White Paper June 2017

Measuring Labor Savings after Implementing an Advanced Pharmacy Automation Solution in Will Call Management

A Study in Labor Savings in Prescription Packaging, Retrieval and Return to Stock

1 ABSTRACT: WILL CALL AUTOMATION PRODUCES LABOR SAVINGS

Replacing a pharmacy's manual will call installation with an automated will call system produces labor savings in all areas of will call workflow – packaging, filing, searching, and RTS (return to stock). It also provides new error and security checks for pharmacy workflow and improves the customer experience.

This white paper shows measurable labor savings can be expected from implementing an automated will call location system. The following table shows labor savings after deployment of the automated system:

Table 1. Summary of Performance Improvements when Using scripClip Automation in Will Call[1]

Will Call Task	**Will Call Automation Performance Improvement Using scripClip™**	
Packaging	43% - 45%	See Section 5
Packaging (filing)	91%	"
Rx Bag Searches	46% - 73%	See Section 6
Misplaced Bag Searches	100% (no misplaced bags occurred when using will call automation)	See Section 7
Return to Stock	36% - 78%	See Section 8

[1] This table is a summary of the measured times in Sections 5 – 8. The time data in each section has been converted to percentages in this table

2 INTRODUCTION: WILL CALL WORKFLOW – THE LAND THAT PHARMACY AUTOMATION FORGOT

Over the past several decades, numerous products have improved both the efficiency and safety of pharmacy operations. These advances have included automatic pill counting, robotic pill dispensing, bar codes for patient and inventory information, and pharmacy management systems.

One part of pharmacy workflow that has been slow to adopt automation has been the will call area of the pharmacy.

Pharmacies waste labor and decrease customer satisfaction when will call scripts take too long to locate and retrieve. A much more serious compliance issue occurs when a wrong prescription bag is given to a customer causing injury, litigation, negative social media or fines. Implementing a good will call management system can reduce labor costs, improve customer satisfaction and provide additional safety checks in the effort to eliminate prescription errors.

Attempts in the past decade at providing will call solutions have been hindered by power management and communication technology limitations.

First generation systems were limited due to the difficulty of supplying power and control signals to large arrays of indicators for prescription bags. Early solutions were to add indicator electronics to metal cabinets — either construct metal cabinets containing hard wired indicator lights or place indicators near hanging bags. These cabinets or shelving systems required custom power modifications and store remodeling. Communication signals between the clerk at the point of sale terminal and the prescription bag in some early wireless systems used inefficient, infra-red signals, which were easily blocked by overlapping packages, people or equipment.

As a result of the expense and installation difficulties, these systems never received widespread adoption by large chains or independent pharmacies. The introduction in ResearchandMarkets.com report, 'Pharmacy Automation Market by Product' (April 2017), stated that 'automation medication dispensing systems accounted for the largest share of pharmacy automation in 2016.' Only one of the worldwide, top 12 pharmacy automation companies mentioned in that report offers any type of will call solution.

Recent advances in micro-power management adopted from hand held consumer device technologies have made it possible to inexpensively offer self-powered, electronic prescription bags that could work 24/7 in a will call environment for over a year on common batteries. Advances in radio communication and networking design have made it possible for hundreds of bags to quickly communicate with a control station while using encrypted data for patient prescription information. - The results of incorporating these advances are easy to set up will call systems that are miserly in power consumption, but loaded with features for patient safety, workflow productivity and security. Some will call systems such as scripClip, are available in different form factors that address hanging bag, paper bag, refrigerated products and oversized packages.

Figure 1: the scripClip system for will call automation. Note support for hanging bags as well as paper bags and over-sized packages.

