispense 14-day or shorter cycles. Do NOT include depreciation expenses here.

**50. Other Equipment or Technologies** \$ \_\_\_\_\_

Include purchases expensed in the current year and rent or lease and maintenance of other technologies not included in question 49 above. Do NOT include depreciation expenses here.

## **Section 9: Depreciation Expenses**

**51. Leasehold improvement:** \$ \_\_\_\_\_

**52. Delivery Vehicles** \$ \_\_\_\_\_

**53. Computer:** \$ \_\_\_\_\_

**54. Dispensing Technologies to Reduce Waste:** \$ \_\_\_\_\_

**55. Other Equipment and Technologies:** \$ \_\_\_\_\_

**56. Medication Dispensing Carts:** \$ \_\_\_\_\_

**57. Building Depreciation:** \$ \_\_\_\_\_

**58. All Other Depreciation:** \$ \_\_\_\_\_

## **Section 10: Indirect Expenses**

**59. Building Mortgage Payment:** \$ \_\_\_\_\_

Enter mortgage payments made during last fiscal year, if applicable.

**60. Building Rent:** \$ \_\_\_\_\_

If building is not owned, enter annual rent expense. If building is owned outright and no depreciation expense is reported, enter the rent that the owner would expect to pay for a similar building and location.

**61. Utilities:** \$ \_\_\_\_\_

Include electricity, natural gas, water, sewer, propane, heating oil and other utilities.

**62. Maintenance and repairs for pharmacy:** \$ \_\_\_\_\_

Include interior, building & grounds and janitorial.

**63. Insurance for pharmacy:** \$ \_\_\_\_\_

Include liability, property and surety bonds. Do NOT include health insurance, professional liability insurance or auto insurance here.

**64. Total bad debt expense for pharmacy:** \$ \_\_\_\_\_

**65. Advertising:** \$ \_\_\_\_\_

Include all advertising and promotion activities for the pharmacy including sponsorship of community events.

**Section 11: Other Specific Indirect Expenses**

**66. Office Supplies:** \$ \_\_\_\_\_

**67. Bank / Credit card charges:** \$ \_\_\_\_\_

**68. Accounting, legal and professional fees:** \$ \_\_\_\_\_

**69. Security:** \$ \_\_\_\_\_

**70. Taxes:** \$ \_\_\_\_\_

Include property, real estate, sales, federal and state income taxes.

**71. Other Consultant Pharmacist Expenses:** \$ \_\_\_\_\_

Excluding compensation entered in question 35, include all other consultant pharmacist expenses including cars, fuel, Insurance, travel expenses, etc.

**72. Miscellaneous:** \$ \_\_\_\_\_

Note: the sum of all itemized expenses in questions 35-72 should equal the Total Operating Expenses in question 24, including either one-third of medication carts that were purchased in the last three years from question 37 or the annual medication cart depreciation expense reported in question 56, but NOT both.

**Thank you for completing this survey!**

Please return the survey in the enclosed envelope to:

**Norman V. Carroll, PhD  
Virginia Commonwealth University  
410 N. 12<sup>th</sup> Street  
Box 980533  
Richmond, VA 23298-0533**

For questions, contact Dr. Norman Carroll at [nvcarroll@vcu.edu](mailto:nvcarroll@vcu.edu) or call 804-828-2587

## **Appendix III. Instructions for Final Survey Instrument**

## LTC Pharmacy Survey Instructions

The National Community Pharmacists Association (NCPA) has commissioned this survey to determine the full operating costs that are incurred by LTC pharmacies to dispense and deliver medications to residents of LTC facilities in the US. This survey is designed to determine the cost of dispensing and delivering medications only. It does not address medication ingredient costs or additional clinical consulting services that may be provided by LTC pharmacies to their clients.

All data collected for this analysis will be kept completely confidential. At no time will individual pharmacy data be shared with or provided to anyone outside the research team. Results of the analysis will be reported to the sponsor of this study (NCPA) in aggregate form only. The analysis is being conducted by a team of experienced researchers with expertise in conducting large-scale cost analyses in community pharmacy. The project has been reviewed and approved by Virginia Commonwealth University.

