ASAP

ASAP Cost-Benefit Analysis
on the
Value of Technology

February 2014

American Society for Automation in Pharmacy
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Introduction

The American Society for Automation in Pharmacy (ASAP) undertook a cost-benefit analysis in 2009 to show the cost that pharmacies incur in the use of technology and how it serves to improve patient safety, patient adherence, and serves to reduce fraud and abuse. We believe that the investment in technology used to deliver needed medications to millions of Americans each and every day is simply overlooked or taken for granted by state and federal governments, third-party payers, and others. This document is an update of the analysis published in 2009. As part of the update we decided to also include an analysis of the technology used in closed-door pharmacies servicing long-term care facilities.

Methodology

In order to develop the cost factors as fully as possible, we solicited input from technology vendors and the users of the technology. Breakpoints were selected based upon the levels at which additional technology components are typically purchased. While purchase decisions are generally individualized to address the specific needs of each pharmacy, we found considerable agreement regarding the breakpoints at which technology is added and the components that are most often added. Depreciation was calculated on a four-year, straight-line basis. While some variability exists in the way that vendor service agreements are handled, we found that certain services and third-party database components are bundled into regular maintenance fees by most vendors. Consequently, we did not attempt to break out the cost of each component. Finally, total costs are presented as an average of the per prescription cost to dispense.

Pharmacy technology clearly requires a significant capital outlay, plus ongoing support and upgrade costs. However, specific benefits are difficult to connect with specific cost factors. We decided to categorize the benefits of key technology components into three areas: patient safety, adherence, and fraud and abuse prevention. Included in this report is a table showing a breakdown of the various technologies and how they apply to each category.

We did not attempt to allocate the percentage of the cost per prescription that would benefit safety and adherence or reduce fraud and abuse. We are leaving it up to the user of the data to make this determination. It should also be noted that we did not attempt to determine the return on investment. This was not the purpose. Once again, the focus of this study was to determine the cost that is added to a prescription based on the technology used in the pharmacy and the benefits derived by the consumer. The costs do not represent the total cost to fill a prescription, only the technology costs associated with the prescription.

The ASAP membership was invited to offer comments to our findings in 2009. We had broad participation and the suggestions offered were incorporated into that final document.

There were no comments challenging the breakpoints or the costs used for the various technologies included. Because of this we feel confident that our updated costs are valid representations. As for the costs and benefits associated with closed-door pharmacies servicing nursing homes, the input we received from pharmacists with experience in this area made us feel comfortable with the cost shown.

We did not attempt to separate hardware and software costs, since it is common industry practice to bundle hardware and software, making it difficult to segregate the two. Likewise we did not attempt to identify the specific costs associated with hardware maintenance. Rather, we decided to apply a percentage of the total investment cost to cover support costs in general.

Intended Use

We encourage the use of these findings, if it is felt the data will serve to improve reimbursement and open up new opportunities for pharmacy in providing technology-based services. We ask that reference be given to ASAP as the source.

Prescription Range	Pharmacy Profile 100 to 200 Rxs/Day	Pharmacy Profile 200 to 300 Rxs/Day	Pharmacy Profile 300 to 500+ Rxs/Day
Technology Used*			
Pharmacy Management System	$20,000	$30,000	$35,000
Workflow System		$55,000	$60,000
Barcode Scanning	$1,000	$2,000	$2,000
Document Scanning/Management at Intake	$1,000	$1,000	$2,000
Robotic Dispensing		$60,000	$185,000
Tabletop Counting/Scales	$6,000	$12,000	$30,000
Counting Scale	$4,000	$4,000	$4,000
Interactive Voice Response (IVR) Patient Interaction Interface	$4,000 $200	$4,000 $300	$4,000 $500
Will-Call Bin Management (included with workflow system)		inc.	inc.
Adherence Automated Packaging	$5,000	$10,000	$40,000
E-signature Capture	$2,500	$5,000	$7,500
Laser Printers (Double Drawer)	$1,500	$3,000	$5,000
Thermal Printers	$600	$1,200	$1,800
Point-of-Sale System	$10,000	$20,000	$30,000
Total Investment Cost	$55,800	$207,500	$406,800
Annual Depreciation[1]	$13,950	$51,875	$101,700
Total Rx's/Yr. (6 days a week, 52 weeks)[2]	46,800	78,000	124,800
Cost per Prescription Based on Annual Depreciated Cost	$0.298	$0.665	$0.815
Service Agreements & Database Support[3][4]	$10,044	$37,350	$73,224

-Drug Database Information	inc.	inc.	inc.
-Prospective DUR module	inc.	inc.	inc.
-Warning Labels	inc.	inc.	inc.
-Drug Images	inc.	inc.	inc.
-Drug Imprint Information	inc.	inc.	inc.
-Consumer Medication Information (CMI)	inc.	inc.	inc.
-PMP Reporting	inc.	inc.	inc.
-PSE Tracking	$140	$140	$140
-Internet Access (Clinical/Drug Info. websites)	$1,200	$1,200	$1,200
-Language Translation (five languages)	$600	$600	$600
-Prescriber File Lookup	$300	$300	$300
Total Annual Support Costs	$12,284	$39,590	$75,464
Annual Support Cost per Rx	$0.262	$0.507	$0.605
Annual Cost per Rx (Depreciation + Service Costs)	$0.56	$1.17	$1.42
e-prescriptions	$2,060	$3,432	$5,4911
Annual Cost of Noncontrolled Substances (spread over total prescriptions filled0	$0.044	$0.044	$0.044
Total Technology Cost Per Prescription	**$0.60**	**$1.21**	**$1.46**

*Includes hardware and software.

