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Final Report

A Comprehensive Longitudinal Assessment of an Innovative Community Pharmacy Practice

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NEEDS ASSESSMENT

In some progressive pharmacies, community pharmacy practice has expanded over the past two decades. During this time, especially in the past 5 to 10 years, new pharmacist services have been brought into community pharmacists' scope of practice. Such emerging services move community pharmacy practice beyond dispensing, into activities including adult immunizations, medication therapy management services, screening services, and adherence management services.

Despite the success of some community pharmacies in sustaining an expanded service offering, many community pharmacies are not adding new pharmacist services. One reason for reluctance by community pharmacy owners to offer new services could be the limited information about the sustainability of such services. Though some information has been published about the marketing and profitability of pharmacist services, that work has tended to be focused on a single service over a limited period of time. There is a need for a comprehensive longitudinal study of innovative community pharmacy practices. We believe that this study will have an excellent applicability for community pharmacies.

Although reimbursement for non-dispensing related pharmacist services is growing, prescription drugs still remain the primary source of revenue for community pharmacies. The majority of prescriptions dispensed in community pharmacies are covered by insurance, so the continued financial viability of pharmacies depends on critically evaluating their third party reimbursement for prescription drugs. During the past year, there was an AWP adjustment that affected third party reimbursement and many states, including Iowa, experienced decreases in their Medicaid reimbursement. These changes, along with continued concerns about low reimbursement in Medicare Part D plans, make it essential to measure changes in third party prescription reimbursement in recent years and compare prescription reimbursement across different payers.

CAPACITY, READINESS & OPERATIONS

Towncrest Pharmacy, located in Iowa City, Iowa, has been active in offering new pharmacist services. During the past 5 years, Towncrest has begun providing the following services: flu shots, herpes zoster immunizations, pneumococcal immunizations, cholesterol screenings, blood pressure screenings, adherence management services, employee health fairs, and medication therapy management services. In addition, they have expanded their prescription compounding services and durable medical equipment

offerings. They also maintain an active prescription dispensing business, dispensing an average of 1,400 prescriptions per week. The purpose of this project is to retroactively evaluate three years of operations of Towncrest Pharmacy.

Specific objectives of this 18-month project are to:

1. Describe the development, marketing, and delivery of pharmacist services at Towncrest Pharmacy during a 5-year period (2006-2010).
2. Assess the financial performance of new pharmacy services, provided during a 3-year (2008-2010) period at Towncrest Pharmacy.
3. Assess the impact of changes in third party prescription reimbursement over the past three years and compare prescription reimbursement across different payers.
4. Characterize patient/caregiver and employee perceptions about and experiences with new pharmacists services.

RESULTS

Aim 1: Describe the development, marketing, and delivery of pharmacist services at Towncrest Pharmacy during a 5-year period (2006-2010)

Baseline Services

Towncrest pharmacy is independently owned community pharmacy located in the southeast section of Iowa City. It is surrounded by several competitors—a grocery chain pharmacy is located directly behind Towncrest, a major chain pharmacy is across the street to the north, and another major chain pharmacy is across the street to the west. The pharmacy has been in existence since 1963, but moved to its current location in 1989. Originally it was owned and managed by one pharmacist. In 1989 it became a partnership between two pharmacists and remained this way for the next 15 years when the original owners sought to bring younger pharmacists to carry on the business. Two pharmacists purchased shares in the practice—one bought his shares in 2004, the other in 2006. Currently these two individuals own 42% of the shares of the practice each with one senior partner retiring and the other continuing to own the remaining shares.

Towncrest Pharmacy is a professional pharmacy with its main business being pharmacy. It has a reputation for individualized service, good patient care, and exceptional rapport with other providers. It has a successful partnership with one of the hospice organizations in town in which it provides dispensing services. Also, it provides dispensing services for two supported living organizations whose clients have intellectual disabilities (ID) and traumatic brain injuries (TBI). The vast majority of clients in these organizations utilized the unit dose packaging system—Opus Cassettes. Fewer clients who are more independent and manage their own medications utilize medication planners.

In the late 1990s, the pharmacists at Towncrest Pharmacy became interested in providing influenza and pneumonia vaccinations. One of the staff pharmacists, at the time, developed a collaborative practice agreement with an internist in town to provide flu and

pneumonia vaccinations to the public. During this time they also created a traveling clinic providing onsite immunizations to several employers in the Iowa City and surrounding communities.

Lastly, Towncrest Pharmacy had a modest durable medical equipment (DME) business. They were known for their knowledge and selection of ostomy supplies and several providers referred their patients to their practice. Besides the ostomy supplies, they also had a selection of canes, crutches, walkers, bathroom aids, and wound care supplies.

Moving Beyond Baseline—Year 1 (2006)

The year 2006 marked the beginning of the time period in which pharmacy services expanded at Towncrest Pharmacy. The new owners saw an opportunity to integrated patient services within the already established dispensing services with the hopes of opening up new revenue streams while continuing to grow and build on the anchor of their business—dispensing. Before developing and implementing services, they first had to create the systems and processes to support this new practice. They made some minor modifications to the pharmacy creating a useable patient care area/clinical office. Also, they created an electronic medical record that could be used efficiently and effectively during patient care activities.

The owners agreed that it was important that pharmacists provide patient care services in both the dispensing and patient care areas so they created a scanning and electronic documentation system so pharmacists could identify, resolve, and document drug therapy problems found during the dispensing process. They called their program "Quick Clinical" and also referred to it as Medication Therapy Management (MTM) on the Run. Although their dispensing process was always technician driven, the pharmacists were not accustomed to performing prospective drug utilization services while in the dispensing functions so there had to be systems and processes created and training on how to quickly review a patient's medication regimen and identify potential and actual drug therapy problems and determine the appropriate action (intervention) to resolve the problem. This required pharmacists to further develop and "fine tune" their clinical knowledge, critical thinking, and problem solving skills. The electronic record that they created allowed the pharmacists to document their activities in the patient record using a SOAP note format. This electronic record could be accessed from any computer in the pharmacy—both the dispensing and patient care areas.

Based on the analysis of one of the owner's previous work experience, they determined that the purchase of a Cholestech machine and associated supplies would be a good investment due to a previous cost-benefit analysis of this service and the attainable break-even point—based on patient demand. The created a patient care process that included taking a mini medical and medication history, reviewing the patient's risk factors, and educating the patient about their results. Their goal was to complete the Cholesterol screening and patient education within a 15 minute period so that they maximized their

efficiencies and improved their opportunities to make a profit.
Their pricing of this service was based on the cost of supplies, time spent with patients, and faxing/communicating results to physicians. The owners developed a marketing plan for this service utilizing mainly radio and print ads. These efforts resulted in approximately 5 to 10 patients using the service per month.

During this initial time period, the state of Iowa already had a program called Pharmaceutical Case Management (PCM) for at risk Medicaid recipients who were taking 4 or more chronic oral medications and had one of twelve disease states. These patients were identified for being at risk for drug therapy problems and this program was developed so that pharmacists and physicians could work collaboratively to improve the medication therapy and therapeutic outcomes in these individuals. The program included funding to reimburse both pharmacists and physicians. The owners reviewed their records and identified over 100 Iowa Medicaid recipients who eventually became eligible to receive this service. The vast majority of their patients came from individuals who were living in group homes managed by a couple of Supported Community Living (SCL) agencies. These individuals had either an intellectual disability or traumatic brain injury. Therefore the medication work-up was performed with staff that provided care to these individuals. Next came the task of scheduling visits with the individuals and/or their caregivers. It was decided that it was best to do home visits since many individuals also had physical challenges. Also, an electronic master calendar was created to help with the scheduling of visits.

Similar to the services performed for PCM, the owners also created their Medication Therapy Management Services (MTMS) for those eligible clients who had Mirixa and Humana Part D benefits. Unfortunately, though this was an opportunity, they only had approximately 10 to 20 patients who were eligible to receive this service per year. The Part D Plan sponsors identified eligible patients and communicated this via e-mail to the Towncrest Pharmacists. The patients were called and recruited (since most did not really understand MTMS and their eligibility) and, if they accepted, were scheduled for a comprehensive medication review at the pharmacy.

Year 2 (2007)

During the calendar year 2007, the pharmacists/staff recruited more patients for the Iowa PCM program. Their recruitment efforts led to an increased in patients enrolled in the program to 150. They utilized their electronic calendar to schedule visits and inform the other staff at Towncrest Pharmacy when they would be gone for visits. To improve acceptance of the PCM program, they met with administrators from their two main SCL agencies to discuss the program and the benefits to the agencies and their clients. This led to improved acceptance from staff from the agencies so that scheduling became less problematic and staff started utilizing the expertise of the pharmacists. The owners also developed a billing system for the PCM services that could be done electronically using their dispensing system. This reduced the time and effort taken to bill for PCM services and also resulted in more timely payment for services rendered.

In 2007, the owners decided to create a medication therapy management service for cash paying patients—called MedCheck. The owners saw a potential opportunity to offer MTM services beyond Medicare Part D eligible individuals. They hired a consultant to help develop the program, create the name for the service, and the components included in the service. In reality the MedCheck program is a one-time comprehensive medication review for which the pharmacist charges a fixed fee. The MedCheck includes a detailed medical and medication history, a thorough review of the patient's drug therapy, identification of drug therapy problems, write-up that is shared with the patient or patient caregiver, and, if approved by the patient, the patient's physician/prescriber. The also created the marketing materials to be used to promote the service.

Towncrest Pharmacy also began providing services for a new organization that was taking care of patients who had mental illnesses. It is similar to the other Supported Community Living agencies except their focus is helping individuals with mental illness to become more independent. This organization received funding from both county and state to provide their services. Towncrest pharmacy owners met with the executive director to discuss medication services and, in particular compliance packaging options. Based upon their conversations a new service was created—called their Medication Adherence Program (MAP). This program provided medication reconciliation services, ongoing medication management, and compliance packaging options. The compliance packaging options included Docudose®, Opus®, Bubble packs, MD2® automatic pill dispenser, MedReady® automatic pill dispenser, and med planners. Although this program started with this agency, it quickly grew to include other agencies and private pay patients. Compliance-packaging options were used based on patient/caregiver preference and/or needs.

In 2007, Zostavax vaccination became available and, unlike previous other pharmacist managed immunizations (e.g. influenza and pneumococcal) which were billed under Medicare Part B (major medical), these were billed under the patient Part D (drug) benefit. Because of this, it provided a great opportunity for pharmacist to provide the service because physician offices were not set up to bill under the Part D benefit. Towncrest Phamacy owners worked closely with a local internist to develop a collaborative practice agreement for Zostavax vaccination. He serves as the medical director for all of the pharmacy's immunization services and provides feedback to us regarding our patient care processes, patient forms, and patient handouts. Towncrest Pharmacy became the first pharmacy in Iowa City and surrounding areas to provide Zostavax. It quickly became a referral source for many different physician groups in the area. At its' peak during 2007, Towncrest pharmacists were administering Zostavax shots to over 100 patients per month. To put this in perspective, currently Towncrest Pharmacy is administering 20 to 30 Zostavax per month due to the increased number of pharmacy providers offering this same service.

Also in 2007, Towncrest decided to develop a Continuous Positive Airway Pressure (CPAP) education and supply service. One of the owners attended an educational program

that discussed a CPAP service. He saw an opportunity within the practice to start providing this service. This service includes provision of CPAP machines and related supplies to patients and the associated patient training and education. Also, physician communication was done via SOAP notes that were faxed to the CPAP prescriber. The pharmacy worked with two major makers of CPAP supplies and created an area in the pharmacy dedicated to product display. In addition one of the pharmacist went through training to have a thorough understanding of CPAP machines and supplies.

In 2007, Towncrest also made the decision to become an accredited Medicare Durable Medical Equipment (DME) provider. This required development of policies and procedures, including an employee manual (which did not exist previously). The owners worked with an accrediting organization over the year. In the fall of 2007, Towncrest became an accredited Medicare DME provider. Not only did Towncrest provide CPAP machines and related supplies, but their ostomy sales were increasing. They also provided wheel chairs, crutches, canes, wound care and diabetes supplies. They created patient forms and handouts (required by Medicare) along with the required documentation needed to justify payment from Medicare and other payers for services rendered.

It was decided by the owners to develop a compounding service in 2007. Although there were already two established compounding pharmacies in the area, one of the owners at Towncrest Pharmacy has a Ph.D. in pharmaceutics and a comprehensive understanding of dosage formulation, therefore they felt that a compounding service fit in with their expertise. They developed a strategic and business plan and made the decision to join the Professional Compounding Centers of America (PCCA). One of the owners went through training, purchased compounding supplies, and started marketing the services. The owners decided to create a separate corporation for Towncrest Compounding due to poor reimbursement from third party payers. Also they became accredited by the Pharmacy Compounding Accreditation Board (PCAB)

Also, during this time the owners made further refinements to their Quick Clinical program to make it more efficient and effective. A couple of new fields were added to the electronic patient record based on response from pharmacists using the system. Pharmacists wanted to review the refill history in a quick manner so the last three dispensing dates were added to the patient record. Also, pharmacists wanted to be able to review the drug interactions that were identified by the computer so these interactions were flagged and connected to Drug Interaction Facts®. By doing this, pharmacists can quickly review the clinical significance of the drug interaction and make a decision as to the action needed (e.g. patient education or physician communication).

Year 3 (2008)

Towncrest Pharmacy expanded their services with the group homes by offering medication inspections for a fee. The purpose of the med inspections was to ensure that the homes were meeting the documentation requirements for medication administration

required by the agency and/or the state. The med inspections were done at the time that the pharmacists provided PCM services. Also, the pharmacists inspected the storage of medications.

