COMMUNITY PHARMACY FOUNDATION

COMPLETED GRANT SYNOPSIS

A Comprehensive Longitudinal Assessment of an Innovative Community Pharmacy Practice

Authors

Randal P. McDonough, Pharm.D., M.S., Towncrest Pharmacy
William R. Doucette, Ph.D., University of Iowa
Julie M. Urmie, Ph.D., University of Iowa
Brandon J. Patterson, Pharm.D., University of Iowa

Objectives

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.

Methods

Design

Aim 1: Describe the development, marketing and delivery of pharmacist services into practice at Towncrest Pharmacy during a 3-year (2008-2010) period.

Variables: The annual volume and revenue of the new pharmacist services of services will be collected for 2008 through 2010. The services to be tracked include: flu shots, herpes zoster immunizations, pneumococcal immunizations, cholesterol screenings, blood pressure screenings, adherence management services (Med-pack, MD2 machine, Doc-U-Dose), employee health fairs, medication therapy management services, compounding services, and durable medical equipment sales/rental. Also, promotional activities related to these services will be collected and described. In addition, changes in the pharmacy layout, workflow and personnel will be described over the 3-year period. Finally, a description of the approach to developing new services will be written by Dr. McDonough.

Data sources: Pharmacy records, pharmacy owners and the media seller will be sources for these study data.

Data collection processes: Students will extract data from pharmacy records under the supervision of Dr. McDonough and support of Dr. Urmie and Dr. Doucette. Interviews with the pharmacy owners will be conducted to describe changes in the pharmacy practice and the new service development process.

Data analyses: Descriptive statistics will be calculated for the number of services provided and annual revenue of the services for each service to be analyzed. This will allow tracking over the 3-year period. A narrative will be written to describe the service development and changes in the pharmacy practice over the study period.

Time line: Spring 2011, collect data for the service volume and revenue. Summer/Fall 2011, analyze service volume/revenue and collect pharmacy practice change qualitative data. Fall 2011/Winter 2012, complete analyses and write narrative of practice changes and service development process. Spring/Summer 2012, write final report.

Aim2 Assess the financial performance of new pharmacy services, provided during a 3-year (2008- 2010) period at Towncrest Pharmacy.
Variables: For each service analyzed, the total annual revenue, total annual costs, and net gain/loss will be calculated. Revenues will be collected as described for Aim 1. Costs will be estimated using a cost allocation approach, with data from pharmacy records. Costs will include: product (if appropriate), labor, supplies, start-up, promotion, overhead, and miscellaneous costs.
Data sources: Financial statements and operational documents at Towncrest Pharmacy will provide the data for calculating the revenues and costs.
Data collection processes: Financial data will be extracted from pharmacy records by students, under the supervision of Drs. McDonough, Urmie, and Doucette.
Data analyses: Total annual revenues will be calculated by summing them for each service. Total annual costs will be estimated by recognizing full direct costs and by allocating proportions of indirect costs based on appropriate bases (E.g. labor allocation based on time, overhead allocation based on square feet). Annual net gain/loss will be calculated by taking the difference between total annual revenue and total annual costs for each service. Sensitivity analyses will be conducted to investigate reasonable changes in service delivery.
Time line: Spring/Summer 2011, collect data for the revenues and costs. Fall 2011/Winter 2012, analyze service revenues and calculate service costs. Winter/Spring 2012, complete all analyses. Spring/Summer 2012, write final report.

Aim 3: Assess the impact of changes in third party prescription reimbursement over the past three years and compare prescription reimbursement across different payers for 2010.
Variables: Prescription gross margin will be assessed across six payers for 2008, 2009 and 2010. The payers will be 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 will be calculated for 2010.
Data Sources: The sources of data for this aim will be pharmacy financial records, including dispensing records, third pharmacy reconciliations, purchasing records, and the pharmacy's income statement.
Data collection processes: A stratified random sample of 75 prescriptions from each of the six payers will be collected from the same two month period in each of the three years. The prescriptions will be stratified by date within the two month period. The reimbursed amount or price and the actual acquisition cost for the drug product dispensed will be obtained for each of the selected
prescriptions. The prescription product for each prescription will be identified as a brand name drug or a generic drug. Information on pharmacy expenses will be obtained from the pharmacy's financial records.
Data analyses: The actual acquisition cost will be subtracted from the price or reimbursed amount for each of the prescriptions to obtain the prescription gross margin. Average gross margins will be calculated for each of the payers in 2008, 2009, and 2010. Average gross margins for brand name prescriptions and generic prescriptions also will be calculated for each of the payers across the three years. The pharmacy's 2010 expenses will be 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 a prescription.
Time line: Spring/Summer 2011, select the sample of prescriptions and begin the cost of dispensing calculations. Summer/Fall 2011, obtain the price or reimbursed amount and the actual acquisition cost for the selected sample of prescriptions. Complete the cost of dispensing calculations. Fall 2011/Winter 2012, calculate the prescription gross margins. Spring/Summer 2012, write final report.

