

Bridging the Gap: Collaboration between a School of Pharmacy, Public Health, and Governmental Organizations to provide Clinical and Economic Services to Medicare Beneficiaries

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Abstract

Objective: Promoting healthy communities through the provision of accessible quality healthcare services is a common mission shared by schools of pharmacy, public health departments, and governmental agencies. The following study seeks to identify and detail the benefits of collaboration between these different groups. **Methods:** In total, 112 mobile clinics targeting Medicare beneficiaries were held in 20 cities across Northern/Central California from 2007 to 2016. Under the supervision of licensed pharmacists, trained student pharmacists provided vaccinations, health screenings, Medicare Part D plan optimization services, and Medication Therapy Management (MTM) to patients at each clinic site. Clinic support was extended by public health departments, governmental agency partners, and a health professional program. **Results:** Since clinic inception, 8,996 patients were provided services. In total, 19,441 health screenings and 3,643 vaccinations were collectively provided to clinic patients. We assisted 5,549 beneficiaries with their Part D benefit, resulting in an estimated aggregate out-of-pocket drug cost savings of \$5.7 million. Comprehensive MTM services were provided to 4,717 patients during which 8,184 medication-related problems (MRPs) were identified. In 15.3% of patients, the MRP was determined severe enough to warrant prescriber follow-up. In total, 42.9% of clinic patients were from racial/ethnic minority groups and 25.5% had incomes $\leq 150\%$ of the Federal Poverty Level. **Conclusion:** Collaboration between a school of pharmacy, public health departments, and governmental organizations can effectively serve Medicare beneficiary populations and result in: 1) lower out-of-pocket drug costs, 2) minimization of medication-related problems, 3) increased vaccination uptake, and 4) increased utilization of health screenings.

Key words: Medicare, Collaborations/Interprofessional education, Public Health, Medication Therapy Management, Health Screenings/Vaccinations

Background

Healthy People 2020 provides national objectives for improving the health of Americans through a multidimensional approach that involves organizational and community collaboration, empowers individuals to make informed health decisions, and measures the impact of preventative activities.¹

Healthy People 2020 consists of key topic areas including improving access to health care services, increasing immunization rates, optimizing health outcomes for older adults, solidifying public health infrastructure, and creating environments that reduce the impact of social determinants on health. Promoting healthy communities through the provision of accessible, high-quality health care is a mission

shared by schools of pharmacy, public health departments, and governmental agencies.² Previous research has demonstrated tangible benefits of intergroup collaboration including expanded vaccination access, point-of-care testing, information sharing, and improved care for vulnerable populations.^{2,3}

Medicare beneficiaries represent a growing population, many of whom incur high annual healthcare expenditures. There are currently close to 58 million Medicare beneficiaries, 84% of whom are 65 years of age or older.⁴ In 2012, per capita health care expenditures for adults 65 years of age and older were approximately three times higher than they were for younger patients.⁵ Prescription drug expenditures are the third largest cost driver of healthcare expenditures, with Medicare spending an average of \$2,203 per beneficiary in 2015 on outpatient prescription drugs.⁶

Medicare Part D is the outpatient prescription drug benefit available to beneficiaries. Patel et al. sought to examine the potential out-of-pocket (OOP) cost savings a beneficiary could realize by optimizing their Part D plan.⁷ It was found that 89.7% of beneficiaries could reduce their OOP cost by switching to a different Part D plan for the upcoming year.⁷ Cutler et al.

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performed a cross-sectional study including 1,300 beneficiaries with annual incomes less than 300% of the Federal Poverty Level who received Medicare Part D assistance at community outreach events and found that OOP costs were, on average, reduced by 68% following counseling recommendations.⁸ Findings from these studies demonstrate that community outreach targeting Medicare beneficiaries can help optimize Part D plan selection and significantly reduce OOP prescription drug costs.