During this time, the pharmacy picked up another SCL that was providing services for patients with mental illnesses. This led to more patients using the Medication Adherence Program (MAP). Towncrest Pharmacy's MAP service was increasing not only because of the increased number of patients who were using it in group homes, but also because of the increased number of private pay patients requesting the service. The number of patients using the automatic medication dispensers also increased at this time. In fact, the Medication Adherence Program became our fastest growing program during this time period.

Because of our marketing efforts and word of mouth, our compounding services increased and we were seeing an increase in referrals from physicians, dentists, and veterinarians. Also, Iowa City Hospice began utilizing some of our specialized compounded medications to help with the end of life cares for their patients.

In 2008, Towncrest Pharmacy secured the opportunity to provided Health Screening Services for a local business with over 200 employees. We worked with the HR administrator to develop and implement the service over a four-day period—two days in late September and two days in early October. It was staffed with two pharmacists and several students who screened employees' blood pressure, total cholesterol/HDL, height/weight, and BMI. The employees were given their results, educated about cardiovascular risk factors, and given informational material to reinforce dietary and lifestyle management strategies. The data collected was collated and de-identified and the results provided to the employer. The screening was done for approximately 180 employees. Towncrest Pharmacy negotiated a fee based on the number of individuals who received the screening.

Year 4 (2009)

In 2009, the owners of Towncrest Pharmacy decided to pursue the community pharmacy residency program offered by the University of Iowa College of Pharmacy. We matched with our first resident who was quickly assimilated into the practice and, in particular, the clinical service offerings. Because the clinical services were growing at such a fast rate, the resident became responsible for the PCM and MTM activities. This increased our number of patient visits/work-ups and billings for these services. Also, at this time Towncrest Pharmacy started providing services for a new company PharmMD whose clients were companies/insurers who wanted MTM services provided to their beneficiaries.

Because of the increase in the number of patient using the clinical services and the addition of a pharmacy resident, Towncrest Pharmacy owners decided to remodel their pharmacy. The removed some slow moving sundries creating extra space for another

pharmacist office/patient care area. The owners hired a local office supply contractor who helped to design and create the new patient care areas. This resulted in two pharmacist offices/patient care areas.

Immunization services (Zostavax, influenza, and pneumococcal) were maintained during this time, but the competition from other pharmacies did have an impact on overall numbers for Zostavax. Towncrest Pharmacy did see an increase in the number of new companies that wanted them to come and provide influenza vaccinations to their employees.

The Medication Adherence Program was increasing during this time as well. Part of the reason for this increase was because the owners had enlisted the services from an individual who provided advertising/marketing services. He created commercials for cable television and radio and advertised in the newspaper periodically. We created a mix of different commercials that highlighted different services and/or departments within the pharmacy. Another SCL that was working with mentally ill patients asked us to start providing dispensing services and MAP for select clients as well.

This really was the year that we utilized our marketing plan to grow all of our services with good results.

Year 5 (2010)

Due to the growth of the clinical services (it was difficult for both the resident and pharmacist-owner to keep up with the demand), it was decided to hire a clinical pharmacist to oversee the clinic and patient care services. The pharmacist that was hired had just finished a VA ambulatory care residency and she was looking for an opportunity in a community pharmacy. This allowed Towncrest Pharmacy to expand their MTM/PCM opportunities.

Also, Towncrest Pharmacy was asked to start providing dispensing services for another new SCL that was just starting up in the area. Several agencies that provide services for the elderly began to utilize our MAP services as well.

Although PharmMD was a unique company and provided Towncrest Pharmacy with some new opportunities, their client base was diverse and in different parts of the country so providing MTM services to these individuals proved challenging. Part of the challenge was the lack of a therapeutic relationship with the patients enrolled in their program. These patients lived in different regions of the United States and, in most instances, they were confused why the pharmacist called, or did not answer the call at all. Because of these issues and the owners decided to pull out of that program and focus their efforts on those services that were providing a good return on their investment—MAP, immunizations, MTM, PCM, DME, and compounding services

In 2010, Towncrest Pharmacy was asked to expand their health screening services for the same company that this service was provided for the previous year, but for a second facility and their employees.

Conclusion

Towncrest Pharmacy has seen a tremendous growth in the number and types of clinical services offered in the five-year period discussed in this report. More importantly, the patient and physician acceptance of their services has been positive. A new revenue stream has been created through their service offerings, but they are also maintaining their dispensing volume even during this down turn in the economy and increased competition. Towncrest Pharmacy has been able to keep their practice growing and maintain their business because of their diverse service offerings, exceptional customer service, and marketing efforts.

Aim 2: Assess the financial performance of new pharmacy services, provided during a 3-year (2008-2010) period at Towncrest Pharmacy.

Background

Over the past two decades, community pharmacists have expanded the scope of their practices to include new pharmacist services. These services move the pharmacist's role beyond dispensing medications to include such activities as immunizations, medication therapy management (MTM), health screening services, medication adherence, and prescription compounding services [1-11]. Though some community pharmacists appear to be successful in providing these expanded services, one reason others may be reluctant is because of limited data on the economic viability and long term sustainability of these services.

Although reimbursement for non-dispensing pharmacist services is growing, dispensing prescription drugs still remains the primary source of revenue for community pharmacies. With recent cuts in prescription reimbursement rates from Medicaid and Medicare Part D, the continued financial viability of pharmacies depends on critically evaluating the financial performance of all their services [12-14]. To compensate for lower reimbursement rates, some pharmacies are trying to maintain high prescription volumes while still managing costs. Another approach is to implement new pharmacist services to increase revenue from services, to both enhance their public image and improve their competitive advantage [15-16].

Published literature is lacking on the sustainability of these services and there is a need for a comprehensive longitudinal study of innovative community pharmacy practices. Few studies have been published regarding the profitability of pharmacist services and have tended to focus on a single service over a limited period of time [3, 17]. The objective of this study was to assess the financial performance of pharmacy services including vaccinations, cholesterol screenings, MTM services, adherence management services,

employee health fairs, and compounding services provided during a 3-year period at an independent community pharmacy.

Methods

This study was conducted at Towncrest Pharmacy an independent pharmacy in Iowa City, Iowa, that has been providing immunizations services for the past ten years. In the past five years, pharmacists at Towncrest Pharmacy have provided herpes zoster immunizations as well as cholesterol screenings, MTM services, medication adherence services and employee health fairs. In addition, they have expanded their prescription compounding services. Towncrest Pharmacy is staffed with 4.5 full-time equivalent (FTE) pharmacists, 3.75 FTE technicians and 1 FTE pharmacy resident who maintain a prescription dispensing service averaging approximately 1,400 prescriptions weekly.

Table 1 provides a description of services provided at Towncrest Pharmacy. Three years (2008-2010) of pharmacy records were examined to determine the total revenue and costs of each of eleven services. The costs associated with each service were classified into seven categories: product, materials, labor, marketing, overhead, equipment, and miscellaneous (Table 2). Product costs were included for each of the three vaccines (influenza, herpes zoster and pneumococcal). Materials included supplies needed to deliver the service (E.g. syringes, patient handouts, packaging**).** Estimates of labor costs were made for the personnel time it took to perform each service. Wages used in the calculations were based on information from the pharmacy owner. Pharmacist wages with fringe benefits were reported to be $66.00. The pharmacy has two levels of pharmacy technician, with different pay levels, $22.00 or $13.00 per hour respectively.

Marketing expenses included radio, television and newspaper advertisements. The proportion of time or space in these ads was used to allocate the percentage of marketing costs to the respective service. Marketing costs varied from year to year and some services were not advertised (Table 2). Overhead costs were calculated based on the percentage of time the designated service area in the pharmacy was used for each service. The sum of the annual rent, utilities and telephone costs was multiplied by the fraction of total time the pharmacy was open for which services were delivered, and by the fraction of total pharmacy space occupied by the service area used to deliver the service.

Equipment costs included the Cholestech LDX Analyzer, which is used for cholesterol screening done both at the pharmacy and employee health fairs. A proportion of the equipment and maintenance costs were allocated to each service based on the proportion of tests performed at the pharmacy and health fairs. Equipment costs associated with the MD2 medication dispenser included phone charges for the phone monitoring, the purchase on the MD2 machine for Iowa Medicaid Enterprise (IME) patients, and the rental cost for the MD2 machine for patients with private insurance. Equipment costs were calculated using the straight line depreciated value based on the acquisition cost of the equipment depreciated over a 5-year period.

Miscellaneous costs included pharmacist time resubmitting paper claims and entering information into the Immunization Registry Information System (IRIS) for the influenza immunization service. For the herpes zoster immunizations, miscellaneous costs included pharmacist time resubmitting paper claims as well as the costs associated with faxing patients' physicians to alert them that the patient had received the vaccine. MTM services miscellaneous costs included the fax/phone charges to the pharmacy for those services. Finally, miscellaneous costs associated with employee health fairs included pharmacist time to prepare a bid for the employee health fairs. Total revenue for each service was calculated by multiplying the service frequency by the revenue per patient or by adding the total revenue paid by insurers or cash paying patients (Table 3).

A sensitivity analysis was conducted to include the average net profit from prescriptions dispensed to patients in the Medication Adherence Program. Medication Adherence Program patients average five prescriptions each month and Towncrest Pharmacy nets $2.50 per prescription on average. These figures were derived from the 2011 NCPA Digest and information from Towncrest Pharmacy.

Results

Table 4 shows the net profit or net loss for each service. Overall, seven of eleven pharmacy services showed a net gain each year (Range: $28.92 to $14,749.26) including influenza and herpes zoster immunization services, MTM services, two adherence management services (Bubble Packaging and MD2 medication dispensers), employee health fairs and prescription compounding services. The services that recognized a net loss included the pneumococcal immunizations, cholesterol screenings, and two adherence management services (Doc-U-Dose and Med Planner). In addition, the sensitivity analysis for the combined Medication Adherence Program showed a net gain each year after factoring in the net gain from prescriptions dispensed to this patient population (Table 5).

Discussion

The immunization services at Towncrest Pharmacy showed mixed patterns, with influenza immunization volume and revenue increasing during the study period, while herpes zoster and pneumococcal numbers declined over time. Although the influenza immunization services showed an increase in volume over the study period, competition among community pharmacies to provide immunization services has become more aggressive. For example, Walgreens announced that they will be offering flu shots at all of its 7,700 stores [18]. The convenience of receiving a flu shot at their local pharmacy is appealing to many patients. However, to make this service sustainable, community pharmacies need to have sufficient trained staff to be able to provide these services efficiently. For example, the study pharmacy utilized pharmacy technicians to perform portions of the immunization process, such as obtaining permission and billing.

The decline of the one-time immunizations (herpes zoster and pneumococcal) could relate to different factors. A national shortage of herpes zoster vaccine delayed pharmacies from receiving the vaccine for months at a time. Second, the cost for the pneumococcal vaccine increased without a compensatory increase in reimbursement. This flat payment actually resulted in a net loss for this service during the study period, which points to the need to closely monitor contracts for pharmacy services. To increase the volume of immunizations given, pharmacists may want to consider implementing strategies to identify patients who are candidates for the vaccine, including use of their pharmacy database to identify age appropriate patients or those with chronic illnesses, or training pharmacy staff to ask targeted patients about vaccination history.

Towncrest Pharmacy's MTM/Med Check services showed a net gain during each year, but the net gain was the smallest ($1,331.36) in 2010. This may have resulted from the large increase in marketing in an effort to attract cash paying patients. Pharmacists may want to explore the feasibility of other opportunities to attract new patients, such as personal selling [19]. While the MTM services were profitable, it is important to note that the service volume equated to only a fraction of time and salary for a full-time pharmacist. This situation points to the importance of continuing to have dispensing services that can generate revenue to support pharmacists who are growing new services. The 2011 NCPA Digest reported that, on average, 92% of revenue for an independent community pharmacy comes from dispensing services [20]. In most cases, dispensing services can provide a vital base from which new pharmacist services can emerge. Dispensing services have established payment mechanisms, and are widely recognized as valuable pharmacist services. Many of the new services lack broad payment mechanisms, may not be recognized by patients (E.g. comprehensive medication reviews), or may not be widely linked to pharmacists. Thus, as the new services are developed and become accepted, it is important that pharmacists continue to capitalize on the vital service of dispensing.

Two of the four services offered as part of the Medication Adherence Program showed a net gain, while two did not. A key difference between the profitable and unprofitable services was labor cost. While pharmacy technicians were being utilized in these services, it is possible that costs could be better managed by using them more, or by having pharmacists check the packaged medications more efficiently. In addition to managing costs to make these services sustainable, a pharmacy may be able to raise the prices for the unprofitable repackaging services. Another approach would be to switch to adherence packaging systems that are most profitable. A sensitivity analysis considered both the adherence services and dispensing of the medications repackaged into the compliance packaging. This approach assumed that patients using the Medication Adherence Program would take their prescriptions elsewhere if they were not using this program (I.e. they chose the pharmacy because the service was available). Using the average net profit from prescriptions dispensed to patients in one of the Medication Adherence Programs, the sensitivity analysis indicated that the pharmacy was realizing a positive net gain.

The employee health fairs and prescription compounding services appeared to be the most sustainable over the three years, showing a positive net gain for both services. One key to providing employee health fairs is ensuring a favorable contract. Employee health fairs involve a substantial amount of time and require rearrangements in staffing to provide pharmacists the time to attend the health fairs. In 2010, the net gain was smaller due to an increase in pharmacist labor by 10 hours combined with a lesser increase in the revenue. Such employee screening events can provide pharmacists with an excellent opportunity to promote their clinical services to a large patient population. It is important to note that neither of these services involved third party payers, which likely allowed more favorable pricing. Pharmacists are encouraged to conduct financial analyses of their services to assess sustainability.