Footnotes:

1. The IRS allows hardware depreciation for five or seven years, software three years. Since hardware and software are bundled, for purposes of this illustration an average four-year depreciation was used. Bonus depreciation allowed by the IRS was not factored in.

2. Total annual Rx volume based on midpoint of range given.

3. The cost of service agreements was based on 18% of the investment cost.

4. Inc. means included with Pharmacy Management System or Workflow System.

5. Although controlled substances are now approved by the DEA for e-prescribing, due to the low percentage of these prescriptions currently being sent electronically, we did not factor these into our cost estimate. It is estimated that controlled substances account for about 12% of prescriptions filled in pharmacies. Therefore, 88% of prescriptions are noncontrolled substances and 50% represent new prescriptions. Currently 45% to 50% of new prescriptions (excluding controlled substances) are transmitted electronically to the pharmacy. The cost per Rx to the pharmacy was estimated at 20 cents. The high end of the e-prescription range (50%) was used. Therefore, the total Rx's filled x .88 x .50 x.50 x .20 = number of electronic prescriptions.

Areas of Impact

Technology Used	Benefits Safety	Benefits Adherence	Prevents Fraud & Abuse
Pharmacy Management System	•	•	•
Prospective DUR Module	•		
Warning Labels	•		
Drug Images	•		
Drug Imprint Information	•		
Consumer Medication Information (CMI)	•	•	
Workflow System	•	•	•
Barcode Scanning	•	•	
Document Scanning at Intake			•
Robotic Dispensing	•		
Tabletop Counting/Scales	•		
Adherence Automated Packaging	•	•	•
IVR/Patient Interaction Interface	•	•	
Will-Call Bin Management	•		•
Language Translation	•	•	
E-signature Capture	•		•
PMP Reporting	•		•
PSE Tracking	•		•
Internet Access*	•		
Electronic Prescriptions	•	•	•
Printers	•		
Point-of-Sale System	•		•

*Access to online drug information.

Closed-Shop Long-Term Care Pharmacy	Pharmacy Profile	Pharmacy Profile	Pharmacy Profile
Beds Serviced Range	600 to 1,500 Beds 5 to 15 LTC facilities Midpoint 1,050	1500 to 4,000 Beds 15 to 30 LTC facilities Midpoint 2,750	4,000 to 10,000 Beds 30 to 40 LTC facilities Midpoint 7,000
Technology Used*			
Pharmacy Management System	$25,000	$35,000	$50,000
Workflow System		$55,000	$60,000
Barcode Scanning	$1,000	$2,000	$2,000
Document Management	$35,000	$50,000	$75,000
Robotic Dispensing		$200,000	$400,000
Remote Dispensing, $175,000/machine, partially paid for by nursing facility (20%). Cost shown here reflects pharmacy's portion (80%). Installed in 30% of the facilities, using midpoint for LTC facilities served.	$420,000	$945,000	$1,470,000
First Dose Cabinet Automation @ $35,000 per facility, using midpoint for LTC facilities served.	$350,000	$787,500	$1,225,000
Unit Dose Packaging Automation	$60,000	$130,000	$210,000
e-MARs ($6/bed/mo./85% census of midpoint for 600 to 1,500 beds; $4/bed/mo. for 1,500 to 4,000 beds; $2/bed/mo. for 4,000 to 10,000 beds)	$5,355	$9,350	$11,900
Laser Printers (Double Drawer)	$3,000	$4,500	$6,500
Thermal Printers	$1,000	$4,000	$9,000
Total Investment Cost	$900,355	$2,222,350	$3,519,400

Annual Depreciation[1]	$225,089	$555,588	$879,850
Total Rxs/Year (based on 11/Rxs/mo./patient/ 85% census)[2]	117,810	308,550	785,400
Cost per Prescription Based on Annual Depreciated Cost	$1.91	$1.80	$1.12
Service Agreements & Database Maintenance[3][4]	**$162,064**	**$400,023**	**$633,492**
-Drug Database Information	inc.	inc.	inc.
-Prospective DUR module	inc.	inc.	inc.
-Warning Labels	inc.	inc.	inc.
-Drug Images	inc.	inc.	inc.
-Drug Imprint Information	inc.	inc.	inc.
-PMP Reporting	inc.	inc.	inc.
-Internet Access (Clinical Drug Information Web Sites)	$1,200	$1,200	$1,200
Total Annual Support Costs	$163,264	$401,223	$634,692
Annual Support Cost per Rx	$1.39	$1.30	$.81
Total Technology Cost Per Prescription (Depreciation + Service Costs)	**$3.30**	**$3.10**	**$1.93**

*Includes hardware and appropriate software.

Footnotes:
1. The IRS allows hardware depreciation for five or seven years, software three years. Since hardware and software are bundled, for purposes of this illustration an average four-year depreciation was used. Bonus depreciation allowed by the IRS was not factored in.
2. Total annual Rx volume based on midpoint of bed range.
3. The cost of service agreements was based on 18% of the total investment cost.
4. Inc. means included with Pharmacy Management System or Workflow System.
5. Electronic prescriptions not applicable to closed-door long-term care pharmacy.

Areas of Impact

Technology Used	Benefits Safety	Benefits Adherence	Prevents Fraud & Abuse
Pharmacy Management System	•	•	•
Prospective DUR Module	•		
Warning Labels	•		
Drug Images	•		
Drug Imprint Information	•		
Workflow System	•	•	•
Barcode Scanning	•	•	
Document Management	•		
Robotic Dispensing	•		
PMP Reporting	•		•
Internet Access*	•		
Printers	•		

*Access to online drug information.