Aside from high OOP drug costs, the complexity of medication regimens can also negatively affect medication adherence and patient outcomes.⁹ Americans age 65 years and older take a median of four prescription medications a month, and 39% take five or more.^{10,11} As such, many Medicare beneficiaries face a high drug burden and stand to benefit from Medication Therapy Management (MTM) services. During an MTM intervention, a pharmacist or qualified healthcare provider reviews a patient's medication regimen, discusses their concerns/findings with the patient, and addresses any medication-related problems (MRPs). By meeting certain eligibility criteria, Medicare beneficiaries can qualify for receipt of these services through their Part D plan. In 2014, around 8% of beneficiaries or 2.5 million individuals were eligible for MTM services through their Part D benefit.¹² Despite the availability of MTM services, drug therapy for many beneficiaries may still be suboptimal. The Centers for Medicare & Medicaid Services (CMS) found that only 10% of participating beneficiaries receive a comprehensive medication review, a required component of MTM programs, each year.¹²

The underutilization of MTM services is troubling since MTM has been shown to be effective in improving medication adherence and reducing adverse drug events in the elderly.¹³ A 2010 study conducted by the Department of Health and Human Services reported that 42% of adverse events experienced by hospitalized Medicare beneficiaries were due to medications.¹⁴ Moreover, Viswanathan et al. found that over 40% of severe drug events were preventable.¹⁵ Lindblad et al. conducted a study including 1,340 veterans which found that 15.3% of them experienced a drug-disease state interaction.¹⁶

Medication Therapy Management programs can improve disease state outcomes by optimizing medication regimens and improving adherence. Theising et al. found that receiving MTM services led to reduced blood sugar levels in patients with diabetes and lower blood pressure in those with hypertension.¹⁷ Perloth et al. found that beneficiaries with congestive heart failure, chronic obstructive pulmonary disease (COPD), and/or diabetes who received MTM services had 11%-40% higher medication adherence rates compared to those who did not receive MTM services.¹⁸ These studies highlight the potential value of MTM interventions.

Immunizations and preventative health screenings for chronic conditions such as diabetes, hypertension, and osteoporosis can also be beneficial in maintaining the health and well-being of Medicare beneficiaries. Influenza and pneumonia represent the eighth-leading cause of death among adults age 65 years and older in the United States, accounting for 44,836 deaths of the elderly in 2014.¹⁹ Although influenza and pneumonia are largely preventable, vaccination rates remain subpar. In 2015, the Centers for Disease Control and Prevention (CDC) reported that 63.4% of adults age 65 years and older received a flu vaccine in the previous year, and 63.6% had received a pneumococcal vaccine in their lifetime.²⁰

Immunization uptake has plateaued over the last decade and remains far short of the 90% coverage goal for each vaccine set by Healthy People 2020.²¹⁻²³ Recommendations were made in 2014 for adults age 65 years and older to receive both pneumococcal vaccines, however uptake has been slow with only 18.3% of adults receiving both vaccines two years after the recommendation.²³ Local public health departments have attempted to increase flu vaccine uptake in underserved populations through partnerships with community-based organizations and hosting vaccine outreach clinics. High patient satisfaction and increased vaccination uptake show that such collaborations can be fruitful.²⁴

Existing collaborations between pharmacy and public health have proven beneficial in helping address unmet public health needs. During the H1N1 pandemic in 2009-2010, a collaboration between pharmacies and a local health department in Palm Beach County, Florida helped distribute vaccines and educate patients. This collaboration resulted in the distribution of 200,000 flu information cards to 250 community pharmacies and in-store health clinics by local public health departments. Of those surveyed, 90% of pharmacy managers reported being asked about influenza by their customers, and 64% of pharmacy managers reported finding the local health department a useful resource.²⁵ The growth of pharmacy and public health collaborations in recent years has sparked interest in policy changes to ensure that pharmacy-based public health services can be effective and sustainable.

Other collaborative programs have been developed with the intent of addressing the health care needs of underserved populations. The Health Disparities Collaborative and the Healthy Communities Access Program were initiated in response to the growing disparity of health care access for different populations.²⁶ In addition to local health department collaborations, partnerships between public health and schools of pharmacy have been created to offer students patient education opportunities. "AdvoCaring," a program established at Notre Dame of Maryland University's Pharmacy School, provides free health services such as blood pressure monitoring and educational sessions on select health topics to

populations in need through partnerships with local agencies.²⁷

Medicare beneficiaries stand to benefit from collaborations between schools of pharmacy, public health departments, and governmental agencies. In this paper, we describe a collaborative approach between a School of Pharmacy, multiple public health departments, and different governmental agencies to assist Medicare beneficiaries in lowering their OOP drug costs, ensuring safe and effective use of their medications through provision of MTM services, and improving access to vaccinations and preventive health screenings.