A limitation of the study is that costs were estimated for many of the services. While pharmacy records were used when available, sometimes pharmacy staff made an estimate for a cost item (E.g. average pharmacist time). Such an approach can have error to the degree that the staff's estimate may differ from the true number. Given that the pharmacy staff is experienced with delivering these services, it is expected that such errors are limited, though not unlikely. Another limitation of this study is that it analyzed the services at only one pharmacy. While this approach does limit the generalizability of the findings, it allows considerable detail for the financial analyses.

Conclusion

Most of the pharmacist services had an annual positive net gain. It seems likely that these services can be sustained in the future. Also, further cost management could improve the viability of those services by avoiding net losses. However, external factors such as competition and reimbursement levels challenge the long-term sustainability of these services.

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Table 1: Description of Pharmacy Services at Towncrest Pharmacy

Service	Service Description
Immunizations	Adult influenza, herpes zoster and pneumococcal immunizations. Influenza immunizations to children age 3 to 18 with a prescription.
Cholesterol Screenings	Cholesterol screenings include a full lipid panel (FLP) and total cholesterol/high density lipoprotein (TC/HDL) screenings.
MTM/Med Check	Consultation services with a pharmacist. MTM services include those provided to Medicare beneficiaries, contracted health plans, two supportive living organizations, and cash paying patients. These services are consistent with the core elements of MTM recognized by the pharmacy profession [21].
Medication Adherence Program	Medication Adherence services whereby pharmacists provide medication reconciliation services, target medication therapy reviews, update personalized medication records, as well as repackage dispensed medications in compliance packaging including Doc-U-Dose, Med Planner and Bubble packs. MD2 medication dispensing machines also help monitor and improve patient medication compliance.
Employee Health Fairs	Health Fairs to employees at local businesses including cholesterol screenings, blood pressure screenings, height, weight, and body mass index. Written results are given to patients.
Compounding	Compound medications that are not commercially available and reformulates medications to be preservative and/or dye free. Natural hormone replacement therapy dosage forms, nutritional, dental and veterinary products and services.

Table 2: Cost Components of each Service

Service	Product[a] $	Materials[b] $	Labor[c] $	Marketing[d] $	Overhead[e] $	Equipment[f] $	Miscellaneous[g] $	TOTAL $
Influenza								
2008	$3,745.28	$309.76	$2,192.96	$185.55	$43.97	N/A	$132.00	**$6,609.52**
2009	$5,387.66	$584.32	$4,136.72	$1,560.92	$91.61	N/A	$132.00	**$11,893.23**
2010	$11,896.34	$749.76	$5,307.96	$1,942.46	$82.02	N/A	$198.00	**$20,176.54**
Herpes Zoster								
2008	$41,715.03	$265.58	$1,986.43	$185.55	$38.68	N/A	$93.10	**$44,284.37**
2009	$27,399.54	$174.44	$1,304.74	$1,560.92	$28.37	N/A	$83.80	**$30,551.81**
2010	$16,008.72	$101.92	$762.32	$1,630.50	$11.44	N/A	$76.40	**$18,591.30**
Pneumococcal								
2008	$580.32	$14.08	$99.68	N/A	$2.00	N/A	N/A	**$696.08**
2009	$583.94	$12.32	$87.22	N/A	$1.93	N/A	N/A	**$685.41**
2010	$430.38	$7.92	$56.07	N/A	$0.87	N/A	N/A	**$495.24**
Cholesterol Screenings								
2008	N/A	$394.46	$682.00	$556.67	$5.54	$72.24	N/A	**$1,710.91**
2009	N/A	$416.40	$726.00	$773.94	$6.51	$77.00	N/A	**$1,999.85**
2010	N/A	$146.54	$242.00	$155.98	$1.51	$25.17	N/A	**$571.20**
MTM/Med Check								
2008	N/A	$496.00	$3,388.00	$417.50	$54.96	$15.40	N/A	**$4,371.86**
2009	N/A	$525.00	$6,710.00	$0.00	$120.23	$30.50	N/A	**$7,385.73**
2010	N/A	$555.00	$8,426.00	$3,463.00	$105.34	$33.30	N/A	**$12,582.64**
Doc-U-Dose								
2008	N/A	$2,096.64	$15,912.22	$185.55	$365.85	N/A	N/A	**$18,560.26**
2009	N/A	$2,213.12	$15,912.22	$754.16	$404.12	N/A	N/A	**$19,283.62**
2010	N/A	$2,213.12	$15,912.22	$0.00	$1,480.30	N/A	N/A	**$19,605.64**
Med Planner								
2008	N/A	N/A	$4,305.60	$185.55	$89.76	N/A	N/A	**$4,580.91**
2009	N/A	N/A	$4,305.60	$754.16	$99.15	N/A	N/A	**$5,158.91**
2010	N/A	N/A	$4,305.60	$0.00	$363.18	N/A	N/A	**$4,668.78**
Bubble Packs								
2010	N/A	$115.44	$470.40	$0.00	$59.33	N/A	N/A	**$645.17**
MD2 Medication Dispenser	N/A	$18.00	$554.00	$185.55	$2.22	$2,431.20	N/A	**$3,190.97**
2008	N/A	$36.00	$554.00	$754.16	$2.45	$3,022.40	N/A	**$4,369.01**

2009	N/A	$36.00	$554.00	$0.00	$8.90	$2,372.40	N/A	**$2,971.30**
2010								
Employee Health Fairs								
2008	N/A	$1,901.27	$3,498.00	N/A	N/A	$503.16	$66.00	**$5,968.43**
2009	N/A	$1,881.00	$3,498.00	N/A	N/A	$499.00	$66.00	**$5,944.00**
2010	N/A	$2,155.18	$4,818.00	N/A	N/A	$550.83	$66.00	**$7,590.01**
Prescription								
Compounding	N/A	$2,405.28	$1,984.40	$139.17	$14.28	$1,587.62	N/A	**$6,130.75**
2008	N/A	$5,225.84	$2,911.70	$325.85	$23.14	$1,648.82	N/A	**$10,135.35**
2009	N/A	$3,950.73	$2,722.50	$281.60	$69.40	$3,196.75	N/A	**$10,220.98**
2010								

a Vaccine: Influenza vaccines that were used included: Fluzone, Flulaval, Fluvirin, Afluria, Fluzone PFS & Fluzone HD.

b Influenza immunization and pneumococcal immunization **materials** per patient: Disposable gloves ($0.10), bandage ($0.02), patient forms/handouts ($0.20), syringe with needle ($0.51 per syringe), alcohol & gauze pads ($0.05). Herpes zoster immunization materials per patient: Disposable gloves ($0.10), bandage ($0.02), patient forms/handouts ($0.20), syringe with needle for reconstitution ($0.10), syringe with needle for administration ($0.51 per syringe), alcohol & gauze pads ($0.05). Cholesterol screening materials: 2008: Lancet ($0.61), capillary tube ($0.28), plunger ($0.13), gloves ($0.10), alcohol and gauze pads ($0.05), bandage ($0.02), handout ($1.50) and either TC/HDL cassette ($8.30) or Lipid Panel cassette ($11.13). 2009: Lancet ($0.43), capillary tube ($0.30), plunger ($0.14), gloves ($0.10), alcohol and gauze pads ($0.05), bandage ($0.02), handout ($1.50) and either TC/HDL cassette ($8.46) or Lipid Panel cassette ($11.13). 2010: Lancet ($0.43), capillary tube ($0.28), plunger ($0.13), gloves ($0.10), alcohol and gauze pads ($0.05), bandage ($0.02), handout ($1.50) and either TC/HDL cassette ($8.43) or Lipid Panel cassette ($11.05). Doc-U-Dose adherence program materials: Each patient gets a set of up to 4 envelopes per day. In 2008 the cost per set of envelopes was $0.18, in 2009 & 2010 the cost per set of envelopes was $0.19. On average, there are 32 patients using the Doc-U-Dose program each month. Bubble Pack adherence program materials (Supplies): Auxiliary Labels ($0.03), card and blister package ($0.37), pressure labels ($0.34). In 2010 there were 3 patients using the Bubble Pack service with each patient using 1 pack per week (3 patients x 1 pack/week x 52 weeks/year = 156). MD2 adherence program materials: Cost of each cup and lid ($0.06). Each patient gets 100 cups at a time. The pharmacy estimates that on average each patient replaces their supply of reusable cups once a year. Employee health fair materials: 2008: Lancet ($0.61), capillary tube ($0.28), plunger ($0.13), gloves ($0.10), alcohol, gauze pads, bandage ($0.07), handout ($1.50) and TC/HDL cassette ($8.30). 2009: Lancet ($0.43), capillary tube ($0.30), plunger ($0.14), gloves ($0.10), alcohol, gauze pads, bandage ($0.07), handout ($1.50) and TC/HDL cassette ($8.46). 2010: Lancet ($0.43), capillary tube ($0.28), plunger ($0.13), gloves ($0.10), alcohol, gauze pads, bandage ($0.07), handout ($1.50) and TC/HDL cassette ($8.43). Prescription compounding service materials: includes the cost of the medication, other ingredients and packaging (E.g. jars, tube).

c Influenza immunization and pneumococcal immunization **labor** per patient: 5 minutes of pharmacist time at $66.00/hour for patient counseling, administration and documentation and 2 minutes of technician time at $22.00/hour for insurance billing. Herpes zoster immunization labor per patient: 6 minutes of pharmacist time at $66.00/hour for patient counseling, vaccine reconstitution, administration and documentation and 2 minutes of technician time at $22.00/hour for insurance billing. Cholesterol screening labor: Pharmacy staff estimates that it takes 20 minutes of pharmacist time at $66.00/hour to perform each cholesterol screening (patient fills out forms, pharmacist lances finger, draws blood into capillary tube and transfers to cassette; machine reads and provides results). MTM services labor per patient for Systems/Reach, Mirixa and Outcomes was calculated based on 20 minutes of pharmacist time at $66.00/hour. Labor for PharmMD was based on 30 minutes of pharmacist time at $66.00/hour. Doc-U-Dose adherence program labor: A technician spends about 10 hours/week (10 hours/week x 52 weeks/year = 520 hours/year) filling the envelopes at $13.00/hour. A pharmacist spends 5 minutes/patient/week checking the Doc-U-Dose (32 patients x 5 min/patient/week x 52 weeks/year ÷ 60min/hr=138.67 hours/year). Med Planner adherence program labor: A technician spends about 10 hours/month (10 hours/month x 12 months/year = 120 hours/year) filling the Med Planners at $13.00/hour. A pharmacist spends 4 minutes/patient/week checking the Med Planner (12 patients x 4 min/patient/week x 52 weeks/year ÷ 60min/hr=41.6 hours/year). Bubble Pack adherence program labor: A

technician spends 2 hours/month filling the bubble packs (2 hours/month x 12 months/year = 24 hours/year) at $13.00/hour. A pharmacist spends 4 minutes per patient per month checking the bubble pack (4 minutes/patient/month x 3 patients x 12 months/year ÷ 60minutes/hour =2.4 hours/year) at $66.00/hour. MD2 adherence program labor: On average, there is one patient per year using the pharmacy services to package the medications and fill the machine. A technician spends 10 minutes/month (2 hours/year) filling and labeling the medication cups at $13.00/hour. The pharmacist spends 10 minutes/month (2 hours/year) checking the medication cups at $66.00/hour. Home visits to load the MD2 medication dispensing machine takes 30 minutes of pharmacist time each month at $66.00/hour (6 hours/year). Employee health fair labor: Employee health fairs were staffed by two pharmacists (or one pharmacist and one pharmacy resident) at $66.00/hour and one fourth-year pharmacy student on rotation at Towncrest Pharmacy. The time spend at each health fair in 2008 & 2009 was 26 hours and 30 minutes and in 2010, 36 hours and 30 minutes. Prescription compounding labor: Sum of the average time the pharmacist spent compounding the prescriptions at a rate of $66.00/hour.

d Influenza immunization and herpes zoster immunization services were **advertised** on the radio, on television and in the local newspaper. Cholesterol screening services were advertised in the local newspaper and in Senior Living Magazine. The MTM service program was advertised on the radio and on television. Adherence Management services were advertised in the local newspaper and on television. Advertising for prescription compounding services was done on the radio and on television.

e **Overhead** was calculated as follows: [(Amount of time designated space is used per service x number of services) ÷ amount of time pharmacy is open over the year] x % of pharmacy overhead based on square feet of service area. In 2010 the pharmacy did some remodeling, which changed the space component. Influenza immunization and pneumococcal immunization overhead: The designated space was used approximately 7 minutes for each vaccine administration (patient fills out forms, talks to pharmacist, and receives vaccination by pharmacist in designated area; pharmacist documents immunization). In 2008 & 2009, the designated area was approximately 7.71% of the pharmacy space, while in 2010 the area was 5.14% of the pharmacy space. Herpes zoster immunization overhead: The space was used approximately 8 minutes for each vaccine administration. Cholesterol screening overhead: The designated space was used approximately 20 minutes for each cholesterol screening. In 2008 & 2009, the designated area was approximately 3.86% of the pharmacy space, while in 2010 the area was 2.57% of the pharmacy space. MTM service overhead: The designated space was used approximately 20 minutes for Systems/Reach, Mirixa and Outcomes and 30 minutes for PharmMD. In 2008 & 2009, the designated area was approximately 7.71% of the pharmacy space, while in 2010 the area was 5.14% of the pharmacy space. Doc-U-Dose adherence program overhead: The designated space was used approximately 658.67 hours/year (technician time filling=520 hours/year + pharmacist time checking=138.67 hours/year) for preparing and checking the Doc-U-Dose. For all of the adherence services in 2008 & 2009, the designated area was approximately 4% of the pharmacy space, while in 2010 the area was 14% of the pharmacy space. Med Planner adherence program overhead: The designated space was used approximately 161.6 hours/year (technician time filling=120 hours/year + pharmacist time checking=41.6 hours/year) for preparing and checking the Med Planners. Bubble pack adherence program overhead: The designated space was used approximately 26.4 hours/year (technician time filling=24 hours/year + pharmacist time checking=2.4 hours/year) for preparing and checking the Med Planners. MD2 adherence program overhead: The designated space was used approximately 4 hours/year (technician time filling=2 hours/year + pharmacist time checking=2 hours/year) for the MD2 medication dispenser. Prescription compounding service overhead: In 2008, the designated space was used approximately 30.07 hours. In 2009, the designated space was used approximately 44.12 hours. And in 2010, the designated space was used approximately 41.25 hours. In 2008 & 2009, the designated area was approximately 3.42% of the pharmacy space. Due to remodeling, in 2010 the designated area was approximately 10.48% of the pharmacy space.