3 PROBLEM: MEASURING ALL PARTS OF WILL CALL WORKFLOW

Will call workflow consists of packaging/filing, searching for single or multiple prescription packages and return to stock operations. Although it might seem obvious any search function would be greatly improved by having the prescription packages self-identify themselves, the amount of savings was vague and never studied in detail (excluding large chain proprietary, internal studies). Also, it was not known how much (if any) penalty was added through packaging and activating an automated prescription. Finally, there are numerous variations in how will call workflow is implemented in pharmacies.

For this study, we chose a specific will call workflow representing an efficient combination of ergonomic layout and indexing methodology. Thus, the study compared a top performing manual will call system against an automated will call system to ensure most readers of this paper should experience similar, if not greater performance improvements when they implement an automated will call solution.

4 THE METHODOLOGY USED IN MEASURING WILL CALL WORKFLOW

Three areas of will call workflow will be analyzed – prescription packaging/filing, prescription search/retrieval and inventory return to stock.

The savings from adding automation to a will call workflow consists of measurable operator savings in performing will call workflow tasks, plus more difficult to measure savings generated by eliminating mistakes and improved customer retention rates.

This white paper used measurements taken from video monitoring at an independent pharmacy (thirty days before will call automation was installed) and measurements obtained from search, retrieval and package check in/out data after installation of PerceptiMed's scripClip Automated Will Call System.

Due to variations in methodologies in packaging steps, return to stock (RTS) workflow, and various will call physical layouts, the published study times (before will call automation was added) may not represent will call activity times achieved in all will call systems.

The pharmacy selected for the study already implemented an ergonomic will call system that minimized retrieval and filing times (before the insertion of automation).

Specifically, the selected pharmacy's design included:

1. A U (or J)-shaped layout for shelving that minimized the clerks' physical movements in examining and retrieving the desired prescription bag. This style of configuration is practical for small to medium sized will call systems. The system used in the study contained, on average, 500 prescription bags (including several oversized paper bags and boxes on the floor).

Figure 2 Pharmacy Will Call Before scripClip Installation

2. A numeric filing system which eliminated confusion and reconfirmation of names that often occurs in surname based filing methodologies

3. Labels on hanging bags containing large, bold-font, easy–to-read numbers

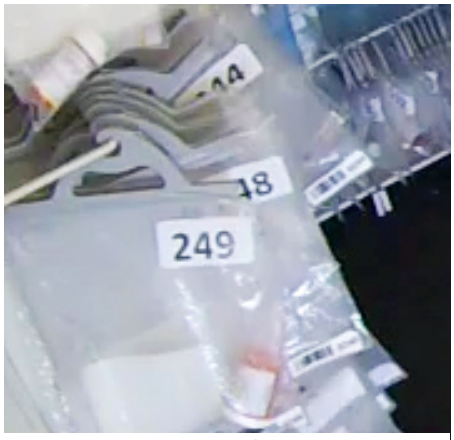

Figure 3: A Numeric Filing System

Even with this efficient system, misplaced packages took over 12 minutes of time to resolve and return to stock remained a lengthy process that was infrequently performed because it was considered a tedious, labor intensive task.

5 PACKAGING

Packaging is a process that includes multiple steps. In our packaging study, we also include filing, i.e. the placing of the prescription package on the shelf (either in an alphabetic or numeric sequence in a traditional will call setting or placed randomly in an automated will call system). The exact steps vary depending upon the workflow design implemented in the pharmacy management system and whether the will call system uses a numeric or alphabetic filing system.

Typically, the pre-automation packaging workflow consists of:

1. Scan the barcode of the prescription vial(s) into the PMS (pharmacy management system)
2. Scan the patient paperwork barcode(s) into the PMS
3. Enter the bag number (only if the PMS uses a numeric indexing will call management process)
4. Place filled prescription vials and associated paperwork in either a hanging bag or paper bag.
5. File the prescription in the will call rack or storage area (either numerically or alphabetically)

The scan steps and the order of the scans can vary depending upon workflow methodology.