Aim 4: Characterize patient/caregiver and employee perceptions about and experiences with the new pharmacist services.
Variables: The patient satisfactions survey will consist of 5-10 items from the Kaiser Permanente dispensing survey used in the Pharmacy Quality Alliance survey and all 20-items from the revised Larson, Rovers, MacKeigan satisfaction survey. Demographic, awareness and utilization items will also be asked. A semi-structured interview guide will be created for pharmacy personnel interviews and will identify barriers and challenges to implementing new pharmacy services.
Data sources: The sources of data will be 500 patients and all pharmacy personnel, including pharmacists and technicians.
Data collection processes: A stratified random sample of 500 patients who have received a prescription in

	the previous 6 months will be selected for patient satisfaction surveys using pharmacy data. The sample will be stratified to oversample those patients who have received a prescription plus received a non-dispensing service at Towncrest Pharmacy. An initial mailing containing a cover letter, survey, and a stamped return envelope will be sent to each patient in the sample. Follow-up postcards will also be mailed to the sample about 14 days after the initial mailing. **Data analyses***:* Data will be analyzed from the patient satisfaction surveys using descriptive statistics. Results will be assessed globally and for each separate service and dispensing functions. Additionally, the multidimensionality of the measures will be assessed using confirmatory factor analysis. Interview data will be transcribed verbatim and then coded for thematic analysis. Three experts in pharmacy services will code the data using an iterative consensus forming process. **Time line:** Spring/Summer 2011, select sample of patients and mail surveys. Summer 2011, conduct interviews of pharmacy staff and analyze survey and interview data. Fall 2011/Winter 2012, code, enter and analyze the survey and interview data. Spring/Summer 2012, write final report.

Results

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

Results:

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.

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

Results:

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).

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

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).

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

Patient 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.

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.

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.

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.

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 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.

Employee 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.

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

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

Service-oriented pharmacies rely heavily on specialized staffing roles as indicated by the staff. In some cases, certain staff had completed residencies. This specialized training was also accompanied by personality attributes unique to the individual.

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.

Pharmacy service delivery is also associated with increased recordkeeping, requiring more time. Additionally, a lack of time can prevent staff from completing tasks at a desired time. Time constraints at work also can force staff to hold scheduled meetings outside of working hours that cuts into personal time.

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. However, even more space could be beneficial.

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

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.

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

Mission can be used to determine how well a new service will fit into a pharmacy service mix. Additionally, new services should not compete with existing successful services. Evidence of successfully fitting new services into this pharmacy were described by staff. Scheduling is a way to fit into the workflow additional services.

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. Sometimes relationships are maintained though non-monetary social exchanges, such as pro bono pharmaceutical care for an assisted living facility. Or social exchanges through extra effort and care can occur.

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. This lack of understanding of each other's' roles becomes most evident when absences occur. 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. Cross-training is not without limitations. More retraining is necessary for each service added and sometimes this amount of training is unrealistic. Additionally, training does not necessarily make an immediate impact. Backing up training was a commitment to answering questions informally made by more experienced staff.

Individual learning occurred primarily as minimal on-the-job training and experience-based. Individual learning is perpetual and cumulative. Learning can also occur at the organizational level with procedural routines developed by staff over time and learning how to engage relationships proactively.

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.

Pharmacy reputation can increase through offering pharmacy services. In offering pharmacy services, it can be difficult to ascertain value for patients and the pharmacy. And often, individual goals determine clinical success making outcomes observable only at the case level.

Pharmacy outcomes such as profitability and diversification of business model can occur but usually in the long-term. Stability in business maintained through the diversification of services can result in more jobs brought into the local community.

Conclusion

Aim 1 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 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.

Aim 3 Conclusion:

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.

Aim 4 Conclusion:

Patients:

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.

Employees:

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.