f **Equipment** for Cholesterol screening was a Cholestech Machine that was bought for $2,000 with a 5 year life expectancy (Cost=$400/year). Additional costs each year include the cost of the control solution ($59.20) and the cost of the LDX optics check cassette for calibrating the machine ($16.20). The machine is also used for employee health fairs. In 2008, 173 of the 204 tests were done at employee health fairs. Therefore, the 2008 cost allocated to just cholesterol screenings was (400+59.20+16.20) x (31/204)=$72.24. In 2009, the cost of the control solution increased to $59.80. Therefore the total cost allocated in 2009: (400+59.80+16.20) x (33/204)=$77.00. In 2010: (400+59.80+16.20) x (11/208)=$25.17. For the employee health fairs, the cost of the Cholestech machine was (400+59.20+16.20) x (173/204)=$403.16. The scale was purchased for $300.00 and the blood pressure cuff for $200.00. Both are expected to last a total of 5 years. Therefore the cost of the scale and blood pressure cuff depreciated over 5 years are $60.00 and $40.00 per year respectively. In 2009, the cost of the control solution increased to $59.80. Therefore the total cost allocated in 2009: (400+59.80+16.20) x (171/204)=$399.00 plus $60.00 for the scale and $40.00 for the blood pressure cuff. In 2010: (400+59.80+16.20) x (197/208)=$450.83 plus $60.00 for the scale and $40.00 for the blood pressure cuff. For MD2 adherence program a monthly fee ($17.95) per patient is charged for telephone monitoring. The pharmacy purchases the MD2 machine for Iowa Medicaid

patients who currently don't own their machine. If the patient has private insurance, the pharmacy rents the machine each month ($45.00) for the patient. For the prescription compounding service, equipment costs were calculated using the straight line depreciated value based on the acquisition cost of the equipment depreciated over a 5-year period.

g **Miscellaneous** costs for influenza immunizations included resubmitting paper claims by pharmacist at $66.00/hour for a total of 2 hours/year. In 2010, pharmacists began reporting immunizations they gave through the Immunization Registry Information System (IRIS). For herpes zoster immunizations: refiling of paper claims by pharmacist at $66.00/hour for a total of 1 hours/year. MTM telephone/Fax costs: One phone call was made or one fax was sent per service administered. Also, the pharmacy subscribes to Facts & Comparisons Online.

Table 3: Total Revenue for each Service

	Frequency[a] & Total Revenue ($)					
Service	**2008**		**2009**		**2010**	
Influenza	352	$8,800.00	664	$16,600.00	852	$26,796.25
Herpes Zoster	271	$51,203.94	178	$33,919.96	104	$18,794.49
Pneumococcal	16	$725.00	14	$665.63	9	$489.03
Cholesterol Screenings	31	$1,155.00	33	$1,225.00	11	$475.00
MTM/Med Check	154	$6,620.00	305	$12,610.00	333	$13,914.00
Docu-U-Dose	32	$11,520.00	32	$11,520.00	32	$11,520.00
Med Planner	12	$4,320.00	12	$4,320.00	12	$4,320.00
Bubble Pack	N/A	N/A	N/A	N/A	3	$1,080.00
MD2 Dispenser	3	$3,496.20	6	$5,912.00	6	$4,589.20
Employee Health Fairs	173	$10,000.00	171	$10,000.00	197	$10,500.00
Compounding	334	$13,471.11	490	$24,884.61	530	$20,684.25

a The number of patients for which the service was provided.

Table 4: Net profit/loss for each Service

Service	2008		2009		2010	
	Total	Per Unit	Total	Per Unit	Total	Per Unit
Influenza	$2,190.48	$6.22	$4,706.77	$7.09	$6,619.71	$7.77
Herpes Zoster	$6,919.57	$25.53	$3,368.15	$18.92	$203.19	$1.95
Pneumococcal	$28.92	$1.81	$-19.78	-$1.41	$-6.21	-$0.06
Cholesterol Screenings	$-555.91	-17.93	$-774.85	-23.48	$-96.20	-8.75
MTM/Med Check	$2,248.14	14.60	$5,224.27	17.13	$1,331.36	4.00
Doc-U-Dose	$-7,040.26	-220.01	$-7,763.62	-242.61	$-8,085.64	-252.68
Med Planner	$-260.91	-21.74	$-838.91	-69.91	$-348.78	-29.07
Bubble Packs	N/A		N/A		$434.83	144.94
MD2 Medication Dispenser	$305.23	101.74	$1,542.99	257.17	$1,617.90	269.65
Employee Health Fairs	$4,031.57	23.30	$4,056.00	23.72	$2,909.99	14.77
Prescription Compounding	$7,340.36	21.98	$14,749.26	30.10	$10,463.27	19.74

NOTE: Net profit/loss = Total revenue – total cost for each service for each year. Per unit is per person or service.

Table 5: Sensitivity Analysis of Medication Adherence Programs

	2008	2009	2010
Net profit/loss Doc-U-Dose	$-7,040.26	$-7,763.62	$-8,085.64
Net profit/loss Med Planner	$-260.91	$-838.91	$-348.78
Net profit/loss Bubble Pack	-	-	$434.83
Net profit/loss MD2 Medication Dispenser	$305.23	$1,542.99	$1,617.90
Average net profit from prescriptions dispensed to patients in one of the Medication Adherence Programs	$7,500.00	$7,950.00	$7,950.00
Net Profit/Loss	**$504.06**	**$890.46**	**$1,568.31**

NOTE: Assumed that each patient using the adherence program had 5 prescription drugs/month, which had an average net profit of $2.50 each.

Aim 3: Assess the impact of changes in third party prescription reimbursement over the past three years and compare prescription reimbursement across different payers.

BACKGROUND AND OBJECTIVE

Although reimbursement for non-dispensing related pharmacist services is growing, prescription drugs still remain the primary source of revenue for community pharmacies. The majority of prescriptions dispensed in community pharmacies are covered by insurance so the continued financial viability of pharmacies depends on critically evaluating their third party reimbursement for prescription drugs. In recent years, there was an average wholesaler price (AWP) adjustment that affected third party reimbursement. Many states, including Iowa, also experienced decreases in their Medicaid reimbursement. These changes, along with ongoing concerns about low reimbursement in Medicare Part D plans, make it essential to measure changes in third party prescription reimbursement in recent years and compare prescription reimbursement across different payers.

The study objective for aim 3 was to assess the impact of changes in third party prescription reimbursement from 2008 to 2011 and compare prescription net profit across different payers for 2010. The original grant proposal only called for examining prescription reimbursement over three years, but we added a fourth year (2011) to better capture the effect of the AWP adjustment and Iowa Medicaid reimbursement decrease which occurred in late 2010.

METHODS

Variables:

Prescription gross margin was assessed across six payers for 2008, 2009, 2010, and 2011. The payers were private pay, Iowa Medicaid, the pharmacy's two largest Medicare Part D plans and the pharmacy's two largest private third party payers. The pharmacy's average cost of dispensing per prescription was calculated for 2010 in order to compare net profit across plans in 2010.

Data Sources:

The sources of data for this aim were pharmacy financial records, including dispensing records, third pharmacy reconciliations, purchasing records, and the pharmacy's income statement from 2010.

Data collection processes:

A stratified systematic random sample of 75 prescriptions from each of the six payers was collected from the same two month period (March and April) in each of the four years. The same time period was used in order to control for seasonal affects. The prescriptions were stratified by date within the two month period and then every nth prescription was selected. The appropriate n for each payer was selected by dividing the total number of prescriptions for each payer from the two months and dividing by 75 (e.g. would select every 4^{th} prescription for a payer with 300 prescriptions over the two month period). Compounded prescriptions were excluded from the analysis. The reimbursed amount or price and the actual acquisition cost (AAC) for the drug product dispensed were obtained for each of the selected prescriptions. The pharmacy's invoices from their drug wholesaler were used to determine AAC. Since sampled prescriptions were drawn from either March or April, the AAC for each prescription was found by starting with the April 30 wholesaler invoice of the same year and working backwards until the first time the drug product dispensed in the prescription was found on the invoice. In the few cases where the drug product purchasing records could not be found for a sampled prescription, the prescription was replaced by the next prescription on the list. Any rebates the pharmacy received from their drug wholesalers were not included in the AACs. The prescription product for each prescription was identified as a brand name drug or a generic drug. Information on the pharmacy's 2010 expenses was obtained from the pharmacy's 2010 income statement and by consulting with pharmacy personnel.

Data analyses:

The actual acquisition cost were subtracted from the price or reimbursed amount for each of the prescriptions to obtain the prescription gross margin. Outlier gross margins of more than $100 or less than -$100 were excluded. Average gross margins were calculated for each of the payers in 2008, 2009, 2010, and 2011. Average gross margins for brand name prescriptions and generic prescriptions also were calculated for each the four years. The pharmacy's 2010 expenses were allocated to the prescription department using appropriate allocation methods, then summed and divided by the total number of prescriptions dispensed in 2010 to obtain the pharmacy's average cost of dispensing (COD) per prescription. Two versions of the COD were calculated. The first version used the square-footage method for allocating all occupancy expenses and the percent of sales method for allocating all other indirect expenses except personnel. The second version used the percent of sales method for allocating all indirect expenses except personnel. For both COD versions, information on the amount of personnel costs attributable to prescription dispensing was obtained from the pharmacy owners. ANOVA was used to examine the statistical significance of differences between mean prescription gross margins across plans and years.

RESULTS

Gross Margin:

Data were collected for 1,800 prescriptions, but 23 outlier prescriptions were excluded, resulting in n = 1,777 prescriptions for analysis. The overall mean gross margin across the full sample of prescriptions was $12.10 (S.D. = 12.74). When results were combined across plan and calculated by year, the gross margin decreased significantly ($p < 0.05$) from $13.01 in 2008 to $10.57 in 2011 (Figure 1). When results were calculated for each plan across all years (Table 1), the highest gross margin was for cash prescriptions ($17.58) and the lowest gross margins were for private 1 ($8.72) and Part D 1 ($8.73). Of note, the Private 1 plan and the Part D 1 plan were administered by the same insurance company.

When average gross margins for each payer in each year were calculated (Figure 1), there were some clear trends. The gross margin for cash prescriptions was about the same from 2008 to 2010, but then increased in 2011. In contrast, the average gross margins for all the other payers tended to decrease over the same time period. The amount of decrease was largest for the Part D 2 plan and Medicaid.

Reimbursement formulas differ for brand and generic drugs, so we compared brand name drug reimbursement with generic drug reimbursement to determine any different trends over the four years (Figures 2 and 3). The average amount of gross margin consistently was higher for brand name drugs than generic drugs, although the percent gross margin was much higher for generic drugs due to their lower acquisition costs. From 2008 to 2011 there was a steady decrease in both the amount and percent of gross margin for generic prescription drugs, but both the amount and percent gross margin for brand name drugs stayed relatively constant. The percent of generic prescriptions in the sample increased from 69% in 2008 to 80% in 2011.

Cost of Dispensing:

The average COD per prescription in 2010 was $6.44 when using the square-footage allocation method for occupancy expenses and $6.89 when using the percent sales allocation method for occupancy expenses. The average COD consisted of $4.87 in personnel expenses, either $0.18 (square-footage method) or $0.63 (percent sales method) in occupancy expenses and $1.39 in other expenses.

Average Net Profit:

In 2010, the average net profit per prescription was either $5.21 or $5.66, depending on which allocation method was used for the cost of dispensing. Using the percent sales allocation method for occupancy costs yields the higher COD and the most conservative estimate of the net profit. Using this higher COD, the average net profit per prescription by payer was highest for cash prescriptions ($10.10) and lowest for Part D 1 ($1.84) and Medicaid ($2.53). The two private plans had similar average net profit in 2010 ($3.37 for private 1 and $3.24 for private 2) while Part D 2 plan had the second highest net profit ($7.15).

DISCUSSION/CONCLUSIONS

The $2.44 decrease in average prescription GM from 2008 to 2011 is concerning, particularly since the payer with the highest average GM (Cash) represents a small percent of the total prescriptions at the pharmacy. The payers with the next two highest average GMs in 2008 also experienced substantial decreases over the four-year time period. The decrease in average GM for Medicaid is not surprising, given decreases in Medicaid reimbursement for generic drugs over that time period plus a decrease in the dispensing fee and the AWP adjustment at the end of 2010. The decrease in average GM for Part D 2 may be due to a change of plan ownership that occurred during the study time period. The decrease in average GM over time seems to have been driven by decreases in the GM for generic drugs, since the GM for brand name drugs was quite stable over the study time period. Given the accompanying increase in the percent of generic prescriptions over the same time period, this trend is important to monitor.