Packaging with scripClip

The packaging steps when using scripClip in will call:

1. Scan the patient barcode(s)
2. Place vials and paperwork in either a (scripClip) hanging bag or paper bag/package (then attach a scripClip paper bag clip).
3. Place the scripClip near the scripClip reader, then press scripClip's button to register the package.
4. Place anywhere (filing is not necessary with scripClip automation) in the will call area.

The workflow after pharmacy automation using scripClip is similar, but the barcode scans of the patient paperwork always occur first. This enables the scripClip system to establish a chain of custody for the prescription bag after it is registered in the scripClip system. The bag and its contents are continuously monitored for bag opening or other tampering. As a result, the custody of the contents is continuously maintained for however long the bag is in will call. After retrieval, the bag is checked back into the system and the contents presented to the customer. Additional bar code scans are not needed except if the legacy step is still kept in the pharmacy management system.

Table 2. Packaging and Filing Performance

Packaging and Filing Results (median times)				
Process without Automation	**Number of Rx's in bag**	**Will Call Without Automation**	**Automation Process**	**Will Call Using scripClip Automation**
a) Scan barcode b) Enter bag number in system c) place vial and paperwork in bag	1	14.5 sec	a) Scan barcode b) place vial and paperwork in bag c) press scripClip button	8.3[1] sec
	2	24.0 sec		13.3 sec
	3	insufficient data		14.6 sec
File prescription into will call area (numerically)	n/a	11.5 sec	Place package anywhere in will call	~1.0[2] sec

[1] The automation data is from a larger analysis of 10,000 packages that included two additional independent pharmacies. The automation data was extracted from system log files and processed. Unless as noted, the automation data was not based on video measurements.

[2] The time to place the scripClip bag on the rod/shelf could not be measured from the electronic log files. This time was derived from viewing the store video after scripClip automation was installed. Clerks preferred placing completed scripClip packages on the end of the shelf closest to them, producing very short 'filing' times.

The 'Will Call Without Automation' time of 14.5 to 24.0 seconds was much longer than the 'Will Call Using scripClip Automation' times even though the two procedures are very similar.

Several explanations for longer 'before time' include the fact some of the 'before time' prescriptions measured involved adding a prescription to an existing customer's hanging bag. This required an embedded search and retrieval for the existing bag instead of just using a new, empty bag. The scripClip packaging methodology recommends an empty bag be used for a customer's additional prescription instead of adding it to an existing bag. This prevents errors by maintaining the 'chain of custody' in monitoring the bag contents. Based on these results, the scripClip methodology appears to also speed up the packaging step in addition to maintaining chain of custody.

Also, obtaining an empty bag occurred in the middle of the packaging process for the 'before time.' Reaching below the counter into a bag storage box for an empty bag added time to the 'before' measurement period.

6 POINT-OF-SALE SEARCH / RETRIEVAL

When a customer walks up to the cashier to pick up their prescription, the efficiency of the will call workflow gets placed on public display. In addition to wasting labor, any miscue runs the risk of displeasing the customer. Measuring the dissatisfaction level and customer retention levels is beyond the scope of this white paper. However, it bears mentioning lost customers can cause revenue losses greater than the cost of the wasted labor involved in slow searches and especially when a long misplaced prescription hunt occurs while the customer is watching (see next section). It is imperative the most customer visible portion of prescription workflow operates in a smooth, efficient manner.

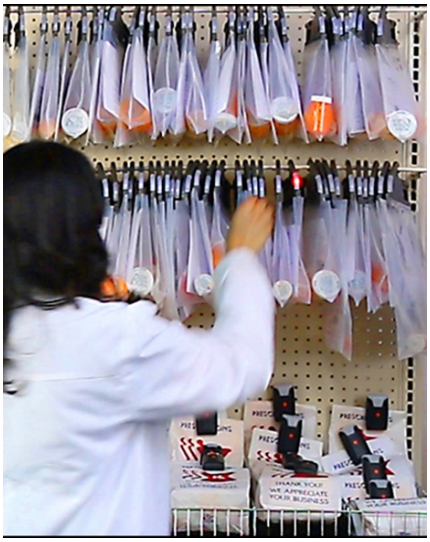

Figure 4. A search assisted with will call automation.