Please complete and return the survey via U.S. Mail using the enclosed self-addressed envelope. While completing the survey, please refer to these instructions to ensure that your information is accurate and complete.

- One survey should be completed for each pharmacy (i.e., separate NABP/NPI number)
- Unless stated otherwise, all data should be from the **same 12-month period** (fiscal year)
- It will be helpful to assemble the following documents from the same fiscal year before beginning the survey:
  - Income Statement, Balance Sheet, tax filing or fiscal year records, salary and benefit information and payroll logs
- If you have additional questions, you may call Dr. Norman Carroll at Virginia Commonwealth University (804-828-2587) or email questions to [nvcarroll@vcu.edu](mailto:nvcarroll@vcu.edu) with the subject 'LTC Survey Question'

### **Section 1: General Information**

Provide the street address for the physical location of the pharmacy. Provide the seven-digit NCPDP/NABP number of the pharmacy and the pharmacy's 10-digit NPI (National Provider Identifier). Indicate the name and position of the individual who completed the survey and to whom all questions should be referred.

## **Section 2: Pharmacy Information**

1. Indicate the location of the pharmacy by checking one of the four categories listed.
2. Enter the pharmacy's total floor space in square feet.
3. Indicate the percentage of the pharmacy's floor space that is used for medication dispensing and supporting activities. These include dispensing, delivery, medical records, administration, billing, inventory management, prescription record keeping, customer support, and training pharmacists and technicians.
4. Enter the number of years the pharmacy has been in operation under its current ownership.
5. Indicate the average number of days the pharmacy is open per week.
6. Indicate the average number of hours the pharmacy is open per week.
7. Enter the average number of days each week that the pharmacy dispenses and delivers medications to clients.
8. Indicate the technologies that the pharmacy uses by checking all that apply.
9. Check whether the building in which the pharmacy operates is owned or leased.

## **Section 3: Client Information**

10. Enter the number of (a) skilled nursing facilities, (b) Assisted Living Facilities, and (c) Other types of LTC facilities to which the pharmacy dispenses and delivers medications. The sum of these three categories in TOTAL should equal the total number of LTC facilities to which the pharmacy dispenses and deliver medications.
11. Enter the number of LTC beds / patients to whom the pharmacy dispenses or delivers medications in each of the three types of LTC facilities. The sum of these three categories in TOTAL should equal the total number of LTC beds / patients to which the pharmacy dispenses and deliver medications.
12. From the list of rural and super rural Zip Codes in Appendix A, enter the number of LTC facilities in rural or super rural Zip Codes to which the pharmacy dispenses and delivers medications in each of the three types of LTC facilities. A list of rural and super rural Zip Codes in your state may be found in Appendix A of these instructions. Rural and Super Rural Zip Codes in other states may be found at [www.ncpaltc.org/zipcodes](http://www.ncpaltc.org/zipcodes).
13. Enter the number of patients / beds in rural or super rural Zip Codes to which the pharmacy dispenses and delivers medications.

## **Section 4: Medication Information**

**14.** Enter the number of prescriptions dispensed as new and refill (i.e., continuing therapy of an existing prescription). For purposes of this survey, a “prescription” is defined as each occurrence of a medication that is dispensed and delivered to a LTC facility for use by a designated patient, irrespective of the dispensing cycle or number of doses that are contained in the packaging. For example, if four 7-day cycles of a medication were dispensed and delivered to a LTC patient during the month it would equal four prescriptions. If two 14-day cycles were dispensed it would equal two prescriptions, and so on.

**15.** Indicate the percentage of prescriptions (as defined in question 14) that are dispensed as the dosage formulations listed. ‘Other’ includes liquids, topicals, inhalers, patches and all other dosage forms not listed in the first two options.

**16.** Indicate the percentage of prescriptions (as defined in question 14) that are dispensed as brand prescription products, generic or multiple-source prescription products and non-prescription (i.e., OTC) products.

**17.** Indicate the percentage of prescriptions for solid oral dose medications that are dispensed in the different packaging options listed.

**18.** Indicate the percentage of prescriptions for solid oral dose medications that are dispensed in the different quantity cycles indicated.