In 2010, the average COD was less than the average gross margin for all payers, yielding a positive net profit for prescriptions across all six payers. This was a positive finding, with two caveats. First, although calculating the COD for all four years was beyond the scope of this study, it likely increased over time. If the trend of decreasing GM continues, it will be important to monitor how much longer the pharmacy will be making a profit on some of the payers with the lowest gross margins. Second, this pharmacy had a much lower COD than the average independent pharmacy COD in 2010 of $11.97 (2010 NCPA Digest); with this COD only two of the plans would have been profitable.

There were several study limitations. Obtaining information on the AAC for the prescriptions was a labor-intensive process, limiting the sample size of prescriptions that could be analyzed in the study. The relatively small sample size for each plan in each year (n = 75) yielded rather large standard errors. We also did not include wholesaler rebates to the pharmacy in the calculations, biasing the average GM downwards. Another limitation is that data were not available to weight the average GM for the pharmacy by the percent of the prescriptions dispensed under each of the six payers. This likely biased the overall GM upwards, since per pharmacy personnel, relatively few prescriptions were dispensed under the two payers with the highest GM. When interpreting the results, it also is important to note that the average GM per plan is a function of both the mix of prescriptions dispensed under the plan and the relative generosity of the payer. For example, the lower average GM in the Private 1plan relative to the Private 2 plan could be due either to a worse reimbursement formula in Private 1 or a different mix of prescriptions dispensed in the two plans.

A key finding from this part of the study was the large decrease in the average prescription GM from 2008 to 2011. Also, the GM also varied considerably across different payers, so it is important for pharmacies to examine the average GM

separately for each payer. The pharmacy generated a positive net profit for all payers in 2010, but the average net profit for each plan must continue to be scrutinized given the decrease in average GM. The trend of both decreased average GM for generic drugs and an increase in the percent of generic prescription dispensed at the pharmacy also must be monitored.

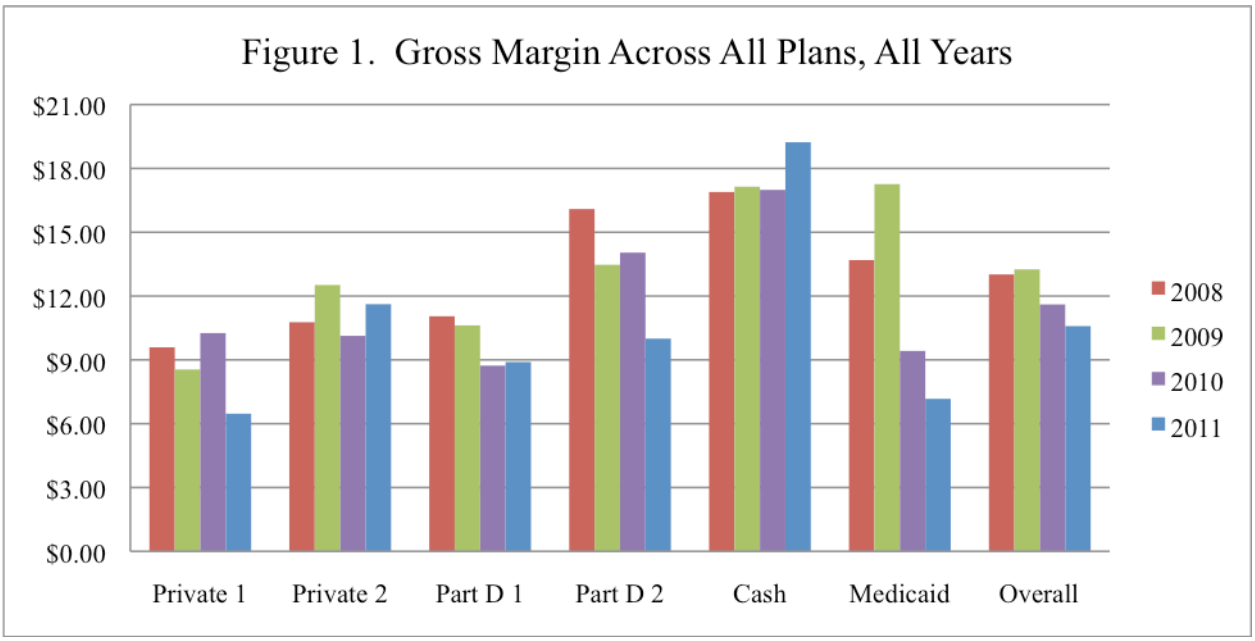
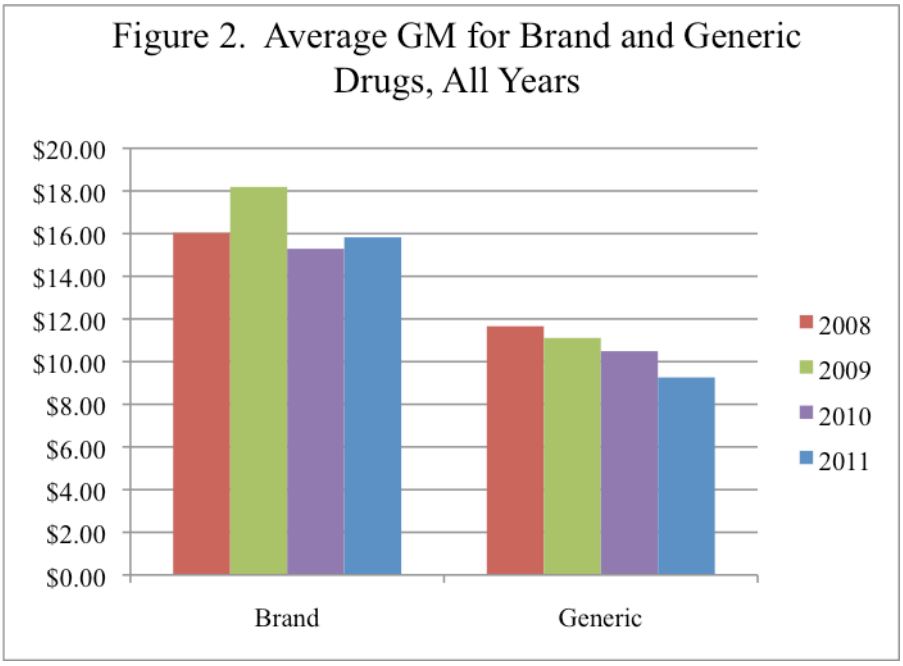


Table 1. Average GM and GM Percent For Each Plan, All Years				
	Gross Margin		Gross Margin Percent	
Plan	**Mean**	**SD**	**Mean**	**SD**
Private 1	$8.72	$11.48	44.93%	34.37%
Private 2	$11.25	$10.66	50.53%	35.86%
Part D 1	$8.73	$6.60	50.29%	31.56%
Part D 2	$13.41	$13.20	59.61%	30.44%
Cash*	$17.58	$14.47	63.61%	29.00%
XIX	$11.90	$13.63	48.70%	33.11%
Overall	$12.10	$12.74	53.23%	32.91%
*Statistically significant (P<0.05) higher reimbursements for both GM and GMP compared to all other payers for all years.				



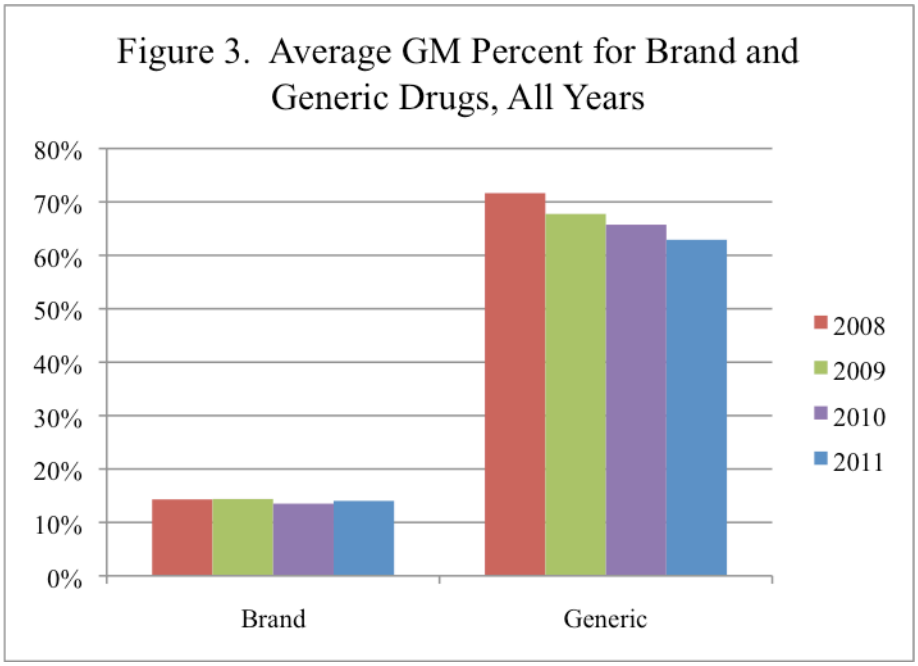


Figure 3. Average GM Percent for Brand and Generic Drugs, All Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
Brand
Generic
2008
2009
2010
2011

Aim 4: Characterize patient/caregiver and employee perceptions about and experiences with new pharmacists services.

Patient Perceptions

Introduction

Growing numbers of pharmacists are offering pharmacy services, including immunizations, chronic disease state management, adherence packaging, durable medical equipment, and other forms of medication therapy management.[1-5] Increased service provision by pharmacists has been shown to improve health outcomes and reduce costs.[1-5] However, consumer adoption of a service-oriented pharmacy model has been slow and warrants investigation.[6]

Classic approaches to studying consumer behavior in pharmacy include patronage motives and patient satisfaction.[7,8] Evaluative criteria for selecting pharmacies have been described as pharmacy patronage motives.[9] Pharmacy patronage motives have been studied to identify salient factors patients use in selecting pharmacies.[9-12] Most literature has been conducted with a focus on dispensing services and has identified convenience and price as important patronage motives. Patient satisfaction with pharmacy services reflects patient beliefs about the extent to which pharmacy service exchanges meets or exceeds expectation, conforms to performance standards, appeals to their emotions, or is equitable in resources exchanged.[13] Patient satisfaction is a multidimensional construct that has been measured in pharmacy literature using validated scales.[14,15] Most studies have assessed overall patient satisfaction and identified pharmacy patrons as being mostly satisfied.[8,16-18]

Previous studies have explored relationships across pharmacy consumer behavior variables.[8] Patronage motives are believed to mediate the association between type pharmacy chosen (eg. independent or chain) with satisfaction and loyalty.[19] While convenience and price were some of the most often cited patronage motives, they were less associated with patron loyalty, or extensive use of a particular pharmacy for services, than relationship motives such as perceived trust and friendliness of the pharmacist.[16,20] Demographics also play a role in patronage motives and pharmacy loyalty, with female gender being associated with higher ratings of patronage motives compared with males, but mixed results with education and income associations with patron loyalty.[21,22] Since prior studies used pharmacies focused on pharmacies with a dominant dispensing focus, evaluation of pharmacy consumer behavior variables in the context of a service-oriented pharmacy setting is warranted.

However, our knowledge of consumer behavior in the adoption of newer pharmacy services, including medication therapy management, immunizations,

health screenings, and technologically-assisted adherence monitoring is deficient. Older studies focused predominately on dispensing services offered by pharmacists. Reasons for seeking out pharmacies offering these unique services and the varied expectation sets a patient has for performance, equity, and emotional connectivity could change. This study advances existing knowledge in three ways. It examines patient satisfaction using a service-oriented, independent community pharmacy with experience offering a cadre of pharmacy services. This is important, given patient satisfaction, service utilization, and patron motivations have been shown to be influenced by expectations. Second, this study explores relationships of patronage motives with pharmacy service utilization with an emphasis on pharmacy services. Previous patronage motive literature has focused predominately on dispensing. Finally, this study explores direct marketing influences on pharmacy service awareness and utilization.

Objective

The objective of this study was to describe and identify significant relationships among pharmacy service utilization, general and service-specific patient satisfaction, pharmacy patronage motives, and marketing awareness in a service-oriented, independent community pharmacy.

Methods

This cross-sectional study was conducted at a service-oriented, independent community pharmacy in a Midwestern city. In addition to dispensing, this pharmacy has more than a decade of experience in offering unique pharmacy services such as medication therapy management, cholesterol screenings, immunizations, durable medical equipment, adherence packaging, free delivery, online refills, and compounding. Cable television, radio, and newspaper advertisements and personal selling by staff are marketing efforts used by this pharmacy.

A stratified random sample of 500 participants was drawn using prescription and clinical pharmacy service records. Half of the sample was randomly selected from prescription dispensing records. The other half of the sample was randomly selected using clinical service records from immunization, hypercholesterolemia and hypertension screening, adherence medication packaging, and employee health screening pharmacy service records to ensure selection of participants with experience using services. Any duplicates were removed and replaced until 500 unique participants were selected.

A self-reported questionnaire was created to assess overall patient satisfaction, service-specific satisfaction, service awareness, pharmacy service utilization, patronage motives, marketing awareness, and demographics. A pilot of the questionnaire was hand-delivered by pharmacy staff to a convenience sample of 25 pharmacy patrons. Of those, 17 questionnaires were returned. Items were

reorganized and refined based on feedback; however, no items were dropped. Questionnaires were then mailed to the main sample with a cover letter signed by a pharmacy co-owner and a stamped return envelope. A reminder postcard was sent three weeks after the initial mailing in efforts to increase response rate.

Twenty-one items on the questionnaire measured overall patient satisfaction. Twenty items came from the Larson, Rovers, and MacKegian, (LRM) patient satisfaction instrument with 11 items measuring the "friendly explanation" and 9 items measuring the "managing therapy" domains of patient satisfaction.[15] An additional item regarding advanced refill requests from the Kaiser Permanente outpatient pharmacy survey, as seen on a Pharmacy Quality Alliance satisfaction survey, was included.[23] These questions were rated using a 5-point scale ranging from "poor" to "excellent." Average individual and domain scores were calculated.