Significant improvements of 46% to 73% occurred when scripClip automation was added to will call search. The more complex the search, the better the increase in performance.

In addition to the performance improvements in multiple bag/package searches, another benefit is that multiple bag/package searches flash and identify all bags/packages belonging to the customer, greatly reducing the possibility of the clerk missing a package and giving an incomplete order to the customer.

Table 3. Search and Retrieval Performance

Search and Retrieval Median Times		
Number of bags	**Will Call Without Automation**	**Will Call Using scripClip Automation**
1 bag retrieved	14.0 sec[1]	7.5 sec[1,2]
2 bags retrieved (total time)	59.5 sec	16.0 sec
3 bags retrieved (total time)	Insufficient data	20.6 sec

[1] Searches without automation were considered completed when the clerk's scan was completed at the POS. Searches using scripClip were considered completed when the 'check-in' button on the scripClip bag was clicked.

[2] The automation data sample is from a larger analysis including three independent pharmacies.

7 MISPLACED PACKAGE SEARCH / RETRIEVAL

Locating a misplaced/missing bag is extremely labor intensive and significantly contributes to will call search times. A will call management system prevents misplaced/missing bags. A scripClip bag checked into the scripClip system cannot go 'missing' providing power is maintained.[1] As a result, the column in the table for 'Using scripClip Automation' shows zero time spent searching for missing bags. The measured labor savings and improved customer satisfaction levels are significant.

The accuracy of misplaced/missing bag rates reported by pharmacists is questionable due to the fact that many pharmacists do not directly monitor their will call operations throughout the day. They are only informed of a missing prescription when a clerk requests a refill after not locating the prescription. Anecdotal reports appear to support that pharmacists that have a direct view of their will call area from their work area tend to report more misplaced prescription events.

In this study, the measured time for misplaced packages is separated from the regular search / retrieval times due to the limited misplaced package data. Due to the lack of consensus regarding what is an 'average number of misplaced packages' for any particular pharmacy, no attempt was made to integrate misplaced search times with normal search times from the previous section.

The results in this section clearly demonstrate that adding scripClip automation to will call workflow virtually eliminated all misplaced bags. Similar results were achieved in a university-pharmacy pilot program using scripClip. The pilot was in operation for over two years and did not report any misplaced bags.

A misplaced/missing bag event usually includes the following actions:

1. An examination of every bag on one or more rows.
2. Additional staff members stop and assist in the search.
3. In cases where the bag is never located, the clerk or technician will involve the pharmacist in refilling the prescription.

[1] The scripClip system continuously monitors bags in will call for battery levels and issues alerts days before battery levels drop to critically low levels. Also, when a bag is selected for a new prescription, the system performs a battery check and will not allow a bag with a low-level battery to be used.

Table 4. Misplaced/Lost Bag Search Times

Misplaced Bag Searches	
Will Call Without Automation missing bag searches	Will Call Using scripClip automation
12:24 (mm:ss) / average search [1]	0 sec [2]

[1] The misplaced/lost bag data (before automation) was limited. In 5.5 work days, four misplaced bags occurred at a rate of O.7 misplaced bags/day, Staff time to locate bag – shortest interval was 2:36 (mm:ss), longest interval was 27:43 (mm:ss)

[2] No misplaced bags under management by the scripClip will call system were reported during the analysis period after scripClip was installed.

8 RETURN TO STOCK

Return to stock (RTS) is an extremely labor-intensive undertaking where unclaimed prescriptions that have reached a pre-determined number of days in will call are searched, retrieved and returned to inventory.