**19.** Enter the annual number of full or partial prescriptions (as defined in question 14) for solid oral dose medications that are returned to the pharmacy from LTC facilities for counting and reporting. If the number of returns is not routinely counted, estimate the annual number using the average from a representative 5-day count.

**20.** Enter the number of full or partial prescriptions (as defined in question 14) for solid oral dose medications that are returned to the pharmacy from LTC facilities for credit and are then returned to stock for reuse. If the number of returns is not routinely counted, estimate the annual number using the average from a representative 5-day count.

## **Section 5: Operating & Financial Analysis**

**21.** Enter the total annual pharmacy sales revenue for dispensing and delivering medications to LTC facility clients inclusive of all supportive and administrative services. Do NOT include revenue from clinical consulting or other non-dispensing or delivery-related services.

**22.** Enter the annual revenue the pharmacy receives from consulting services.

**23.** Enter the annual revenue the pharmacy receives from all other sources. The sum of questions 21-23 should equal the total revenue for the pharmacy.

24. Enter the total annual operating expenses for the pharmacy. Do NOT include cost of goods sold.
25. Enter the end-of-year Accounts Receivable (from the balance sheet).
26. Indicate the percentage of accounts receivable (question 25) that result from medication dispensing and delivery activities as defined in question 21.
27. Enter the ending medication inventory for this fiscal year (from the balance sheet). Include inventory in emergency boxes that are placed in LTC facilities if owned by the pharmacy.
28. Enter the beginning medication inventory for this fiscal year. This will be the same as the ending medication inventory from the previous year. Include inventory in emergency boxes placed in LTC facilities if owned by the pharmacy.
29. Indicate the percentage of prescriptions (as defined in question 14) that are billed to each of the funding entities listed. Classify OTC prescriptions paid by the LTC facility as 'Private'.
30. If the pharmacy is part of a multi-pharmacy organization then check 'Yes' and proceed to question 31. If 'No' then skip questions 31-34 and proceed directly to question 35.
31. Indicate the number of pharmacies in the organization.
32. If the organization has a central office that supports the activities of all pharmacies in the organization then check 'Yes' and proceed to question 33. If 'No' then skip questions 33-34 and proceed directly to question 35.
33. Enter the total annual expenses for the organization's central office during the past fiscal year.
34. Enter the organization's total sales revenue during the past fiscal year.

## **Section 6: Personnel Expenses**

35. In column two under 'FTEs', enter the number of full-time equivalents employed in each of the personnel classes listed.

In column three under '**Total Compensation**', enter the total annual compensation for all employees in the personnel class, inclusive of salary or wages, social security and unemployment taxes, payroll taxes, workers' compensation, health insurance, life insurance, bonus, pension and profit sharing contributions.

In column four under '**% of Time Spent Dispensing or Supporting Dispensing Activities**', enter the average percentage of time that employees in each personnel class spend participating in, or directly or indirectly supporting, medication dispensing and/or delivery activities. If an

outside delivery or courier service is used to deliver medications, enter the cost in question 46 under 'Postage and Delivery Services'.

## **Section 7: Medication Dispensing Carts**

**36.** Enter the number of medication dispensing carts the pharmacy has purchased in the fiscal year being used for this survey and the preceding two fiscal years.

**37.** Enter the acquisition cost (including tax) of the medication carts indicated in question 36.

## **Section 8: Direct Costs**

**38.** Enter the annual cost of after-hours dispensing and delivery by other (i.e., "back-up") pharmacies. Include only the cost of back-up pharmacy services to dispense and deliver medications. Do NOT include the cost of goods sold for these prescriptions.

**39.** Enter the annual cost of medication packaging containers as indicated in question 17 and labels. Do NOT include the cost of labeling equipment here.

**40.** Enter the annual cost of professional liability insurance for all pharmacy personnel.

**41.** Enter the annual cost of licenses, permits and fees for the pharmacy and all pharmacy personnel that are paid by the pharmacy. Include all accreditation fees.

**42.** Enter the annual cost of all dues, subscriptions and CE programs.

**43.** Enter the annual cost of third party program expenses including transaction fees. Do NOT include bad debt from unpaid third party claims here.

**44.** Enter the annual cost to purchase computer equipment that is fully expensed in the current year and the cost to rent, lease and maintain computer hardware. Do NOT include depreciation expense here.