Pharmacy service utilization was measured using two items. One item asked how many times a patron visited the study pharmacy in the past 12 months, while the other asked how many times a patron visited another pharmacy in the past 12 months. Patronage motives were measured as an open-ended question that asked respondents why they chose the study pharmacy. This approach allowed respondents to provide multiple motives and identify motives that might be related to the newer pharmacy services. These items were consistent with assessments in previous literature.[24]

A section of the questionnaire measured service-specific awareness, utilization, and satisfaction for eight services, including prescription filling, influenza, herpes zoster, and pneumococcal vaccinations, cholesterol screening, compounding, durable medical equipment, and compliance packaging. Service-specific awareness and utilizations were measured using yes or no response options, while service-specific satisfaction was measured using a global question "How would you rate the quality of this particular service" using the same 5-point "poor" to "excellent" scale previously described. Direct marketing efforts (television, radio, and newspaper advertisements) awareness was assessed as a dichotomous variable. Demographics measured included age, gender, prescription and over-the-counter utilization per month, annual household income, highest level of education completed, and an open-ended question for chronic conditions.

Both open-ended items for patronage motives and chronic conditions were thematically coded using an approach informed by extant literature. That is, medically defined diseases and patronage motives previously published were known to investigators and predominately used for identification of open-ended responses. Two research investigators independently coded responses and then met to form consensus on both sets of codes. Final codes were dichotomized as dummy variables "responded with patronage motive" or "presence of disease state" coded as "1" or "did not respond with patronage motive" or "absence of disease state" coded as "0" for use in subsequent analysis.

Descriptive statistics, including percentages and means were calculated for all variables. Cronbach's alpha and inter-item correlations were calculated for testing reliability of the two scales comprising the LRM patient satisfaction measure. Inferential statistics, including t-tests and chi-square statistics were used in further analysis. T-tests were calculated to compare individual and domain patient satisfactions scores from participants receiving dispensing-only services versus participants receiving any other pharmacy services. Differences in utilization of the study pharmacy's services across those with a particular patronage motives compared to those without that patronage motive were also calculated using t-tests.

Chi-square tests were calculated to analyze differences in participants reporting of a particular patronage motive and utilization of a different pharmacy for services other than the study pharmacy. Marketing influences on pharmacy service awareness and pharmacy service utilization were also tested using chi-square statistics. A-priori significance levels for chi-square and t-tests were set at $p < 0.05$. Data were analyzed using IBM SPSS version 19.0.0.1 (IBM Corp.; Armonk, NY). All study procedures were approved by the University of Iowa institutional review board.

Results

Five-hundred questionnaires were mailed to the sample. Of the 500 questionnaires sent, 8 were undeliverable, and 241 were returned yielding a useable response rate of 49.0%. The average age of the sample was 68.6 years (s.d. 12.3), with 64% of the sample being female. Nearly half of the participants reported having either hypertension or hypercholesterolemia while only 16% reported having diabetes. Just over 65% of the sample had any college degree; and, over 60% of the sample had household annual incomes greater than $50,000. Fifty percent had been aware of direct marketing efforts made by the study pharmacy.

The LRM patient satisfaction measure had an average score of 3.59 (s.d. 0.53) for the "friendly explanation" scale and 3.27 (s.d. 0.75) for the "managing therapy" scale. While these scales were highly correlated (0.87, $p<0.01$) the average score reported by respondents for each scale was significantly different (0.32 mean difference, $p<0.01$). The "friendly explanation" scale had a Cronbach's alpha of 0.95 and an average inter-item correlation of 0.63. The "managing therapy" scale had a Cronbach's alpha of 0.96 and an average inter-item correlation of 0.74.

Overall patient satisfaction is reported in **Table 1**. Most respondents rated their satisfaction as "Very Good" to "Excellent" for all measures. The most satisfying aspects were staff professionalism and overall service. The least satisfying aspects were privacy of conversations and pharmacist efforts to improve one's health, though these average ratings were overwhelmingly "Very Good" or "Good". Comparisons made on individual and domain patient satisfaction scores based on

dispensing-only service utilization versus any other service utilization were all not statistically significant.

Pharmacy services-specific satisfaction, awareness, and utilization are presented in **Table 2**. Highest awareness and utilization was for prescription dispensing. Influenza vaccination was the most used pharmacy service beyond dispensing. Respondents were most satisfied with pneumococcal vaccination, prescription dispensing, and adherence packaging. Cholesterol screening was the least satisfying.

Relationships led patronage motives appearing in 43.6% of the respondents' responses with convenience (28.2%) and local pharmacy ownership (15.4%) next in priority. Other patronage motives, mentioned by less than 10% of respondents, included unique service, pharmacy atmosphere, personnel competency, pharmacy reputation, referral, wait times, and quality previous experience.

The average number of times a participant visited the study pharmacy in the previous 12 months according to the presence or absence of specific patronage motives are presented in **Table 3**. Significant differences were shown for patronage motives including relationships, pharmacy atmosphere, quality previous experience, and unique service. Significant relationships favor more study pharmacy visits from respondents reporting "quality previous experience", "pharmacy atmosphere", and "relationship" patronage motives; while the patronage motive of unique service was a negative relationship. That is, participants reporting "unique service" as a patronage motive visited the study pharmacy less often than those not reporting that patronage motive.

A 2X2 comparison of patronage motive and other pharmacy service utilization is presented in **Table 4**. Significant differences exist for patronage motives including "pharmacy atmosphere", "personnel competency and knowledge", and "unique service." When pharmacy atmosphere and personnel competency and knowledge were reported by participants as patronage motives, participants did not visit another pharmacy more often for services. When unique services were reported by participants as a patronage motive, participants did visit another more often pharmacy for services.

Marketing and pharmacy service awareness comparisons are presented in **Table 5**. Marketing awareness was significantly associated with pharmacy service awareness for influenza vaccinations, cholesterol screenings, and compounded prescriptions. For those services, participants more aware of marketing were also more aware of the pharmacy service. Marketing had no significant association with pharmacy service utilization, as none of those comparisons were statistically significant.

Discussion

This cross-sectional study identified several significant relationships among pharmacy service utilization, patronage motives, patient satisfaction, and direct marketing efforts. Study participants were mostly satisfied with the pharmacy services on global and service-specific measures. Patronage motives of relationships, pharmacy atmosphere, and quality previous experience were associated with increased pharmacy service utilization at the study pharmacy, while a unique service patronage motivation was associated with decreased pharmacy service utilization at the study pharmacy. Participants citing pharmacy atmosphere and personnel competency as patronage motives did not use pharmacies other than the study pharmacy more often, while participants citing unique services as a patronage motive did use pharmacies other than the study pharmacy more often. Direct marketing awareness is associated with more pharmacy service awareness but not pharmacy service utilization.

Patient satisfaction was shown to be high at both the general and service-specific levels. This finding corroborates previous literature that demonstrated the limited variation in satisfaction measures when most patients reported high levels of patient satisfaction.[14-18] This finding is significant in a pharmacy with this much diversity in service offerings, where patient expectations are likely varied. It demonstrates that pharmacies can provide a cadre of services and address patient expectations reasonably well. Another interesting yet troubling finding is that the lowest patient satisfaction score was "the ability of the pharmacist to improve one's health." Since the overall score for that item indicates that patients were still overwhelmingly satisfied, it may be a moot point. However, since this finding is similar to that in the initial validation, and the relative position near the bottom of the satisfaction ratings in a pharmacy where services are well-known, this could indicate an area for future study.[15] One possible area for exploration would be the patient's expectation set for pharmacists in improving health linked specifically to pharmacy services. As previous work would suggest, patient expectation for pharmacists' role in helping resolve their health care needs are low and ambiguous.[25,26]

Patronage motives were associated with patterns of use of a particular pharmacy for pharmacy services. As previous literature has found, fostering trust and relationships with patients, demonstrating competency in the delivery of pharmaceutical care, providing quality experiences, and having a professional atmosphere are positive patronage motives that can increase loyalty to a particular pharmacy.[16,19,21] One interesting finding in this study was the association of a unique service patronage motive with less utilization of the study pharmacy and with more utilization of a different pharmacy. While unique pharmaceutical care service offerings may indeed be a path to professional sustainability for pharmacy, creating them is only part of the story.[1,27] Our evidence suggests that pharmacy patrons shop around for pharmacy services and will use a unique service at a particular pharmacy

when offered, but they may not transfer their entire business. As previous research has demonstrated a degree of sustainability in pharmacies offering unique services, these practices should continue.[28-30] However, pharmacists should also focus on other things, such as demonstrating competence, building relationships, providing quality care, and having a professional atmosphere to create a loyal customer base.

Direct marketing with television, radio, and newspaper advertisements was associated with pharmacy service awareness, but not utilization. Since marketing is more than creating and communicating a message and includes the delivery and exchange of valued items, it appears these marketing efforts are only partially effective.[31] Personal selling is a 5-step marketing process pharmacists can use in everyday practice to gather patient information and identify health care needs, probe patients with questions asking for specific medication and health concerns, present specific pharmacy services as a means to resolve concerns and fulfill needs, and offer pharmacy services.[32] A more customized relationship marketing approach, like personal selling, may be useful in identifying patient needs and connecting them with appropriate and valued service offerings, a key challenge providing pharmaceutical care.[33,34]

Limitations

This study was conducted using a single, service-oriented, independent community pharmacy. Generalization of these results may be difficult. Future study in a larger sample of progressive pharmacies is needed. Additionally, nonresponse bias can impact results of this study. It is possible that the most satisfied patients were than those who returned questionnaires. Variation in measures of utilization and satisfaction may be reduced as a result. This limitation would strengthen our argument for identifying statistically significant results, as any identified significant relationship must have overcome the problem of limited variation. Additionally, the usable response stratification was consistent with original stratification sampling approach (ie. 50% dispensing and 50% services-beyond dispensing). Self-reported questionnaires may suffer from recall. Recall periods were minimized in constructing items and numerous approaches to measuring dimensions of each variable were made on the questionnaire.

Conclusions

Participants were mostly satisfied with pharmacy services on general and service-specific levels. Pharmacy patronage motives are associated with pharmacy service utilization. Marketing has a positive relationship with awareness, but not utilization. Offering unique services may not be enough to bring in patients loyal to a pharmacy's complete set of services. Pharmacists should focus on developing strong relationships with patients and conveying competence when delivering appropriate, quality pharmacy services in a professional pharmacy atmosphere.

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Table 1. Overall Patient Satisfaction (N = 241)

Question	Respondents	Poor (%)	Fair (%)	Good (%)	Very Good (%)	Excellent (%)
Your pharmacy services overall are...	227	0.0	0.9	5.7	22.9	70.5
The availability of the pharmacist to answer your questions is...	224	0.0	0.4	6.3	25.4	67.9
The courtesy and respect shown you by the pharmacy staff is...	226	0.4	0.0	4.9	27.4	67.3
The professionalism of the pharmacy staff is...	228	0.0	0.4	3.5	28.9	67.1
If you ordered your prescription refill in advance (by phone, internet, etc.), the speed for which it was ready for pick-up is...	215	0.5	0.9	4.7	27.1	66.8
How well the pharmacist answers your questions is...	223	0.0	0.9	4.9	28.3	65.9
The pharmacist's ability to advise you about problems that you might have with your medications is...	221	0.0	0.9	5.0	28.5	65.6
How well the pharmacist explains what your medications do is...	221	0.5	0.9	5.4	29.9	63.3
The promptness of prescription drug service is...	220	0.0	0.0	5.9	31.8	62.3
The pharmacist's professional relationship with you is…	226	0.0	2.7	7.5	17.9	61.9
How well the pharmacist instructs you about how to take your medications is...	216	0.5	1.4	6.9	30.1	61.1
The pharmacist's efforts to solve problems that you have with your medications are...	199	0.0	3.0	11.1	31.7	54.3
The responsibility that the pharmacist assumes for your drug therapy is...	194	0.0	2.6	17.0	30.4	50.0
The amount of time the pharmacist offers to spend with you is...	209	0.5	4.8	12.9	33.5	48.3
The pharmacist's efforts to assure that your medications do what they are supposed to are...	193	0.5	4.1	13.0	35.2	47.2
How well the pharmacist explains possible side effects is...	218	0.9	3.7	11.5	36.7	47.2
How well the pharmacist helps you to manage your medications is...	200	1.0	3.0	11.0	38.5	46.5
The professional appearance of the pharmacy is…	227	0.0	1.3	11.5	41.4	45.8
The privacy of your conversations with the pharmacist is...	210	2.4	6.2	14.8	31.4	45.2
The pharmacist's interest in your health is...	209	1.4	2.9	13.9	38.3	43.5
The pharmacist's efforts to help you	192	1.0	2.1	21.4	35.4	40.1

improve your health or stay healthy are…
Respondents vary due to missing data

Table 2. Service-specific Satisfaction, Awareness, & Utilization (N = 241)			
Service	**Awareness (%)**	**Utilization (%)**	**Average Satisfaction[a]**
Pneumococcal vaccination	61.0	14.1	3.76
Prescription dispensing	92.5	87.6	3.73
Adherence packaging	34.0	15.4	3.71
Influenza vaccination	87.1	53.1	3.67
Compounded prescriptions	53.5	13.7	3.57
Herpes zoster vaccination	34.9	10.4	3.56
Durable medical equipment	64.3	13.3	3.53
Cholesterol screening	54.4	5.0	3.10

Respondents vary due to missing data

[a] Reported as means (5-point scale where: 0 = poor, 1 = fair, 2 = good, 3 = very good, and 4 = excellent)