There are two major methodologies used in RTS workflows. The clerk either uses a list of aged prescriptions generated from the PMS or individually examines all bags for a targeted (or earlier-in-time) date. There are also other variations where bags get sub-filed chronologically so the valid RTS candidates are already grouped together.

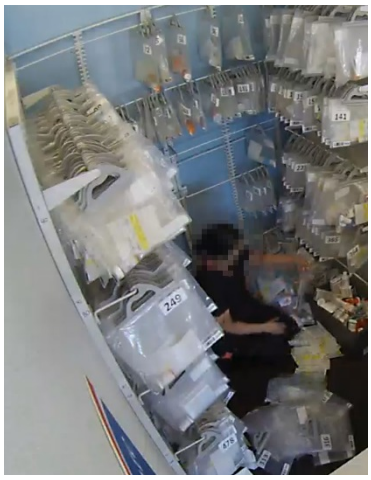

Figure 6. RTS before scripClip. Bags are individually checked for targeted date.

The following table examines how the level of 'saturation' (i.e. the percentage of bags in will call that have exceeded their 'pull dates' compared to the total number of bags in will call. In a manual methodology that examines all bags for their fill dates, the more 'saturated' the will call, the more efficient this methodology appears. However, keeping the will call area saturated creates a negative impact by increasing filing times and regular customer search times due to the increased number of total bags cluttering up will call. The amount of impact to these other areas of workflow due to keeping the will call area 'saturated' was not studied in this white paper.

The pharmacy studied had a saturation level of 61% in the measured RTS event. This may be higher than the average saturation level for other pharmacies. As a result, we calculated other, lower saturation levels. The '20% and 5% of Total RTS candidates' rows are calculated estimates in order to examine lower saturation levels in the 'before automation' pharmacy RTS candidates in will call. This number was calculated assuming that the clerk still had to examine all bags in will call (following the RTS methodology already being used in the 'before automation' will call environment).

An automated will call system outperforms a manual system across varying levels of 'saturation.' Performing RTS at lower 'saturation' levels in the scripClip system provides the greater percentage improvement (78% faster than manual). As mentioned earlier, regardless the level of saturation, the will call automation system eliminates slower filing and customer search times that occur in manual methodologies due to the clutter of bags exceeding their pull dates.

Table 5. Return to Stock (RTS) Performance

Return to Stock		
Percentage of RTS bags in Will Call	Will Call Without Automation	Will Call Using scripClip Automation
61%	92 min[1]	59 min[2]
20%[3]	51 min	19 min
5%	43 min	9.5 min
RTS Time Measurement Criteria[4]	Measured from start to completion clock time of RTS task in video	Measured from clicking "Search" to when the Clip is "checked out by pressing scripClip button.

Note: The 'before automation' data was collected is limited.

[1]The pharmacy in this study used a RTS methodology of examining each bag in will call for the RTS trigger date. The total time spent for the RTS was 92 minutes over three RTS sessions (during one work day) to completely examine the will call inventory. The search time for a RTS bag using the 'examine all bags for an expiration date' approach produces large search times since every bag in will call gets examined when using this approach. Thus, the more expired bags in will call, the lower the 'search time' per bag. This study found 306 bags that qualified, making the search time appear low (approximately 18 sec/bag).

[2] After implementing scripClip will call automation for RTS, the pharmacy started to run more frequent RTS searches and stopped spending long dedicated blocks of time for RTS. The time in column 3 represents the individual RTS bag retrieval times multiplied by the number of retrievals obtained via RTS search without automation (column 1). The calculated times of 59, 19 and 9.5 minutes were determined by multiplying the average automated retrieval time of 11.4 seconds by the number of RTS bags in each table row.

[3] In the 20% calculation, 100 bags were calculated as valid bags to be removed and 400 remained as active bags. An estimated value of 4 seconds was assigned to be the time required to examine each active (not a RTS candidate) bag. In the video study, the actual time to examine an active bag varied due to the visibility of the Rx date appearing through the hanging bag. In some cases, the bag had to be taken off the hanging rod, and its contents removed in order to view the Rx date.