**45.** Enter the annual cost of purchasing software this is fully expensed in the current year as well as licensing and user fees for all computer software including practice management systems, database subscriptions and maintenance fees.

**46.** Enter the annual cost of postage and courier services such as UPS and FedEx. Include outside (non-employee) medication delivery services.

**47.** Enter the annual cost of all delivery vehicles including rent or lease expense, insurance, fuel, maintenance and repair. Do NOT include the cost of delivery personnel here (see question 35). Do NOT include vehicle depreciation expense here (see question 52).

**48.** Enter the annual cost of all telephone line charges, answering service and IVR system fees. Do NOT include third party expenses here (see question 43).

**49.** Enter purchases expensed in the current year and the annual rent or lease and maintenance of all dispensing technologies that can be used to dispense a 14-day or shorter cycle. Do NOT include depreciation expense here (see question 54).

**50.** Enter the annual rent or lease and maintenance of all other equipment and technologies used in or by the pharmacy to support the dispensing and delivery of medications to LTC facilities that are not included in question 49. Do NOT include purchase or depreciation expenses here (see question 55).

## **Section 9: Depreciation Expenses**

**51.** If the building is not owned, enter the annual depreciation expense of leasehold improvements, if applicable.

**52.** If delivery vehicles are owned, enter the annual depreciation expense of all vehicles.

**53.** Enter the annual depreciation expense for the pharmacy computer system hardware and software, if applicable.

**54.** Enter the annual depreciation expense of dispensing technologies that may be used to reduce waste as defined in question 49.

**55.** Enter the annual depreciation expense of all other equipment and technologies used by the pharmacy to support the dispensing or delivery of medications to LTC facilities that are not included in question 54.

**56.** Enter the annual depreciation of medication dispensing carts that have been purchased for placement in LTC facilities, if applicable.

**57.** If the building in which the pharmacy operates is owned outright, enter the annual depreciation expense here. If the building has a mortgage, enter '0' here and enter the annual mortgage payment in question 59 below. If no depreciation is declared then enter '0' and see question 60 below.

**58.** Enter all other depreciation expenses not included in questions 51-57.

## **Section 10: Indirect Expenses**

**59.** If the building in which the pharmacy operates is owned and has a mortgage, enter the annual mortgage payments including principal and interest. Otherwise, enter '0' here.

**60.** If the pharmacy building is not owned then enter annual rent expense here. If the pharmacy building is owned and has a mortgage then enter mortgage expense in question 59 and enter '0' here. If the building is owned outright and depreciation is declared, enter depreciation expense in question 57 and enter '0' here. If the building is owned outright and no depreciation expense is declared then enter the rent that the owner would expect to pay for a similar building and location.

**61.** Enter the annual costs for electricity, natural gas, water, sewer, propane, heating oil and other utilities.

**62.** Enter the annual cost of maintaining building and grounds including interior and exterior maintenance and repair, trash removal and janitorial services.

**63.** Enter the annual cost of liability insurance, property insurance and surety bonds. Do NOT include health insurance (see question 35) or auto insurance (see question 47) here.

**64.** Enter the annual bad debt expense for the pharmacy.

**65.** Enter the annual cost of advertising and promotion including sponsorship of community activities and events.

## **Section 11: Other Specific Indirect Expenses**

**66.** Enter the annual cost of office supplies.

**67.** Enter the annual cost of bank or credit card charges.

**68.** Enter the annual cost of accounting, legal and professional administrative services.

**69.** Enter the annual cost of security services for building, grounds, delivery vehicles and personnel, including security personnel and security monitoring systems.

**70.** Enter annual taxes including property, real estate, sales, federal and state income taxes.

**71.** Enter the annual expenses of consultant pharmacists. Exclude compensation previously indicated in question 35 but include such things as cars, fuel, insurance, travel expenses, etc.

**72.** Enter all other operating expenses not included in questions 35-71. The sum of all itemized expenses in questions 35-72 should equal the Total Operating Expenses in question 24, including either one-third of medication carts that were purchased in the last three years from question 37 or the annual medication cart depreciation expense that is reported in question 56, but NOT both.