Table 3. Comparison of Study Pharmacy Service Utilization by Patronage Motive		
	Times Visited Study Pharmacy within Past 12 Months	
Patronage Motive	**With Patronage Motive**	**Without Patronage Motive**
Quality previous experience	25.2* (7)	16.2* (202)
Pharmacy atmosphere	21.8* (19)	16.0* (190)
Relationships	18.4* (103)	14.6* (106)
Referral	17.7 (10)	16.5 (199)
Personnel competency	16.6 (16)	16.5 (193)
Convenience	16.3 (67)	16.6 (142)
Pharmacy ownership	16.0 (35)	16.6 (174)
Pharmacy reputation	15.8 (13)	16.6 (196)
Wait time	12.8 (8)	16.6 (201)
Unique service	5.7* (22)	17.8* (187)

Reported as average counts (n); * t-test P-value<0.05

Table 4. 2x2 Comparison of Other Pharmacy Service Utilization by Patronage Motive (N = 197)				
	Did Visit Another Pharmacy in Past 12 Months		Did Not Visit Another Pharmacy in Past 12 Months	
Patronage Motive	**With Motive (%)**	**Without Motive (%)**	**With Motive (%)**	**Without Motive (%)**
Relationships	20.3	20.8	27.9	31.0
Convenience	13.7	27.4	17.8	41.1
Unique service	7.6*	33.5*	2.0*	56.9*
Pharmacy ownership	4.5	36.5	12.2	46.7
Pharmacy reputation	3.0	38.1	3.6	55.3
Referral	2.5	38.6	3.0	55.8
Pharmacy atmosphere	2.0*	39.1*	8.1*	50.8*
Quality previous experience	1.5	39.6	2.0	56.9
Personnel competency	1.0*	40.1*	6.6*	52.3*
Wait time	0.5	40.6	3.6	55.3

*x^2 P-value<0.05, % based on N

Table 5. Marketing Awareness Impact on Pharmacy Service Awareness (N = 217)				
	Aware of Marketing		Unaware of Marketing	
Service	**Aware of Service (%)**	**Unaware of Service (%)**	**Aware of Service (%)**	**Unaware of Service (%)**
Prescription dispensing	53.9	0.9	15.2	0.0
Influenza vaccination	53.5*	1.4	40.1*	4.6*
Durable medical equipment	41.0	11.1	28.6	13.8
Pneumococcal vaccination	38.2	14.7	27.2	14.7
Cholesterol screening	37.8*	14.7*	21.2*	20.7*
Compounded prescriptions	36.9*	11.9*	21.2*	18.0*
Herpes zoster vaccination	22.6	29.5	14.7	27.2
Adherence packaging	19.4	25.8	16.6	21.2

*x^2 P-value<0.05, % based on N

Employee Perceptions

Introduction

Clinical pharmacy services offered by pharmacists in community settings are increasing. Integration of these services into a pharmacy's operations requires careful consideration about budgeting, staffing, and physical resources. The implementations of these services have been shown to require some reengineering of pharmacy space and staff functions and willing participation by a motivated staff.

Pharmacists are necessary for the delivery of medication therapy management, and other more clinically structured patient-focused services. While necessary, pharmacists are not sufficient. Pharmacy technicians, office staff, and additional health care providers have a role in supporting delivery of clinical pharmacy services. Their attitude and beliefs about assuming new roles when new pharmacy services are added to the practice can affect how smoothly such services are incorporate into the pharmacy's workflow. When planning and adding a new service, it can be helpful in addressing the staff's concerns about the pending changes. However, little work has documented experiences with clinical pharmacy delivery using the perceptions of a full range of staff.

Objective

The aim of this project was to explore pharmacy personnel perceptions about and experiences with delivery of clinical pharmacy services.

Methods

This qualitative study was conducted at a service-oriented, independent community pharmacy in a Midwestern city. In addition to dispensing, this pharmacy has more than a decade of experience in offering unique pharmacy services such as medication therapy management, cholesterol screenings, immunizations, durable medical equipment, adherence packaging, free delivery, online refills, and compounding. This pharmacy has three pharmacist-owners with the newest owner having 10 years of experience with the company. In addition to the pharmacist owners, there are 2 staff pharmacists and 1 clinical pharmacist and a resident. There are technicians and additional students who complete rotations at the pharmacy.

Semi-structured interviews were performed using an interview guide. This guide asked participants about their work history at the pharmacy, involvement in clinical and non-clinical pharmacy services, clinical service delivery effects on workflow, barriers to offering clinical services, pharmacy strengths, potential changes, value of clinical services to the pharmacy, and thoughts on increasing the amount of services offered.

Probing questions, asking for definitions, clarity, or elaboration, were allowed to more deeply investigate issues that participants revealed during the interviews.

Interviews were audio-taped and transcribed verbatim. Transcripts were then coded by a team of three research investigators. Each investigator independently coded the data. Codes were discussed amongst the investigators and emergent themes were identified through a consensus-forming process. Representative quotes were selected by research investigators to describe the range of perceptions for each emergent theme.

All interviews and analyses were conducted using methods approved by the University of Iowa IRB.

Results

Nine semi-structured interviews were conducted. Staff roles of participants were pharmacist (2), pharmacist-owner (2), and pharmacy technician (5). Interviews averaged a little over 20 minutes in length.

Three emergent themes were identified: the presences of challenges and barriers to the delivery of clinical pharmacy services and facilitative strategies used to overcome them, the importance of individual and organizational training and learning in creating efficiencies and improving performance, and the range of outcomes for clinical pharmacy services has the potential to impact many stakeholders, generally are experienced in the long-term and are difficult to assess.

First, numerous barriers, challengers, and facilitators influence the successful delivery of clinical pharmacy services. An overarching theme described by staff was the innate tension between clinical and non-clinical service delivery. This tension underpinned the challenges, barriers, and facilitators to implementing pharmacy services. Staff described the tension as palpable, almost like two pharmacies being operated as one.

> *"It's almost like 2 pharmacies within 1, because of the enormous number of clients that we serve on top of the regular every day individuals that are served filling prescriptions as needed."*
> Pharmacy Technician 2

> *"They are kind of separate little worlds. They all certainly rely on each other, but I think that the people that aren't involved with the clinical services don't really understand it and don't really there is really only 3 of us that are involved with it."*
> Pharmacist 1

One commonly expressed challenge to implementing pharmacy services was staffing. The staff thought current staffing levels were appropriate for the pharmacy most of the time with the occasional shortage during high volume periods.

> *"Staff numbers no, I think it gets a little, you never really know when everyone is going to come in. I guess at the end of the month everyone is trying to pick up their prescriptions and we feel a little understaffed maybe."*
> Pharmacy Technician 3

Current staffing levels for delivery of a mix of services rely more on pharmacists than traditional dispensing-only models.

> *"We have so many different areas that we have things going in, that means that we actually have a much higher staff ratio of pharmacist to total employees than almost any other pharmacy I know of. Because we have to have so many different things going on at a time that are different that require different expertise."*
> Pharmacist-Owner 1

Staff also described demand increases as a rationale for recent hiring.

> *"…we have just hired another pharmacist just for that area because it is an enormous area and there is a huge clientele base that we cater to."*
> Pharmacy Technician 2

Also, some reluctance was expressed to expanding clinical services due to manpower issues, while others saw a natural path to expansion through a planned hiring scheme.

> "*I don't know if we have the manpower to handle it right now."*
> Pharmacy Technician 1

> *"That is my goal and me being brought on the hope was that we could grow it to a point where I might spend hardly any of my time dispensing because we have so many clinical services maybe even to the point we are able to hire support staff. That would probably be the next piece. Somebody to do some of the paperwork that doesn't require pharmacists to do it. And then beyond that eventually even potentially other pharmacists that are also assisting with the delivery of services."*
> Pharmacist 1

Service-oriented pharmacies rely heavily on specialized staffing roles as indicated by the staff. In some cases, certain staff had completed residencies.

> *"If someone comes in and has major questions generally our resident is available or he has a small cubicle where patients can sit down with someone usually."*
> Pharmacist 2

This specialized training was also accompanied by personality attributes unique to the individual.

> *"I completed a first year residency with a focus in ambulatory care at the Iowa City VA. Immediately prior to starting my position here so clinically I was very comfortable with providing these services not quite as much with the administration of clinic but I am a very organized person so that kind of came from my own personal skills."*
> Pharmacist 1

Another major challenge to pharmacy service delivery, that goes hand-in-hand with staffing concerns, is the limited amount of time to complete tasks. As staff expressed, time is such a major challenge that adjustments to breaks are self-imposed.

> *"Challenges would be the volume of work in the little time that I am here."*
> Pharmacy Technician 1

> *"Our staff works without breaks, except for lunch breaks, they do not get morning or afternoon breaks. They just choose not to, we have this break room, but nobody ever uses it except for lunch, you know, we're just so busy. I don't think very many people realize how hard pharmacy staff works, you know, how continuously, how constant the workload is."*
> Pharmacist-Owner 2

Pharmacy service delivery is also associated with increased recordkeeping, requiring more time.

> *"Paperwork is a big big one. In order to do the services and to do it with quality, there is a lot of paperwork and recordkeeping to do. And that takes a lot of time."*
> Pharmacist 1

Additionally, a lack of time can prevent staff from completing tasks at a desired time.

> *"...we are supposed to go over them every 6 months; and we hit that, finally. In February it took us five or six months to get done but we are actually on top of the schedule now instead of trying to play catch-up with everybody."*
> Pharmacist 1

Time constraints at work also can force staff to hold scheduled meetings outside of working hours that cuts into personal time.

> *"...because we do this* [meetings] *after work. This is time it takes away from our families. So we try to keep it short a half an hour to an hour and a half."*
> Pharmacist 1

Having enough physical space to deliver dispensing and an assortment of clinical services was another challenge mentioned by several of the pharmacy staff. Recently added basement workspace helped alleviate some space issues.

> *"…the basement was finished and that added a lot more space. It was pretty cramped when I first started we were sharing spaces and getting in each other's way."*
> Pharmacy Technician 1

> *"…we are fairly tight we added this whole area downstairs because we were short on space. I could see in the very near future that that probably is going to be another issue once again; even though we have expanded we need probably some more space."*
> Pharmacist-Owner 1

However, even more space could be beneficial.

> *"I feel like it is kind of cramped for the space but I think I don't really have any changes with the people or anything. It is a little small and cramped for everyone."*
> Pharmacy Technician 3

> *"And we're crowded in the prescription department, the prescription filling department, we are crowded there…it would be nice to stretch that out a little bit…it would be nice if we had just a little more square footage area period, you know, it does help coming down here* [basement]*…"*
> Pharmacist-Owner 2

Reimbursement of pharmacy services is another major barrier to implementing more clinical pharmacy services.

> *"And the amount of time that you have to put in because they are complicated sometimes is not equivalent to what you are getting reimbursed."*
> Pharmacist 1

In addition to more tangible challenges, such as space and staffing, more intangible barriers to implementing pharmacy services can exist. One pharmacist mentioned the disparate visions of owners.

> *"Where overall you've got three people who all have kind of their own vision and are not necessarily meeting formally on a regular basis to discuss where things are going and where they need to go."*
> Pharmacist 1

Facilitative approaches have been used by staff to ensure successful pharmacy service delivery. The integration of the mission and vision into service planning decisions

is one approach. The presence of vision was articulated by some staff, while others mostly were unaware.

> *"I think the primary owner that I am with during the course of the day has a lot of vision for Towncrest and again it comes back to the other pharmacist and myself being fully trained so that those visions can be seen."*
> Pharmacy Technician 2

> *"But I mean I only have been working for about a year for about once a week. So I don't really get the whole vision."*
> Pharmacy Technician 3

A service orientation mission for this progressive pharmacy was patient-focused and committed to improving the health and well-being of patients served in the long run.

> *"Well, for many many years we wanted to be progressive and be sort of cutting edge pharmacy and so you know we were one of the very early pharmacies, I mean, I am going back to my Drug Fare days out here in the same community, in the very early 70's we started doing patient counseling; we were one of the very first ones to do that, and then when pharmaceutical care came in, in the early 90's we were very involved in that process right from the beginning and we had a group of pharmacists that met regularly, you probably know all about that, you know we're like a support group for each other, exchange a lot of ideas, and sort of motivated each other I would say and that was lots of fun."*
> Pharmacist-Owner 2

> *"Well they all have kind of a central theme, patient care, patient orientation, they fit in the complexion of the pharmacy in that manner. For example, we are not selling you know homemade greeting cards, we could, but we don't. we don't sell a lot of homeopathic remedies, some of the stuff that is maybe a little less scientifically based because that is not our complexion like our evidence based pharmacy evidence based medicine compounding etc. We try to fit all of our things into that general picture."*
> Pharmacist-Owner 1

> *"I think that the biggest change is not thinking about right now. Because if you are only ever thinking about where you are right now you are never going to put in the investment to get to the point where those services are viable."*
> Pharmacist 1

> *"And they're banking on that in 2-3 years that is going to pay off. And if you are only thinking about now and you are not thinking that far out, you are never ever going to make that investment. And if you don't make that investment in having somebody that is devoted to have at least half the time to do something you are never going to get it off the ground to the appropriate level that you could hire someone to do it."*

Pharmacist 1

"But I think it is shown by some of the staff that we're here for the customer. That you know our work ethic is to be customer oriented. And we are able to achieve better relationships with our customers to improve their quality of life."
Pharmacist 2

New ideas for services can be generated through experiences and identification of opportunities as customer needs change.