[4] Neither 'with' or 'without automation' RTS processes included billing reversal times to the pharmacy management system. Also, some of the 'without will call automation' bags were emptied as they were taken off the shelf.

9 PHARMACY BENEFITS - LABOR SAVINGS PLUS OTHER COST SAVING INTANGIBLES

In summary, adding will call automation to a pharmacy's workflow decreases labor across all stages of will call workflow, and significantly impacts harder to measure cost areas –

- Compliance – adding will call automation increases patient safety by monitoring the validity of multiple prescription packages and enforcing that the correct package is presented to the correct customer. In addition to reducing the risk of patient injury, will call automation also decreases the risks of HIPAA violations.

- Customer retention – will call automation greatly reduces the risks of making patients wait for ten or twenty minutes while searching for their misplaced prescriptions. This can cause customers to take their business elsewhere. Also frustrating is waiting in long lines while the will call staff searches for the prescription for the customer in front of you. In addition, frustrated customers can post negative reviews in social media. Thus, a single misplaced prescription can have a ripple effect on more than just the customer dealt the misplaced bag.

  Another customer service related issue is giving a customer an incomplete order when the patient has multiple prescriptions in the will call area. A will call automation system will identify all of a customer's prescriptions (including family members) in will call and in other areas of the pharmacy (over-sized bags, refrigerators, secure cabinets, etc.). This greatly reduces the possibility of an annoyed customer returning to the pharmacy to pick up the left-behind prescription.

- Customer satisfaction - will call is an important area in the pharmacy where in-store customers can directly view and experience improvements to their pharmacy experience. Will call automation provides a major service improvement for in-store customers. Will call automation contains additional features that can further improve search times for customers. One such option is to send out barcoded, customer package information through the pharmacy's outbound customer texting service. This allows the customer to directly activate their bag search by displaying the barcoded message, on their phone, to the POS's barcode scanner, thereby avoiding time spent dealing with the name confusion of spelling and respelling the customer's last name to the clerk.

- RTS inventory management – will call automation turns the labor-intensive task of locating aged inventory into a quick operation. Instead of avoiding the RTS process, staff can actually run RTS searches *before* the actual pull date and contact these customers. Pharmacies, that offer delivery, can offer these slow-to-pick-up customers free home delivery to convert a prescription, whose charge will soon be reversed, into a sale.

10 Conclusion: Gains from Deploying Will Call Automation to a Pharmacy's Workflow

Implementing an automated will call system produces benefits in labor savings across all parts of will call workflow and improves the customer experience.

- Packaging times experienced up to a 45% performance increase, some of which were generated by using more efficient packaging steps.
- The filing time required for packaging was reduced by over 90%. With automation, prescriptions were typically placed at the most convenient shelf, closest to the clerk.
- Prescription search times reduced by up to 73%.
- The adoption of automation in will call virtually eliminated misplaced and lost prescriptions.
    - This is significant for both labor savings (each misplaced prescription required over 12 minutes of labor) and for customer retention improvement.
- Return to stock was 36% to 78% faster when using automation.

Will call has been the last segment of pharmacy workflow will call to adopt automation. Will call automation now provides cost effective will call automation solutions for both large chain pharmacies as well as modest-sized, independent pharmacies. The labor savings can now be calculated by using the data produced in this white paper and factoring in the hourly cost of your clerical and technician labor.

For a custom analysis of your pharmacy's will call operations, please contact Capsa Healthcare, info@capsahealthcare.com, 800.437.6633.

An experienced pharmacy operations consultant can provide advice on improving your workflow and calculate your expected ROI when implementing will call automation in your pharmacy.

Figure 7. scripClip is available in several form factors. Above is the bag clip version. Hanging bag versions are also available. scripClip installations are offered in any combination of these form factors.