"Hospice has a pharmacist currently on their staff and she is half-time at hospice and half-time at Mercy hospital. She is now going to go full-time at Mercy hospital and so is leaving hospice. Hospice approached us and asked us if we would be able to fill that gap in what they needed."
Pharmacist 1

Mission can be used to determine how well a new service will fit into a pharmacy service mix.

"Any service we would add to our repertoire would have to fit under the umbrella of what we consider to be our mission, that's kind of overlap, we are general health, we like to be evidence based and not just throwing stuff out there for the sake of throwing it out there."
Pharmacist-Owner 1

Additionally, new services should not compete with existing successful services.

"But, I guess, a strong thing in my mind is that the base of the whole thing is our prescription volume, that we do and everything else sort of feeds off of that. So, as we've talked about within our group: number one you have to take care of the patients we already have, and especially take care of the regular prescription patients and you can't get so involved in all these other things that the service level and that area suffers in any way"
Pharmacist-Owner 2

Evidence of successfully fitting new services into this pharmacy were described by staff,

"I'd say a lot of them they've done a pretty good job at trying to work them into the flow. As far as me being up on the counter and assessing our scripts that are coming in and leaving right away, they do a good job I think at having an additional pharmacist or additional staff that is able to care to those services."
Pharmacist 2

Scheduling is a way to fit into the workflow additional services.

"Scheduling I guess, cause it wouldn't make sense for us to have someone that did only that because they would just kind of sit there most of the day. But it makes it kind of hard when you have a bunch of people coming in that you don't have ready."
Pharmacy Technician 4

Another approach to ensuring successful delivery of clinical services is the development of relationships. This pharmacy has successfully cultivated relationships with patients, physicians, and other health care entities, such as assisted living facilities. In regards to patients, this pharmacy's staff makes concerted efforts to know patient names and make the patient feel more like a member of the family than just a customer.

"They [pharmacy staff] *are very personable. They get to know the clients. The walk-in clients they know by name. It is your typical neighborhood place. I think that attracts a lot of people."*
Pharmacy Technician 1

"They are in my opinion the epitome of community pharmacy. They know approximately 95% of the people who walk through the door if not more and address them by name."
Pharmacy Technician 2

"They get called by their name. They feel comfortable asking questions they are not there is not really a barrier between the pharmacist and them."
Pharmacy Technician 3

"I'd say they have a very like personalized touch like they do their best to address people by name to make them feel welcome. To chat with them you know as kind of make them feel more than just a customer that is in and out."
Pharmacist 2

"…I feel that a large number of patients that come in here are my friends, you know, so…and I have developed friendships over the years with them…I started out downtown 52 years ago and we still have a few patients that were patients downtown when I started 52 years ago…and I am in my fifth location and they have moved each time with…and that's what patients will do…these are people that when they come in, we hug each other."
Pharmacist-Owner 2

Sometimes relationships are maintained though non-monetary social exchanges, such as pro bono pharmaceutical care for an assisted living facility.

"And you know a good demonstration of that is that even though some of the patients from Systems for example don't have funding to have medication reviews done. We still offer to do them. Because we think that is valuable and so we

developed that relationship with Systems to keep us as their pharmacy and to be the ones to provide them with the services that they need because we see the value in providing that patient care."
Pharmacist 1

Or social exchanges through extra effort and care can occur.

"So it seems like a lot off the older population really appreciates that work that we go through with their insurance and all that stuff. Because we understand what we need to do we will call an insurance company especially if you are someone 85 or older and would have no idea what is going on. So we take care of a lot of that stuff."
Pharmacy Technician 4

"Another part of it that I think we do really well is relationships with people. We work very hard to do what we can to satisfy every single patient that we are serving. We certainly can't do that with every patient some patients aren't receptive to what we have to offer but we go out of our way to make sure that we take care of them how they need."
Pharmacist 1

When asked why they use social exchanges as a basis for relationships, a pharmacist provided the following response.

"Because we think that is valuable and so we developed that relationship with Systems to keep us as their pharmacy and to be the ones to provide them with the services that they need because we see the value in providing that patient care."
Pharmacist 1

At odds with relationship development is expansion of pharmacy services due to more staff being required.

"No, but you have to be careful, you know, as it gets bigger, as our volume grows and we add on more people they probably don't have the same personal connections with the patients that Bill and I did in the beginning, you know, that we've had over the years. And I worry a little bit about every time the patient comes in they see a new face."
Pharmacist-Owner 2

Second, individual and organizational learning is important for creating efficiencies and improving performance. The theme of a lack of understanding of others' roles in the pharmacy was mentioned by staff often and underpins the need for personal learning.

"I think and there is also the piece that people don't understand what other people are doing. So they don't necessarily see the value in what the other person is doing. They don't understand why it is that they get to do what they do and the other person is doing what they are doing."
Pharmacist 1

This lack of understanding of each other's' roles becomes most evident when absences occur.

"It seems that barriers there are is that when they are not here. You know when vacations come, people are sick, filling in the other pharmacy, you know workflow does stop a little bit and I'd say my stress level goes up some."
Pharmacist 2

One key area for individualized learning repeatedly mentioned by staff was cross-training. In this sense, staff would learn multiple roles to work in different areas of the pharmacy operations.

"What would help you know, having our staff be more cross trained in all the aspects of what we are doing. When a particular person is going for vacation or sick, which you know happens, there's only a few people that could step in and it would be nice and very helpful to us if anyone of us could step in at that position rather than just a couple of key people and usually it will be Randy or myself."
Pharmacist-Owner 1

Cross-training is not without limitations. More retraining is necessary for each service added and sometimes this amount of training is unrealistic.

"But the more services you offer the more staff you are needing to retrain on that. The more time is needed to be put into that."
Pharmacist 2

"I think that is easier said than done to train everyone equally at every position."
Pharmacist 2

"So being able to cross train everybody in all the different aspects would be very helpful. That being said, it's also a very difficult thing to do especially with the large amount of complexities some of these things have."
Pharmacist-Owner 1

Additionally, training does not necessarily make an immediate impact.

"We are not going to see a huge change right away but the three of us involved in this are hoping to see an enormous change by the beginning of the year when I'm fully trained, she is fully trained, and the owner that has primarily been

responsible can step back and be able to just oversee different aspects as opposed to just being the primary person responsible."
Pharmacy Technician 2

Backing up training was a commitment to answering questions informally made by more experienced staff.

"With my specific job I feel very confident. I think I was trained well and someone is always available to help answer questions."
Pharmacy Technician 1

"I mean the girls that I train with are basically the other technicians that have been working for here a year and a half or longer. That's who I trained with. And then if I have any question and someone will l be able to answer."
Pharmacy Technician 3

"I pretty much got shown the dispensing system and kind of got thrown into it, which is perfectly actually fine with me. I'd rather kind of figure it out myself and if I have questions come and ask."
Pharmacist 1

Individual learning occurred primarily as minimal on-the-job training and experience-based.

"Well initially it was the training on just filling the med cassettes and making sure the appropriate medications and dosages were getting where they needed to go and the cassettes were loaded appropriately. Some of the individuals are in school so they have to bottles labeled appropriately and filled appropriately on the appropriate dates to go to school. As far as the computer system that is a whole different dynamic in itself because of all of the insurance. Making sure everything is billed appropriately and if it's not applicable to insurance then it is charged appropriately to the client that it goes to. Making sure the prescription is available either that is an electronic prescription that we received or one that is there so that we know we have the refill for the medication that they need."
Pharmacy Technician 2

"So really there is no way to learn it without practicing because there is so much you can to write everything down. It is just practicing it as it comes and learning all the little stuff."
Pharmacy Technician 4

"I just kind of had to figure it out and go through it and just do it once or twice to have a good feel for it."
Pharmacist 1

"Over time you realize there are more areas and more services here than I had training for in school or in any of my other jobs and so I feel like I am just kind of trained as we go. If it comes up and I am involved I am shown and try my best to remember next time."
Pharmacist 2

Individual learning is perpetual and cumulative.

"In my 2 and a half years I feel like I have learned quite a bit over that time to widen my knowledge on the other aspects of the pharmacy."
Pharmacist 2

Learning can also occur at the organizational level with procedural routines developed by staff over time and learning how to engage relationships proactively.

"We also had a patient who is in Reach and hospice and we have never had that happened before so it is kind of a learning process for everybody and I was able to call the nurse and have her come in and talk about what we were going to do and plan that out ahead of time before it becomes a problem."
Pharmacist 1

"Once you get the first time [through a process] *the others kind of after that are certainly much faster."*
Pharmacist 1

Finally, numerous outcomes of clinical pharmacy services can be experienced by patients, technical staff, pharmacist staff, and the pharmacy, but generally are experienced in the long-term and are difficult to assess. Patients get clinical value and humanistic value through service offerings conveniently located in single pharmacy.

"You could come here get your cholesterol checked, you can have a medication review, you can pick up durable medical equipment, you can have drug information questions answered, we do custom compounding of medication, we could package your medications in a way that's going to help enable you to stay at home as oppose to being a nursing home, we could send you out with a robotic dispenser, that's going to help do the same thing. I mean there are lots of different things we can do and offer that nobody else is going to, and it's all under one roof, albeit sometimes very chaotic roof."
Pharmacist-Owner 1

Pharmacy reputation can increase through offering pharmacy services.

"Well, I guess I'd have to say, you know, all of that sort of, adds to our reputation probably. And then in addition to that you know, we have people that come here, that are patients at other pharmacies and they're interested in compliance

packing and we can provide that for them and the other pharmacy can't, so we end up eventually, that those patients transfer here."
Pharmacist-Owner 2

In offering pharmacy services, it can be difficult to ascertain value for patients and the pharmacy.

"I guess there is an array of services so the values are a little different I mean. You know our service up on the counter making sure that people are getting the correct medications and they're safe and things. There is a safety value their healthcare."
Pharmacist 2

"Everything is in spreadsheets. We are documenting all of the billing for clinical services everything that we are doing actually it is broken up by month to see where we are it's not completely comprehensive because it doesn't take into account the cost of supplies or opportunity costs of things that are lost from having us out of the pharmacy or whatever. But it is at least somewhat of a gauge of what are services are bringing in financially."
Pharmacist 1

And often, individual goals determine clinical success making outcomes observable only at the case level.

"And so my primary goal and outcome is each individual patient is trying to get them to healthier or you know more compliant with their medication or whatever we can do to help them. And that is something that is very hard to gauge kind of on the global scale. You kind of see it on a case by case basis."
Pharmacist 1

Pharmacy outcomes such as profitability and diversification of business model can occur but usually in the long-term.

"...we like what we do, but we also like to be able to pay the bills and make a little bit of profit in the end."
Pharmacist-Owner 2

"...so the network pressure on us from a profitability standpoint means you've got to diversify a little bit. So bringing some other services in allows us to have a little bit more control over the bottom line."
Pharmacist-Owner 1

"It would have to have positive revenue implications; it's not worth doing if you can't make something from it because you are going to put money into it. That's not terribly true, there are several of our services that don't really make a lot of

money but they bring other business in with them, for example the medication packing, probably don't make money on, but by the fact that we require them to have their prescription filled here, that subsidizes and that actually brings to the bottom line…"
Pharmacist-Owner 1

"As far as you know I couldn't tell you if you know our packaging programs are that type of service like if we make money on it. I don't know. I think that the benefit is that we are offering that service to our community and that service is seen as these people are really care they want to do something extra and do something special for people that need that help."
Pharmacist 2

Stability in business maintained through the diversification of services can result in more jobs brought into the local community.

"So they are close, but allowing us to have enough other services out there to make it, so we are not going to be in jeopardy of having to sellout, and basically sell jobs, we are a local employer, we try to make sure that we are employing our people, keeping their future safe and keeping them stable."
Pharmacist-Owner 1

"I am not saying the pharmacy couldn't survive without it but it would be an enormous detriment. Obviously two of us would lose our jobs so it is utterly important to put the patient or the client first to ensure that we are doing everything we can for them so in turn we have a place to go every day."
Pharmacy Technician 2

Discussion

This study highlighted the significance of barriers, challenges and facilitators for the delivery of clinical pharmacy services. Staffing, time, space, reimbursement, and other intangible limitations are barriers and challenges a pharmacy must overcome. Use of mission and vision to determine service fit and workflow issues and building relationships with patients, providers, and other health care entities are strategies pharmacies can use to overcome challenges and barriers. Additionally, learning is important at the individual and organizational levels. Personnel could benefit from cross-training and through experiences in working in a variety of services. Process standardization and formalization by the organization could lead to improved efficiencies. Finally, clinical pharmacy service delivery creates positive outcomes for a number of stakeholders. Patients can experience improved health, technician staff can have more job opportunities, pharmacists can have great job satisfaction, and the pharmacy can increase its financial strength and permanence in the long-run through a diversification of service options it provides the local community.

Limitations

This study is not without its limitations. First, this study was conducted in a single, independent pharmacy with a demonstrated history of success in delivering clinical pharmacy services for a decade. Pharmacies attempting to use information from this study but having different histories and contexts must judge the appropriateness of comparisons. Second, this study investigated the individual perceptions of staff from a single pharmacy. Staffs at other pharmacies could be different on a number of skill, attitude, and knowledge attributes not identified in this study. While this study faces the same limitations as other qualitative endeavors, its strength lies in the rich description of reality as provided by participants and the coalescence of emergent themes from this data.

GRANT CONCLUSIONS

The research team was able to successfully complete the research and keep the timeline discussed in the grant application. There were four aims for this project and each aim was completed with a comprehensive write-up of the results. The researchers have been fortunate that their work has already been recognized through poster presentations at national meetings and one manuscript has already been accepted for publication in a peer-reviewed journal. The research team wishes to recognize the owners and staff at Towncrest Pharmacy for sharing their data, time, and expertise. Also, they want to recognize the Community Pharmacy Foundation for their support of this important project.