Methods

In total, 112 mobile health clinics targeting Medicare beneficiaries (Mobile Medicare Clinics) were conducted by the University of the Pacific Thomas J. Long School of Pharmacy and Health Sciences during the annual fall Medicare open enrollment window between 2007 and 2016. All clinics occurred at locations throughout northern and central California. The clinics began by offering only Medicare Part D plan optimization services and expanded over the years to include MTM, vaccinations, and a myriad of free health screenings. All screenings and services were provided by trained pharmacy students under the supervision of licensed pharmacists.

Medicare Part D plan optimization included evaluating a beneficiary's Part D drug plan and identifying if a lower cost plan was available by inputting beneficiary specific information (e.g., medication regimen, preferred pharmacy) into the online Medicare Plan Finder Tool (available at www.medicare.gov). Potential OOP cost savings opportunities, by switching Part D plans, were recorded for each assisted beneficiary.

In 2010, the Mobile Medicare Clinics expanded to include MTM services. The provision of MTM services for assisted beneficiaries included a systematic 12-point process during which the following MRPs were evaluated: 1) expired/out-of-date medication(s), 2) untreated condition(s), 3) therapeutic duplication(s), 4) medication(s) without indication, 5) contraindication(s), 6) potentially inappropriate medication(s) for older adults, 7) drug-drug interaction(s), 8) drug-disease/condition interaction(s), 9) awareness of the purpose of each medication, 10) how patient reported taking each medication as compared to labeled directions, 11) adverse drug reaction(s), and 12) the availability of cheaper therapeutic alternative(s). Drug information databases including Lexicomp®, Clinical Pharmacology®, UpToDate®, Facts and Comparisons®, and Micromedex® were consulted to help facilitate each MTM intervention. The type and frequency of each MRP was recorded during each MTM intervention. Student findings were presented to a supervising licensed pharmacist during each intervention and a determination was

made as to the severity of each identified MRP. With patient consent, prescribers were notified of all severe MRPs. Demographic data (e.g., race/ethnicity, income, etc.) were collected from each assisted beneficiary during the Part D and/or MTM intervention via a standardized data collection tool that was approved by the University's Institutional Review Board.

In addition to Part D and MTM services, the clinics expanded to provide vaccinations (first introduced in 2010) and health screenings (first introduced in 2011). Immunizations including influenza, pneumococcal (both PCV13 and PPSV23), zoster, and Tdap vaccines have been available at clinic sites. Diabetes and cholesterol screening, blood pressure testing, bone mineral density testing, falls risk assessment, anemia testing, memory decline screening, depression screening, asthma/COPD screening, insomnia screening, and anxiety testing have also been made available at clinic sites.

Our Mobile Medicare Clinics sought collaborative opportunities with strategic partner groups over the years. Partnerships were forged with the following governmental agencies: Health Insurance Counseling & Advocacy Program (HICAP), County Public Health Departments, CMS, Social Security Administration (SSA), and California Department of Aging (CDA). In addition, partnerships with Clinic host sites and other professional programs [University of San Francisco (USF) Nurse Practitioner Program] have also been cultivated. The nature of these partnerships and the support provided by each partner group can be found in **Table 1**.

Results

In aggregate, 8,996 patients were assisted at Clinic sites between 2007 and 2016. In total, 42.9% of patients self-identified as belonging to a racial and/or ethnic minority group, and 25.5% had incomes less than or equal to 150% of the Federal Poverty Level.

Part D optimization services were provided to 5,549 beneficiaries since the inception of the Clinics. It was observed that 76.3% of assisted beneficiaries had the potential to lower their OOP costs by switching Part D drug plans in the upcoming year (**Table 2**). In aggregate, beneficiaries could realize \$5.7 million (or \$1,031/beneficiary per annum) by switching Part D plans during the annual Medicare Part D open enrollment period. Mean potential OOP savings through Part D plan optimization services increased with time, growing at an average rate of 11.1% per year. In addition, there was a 154% increase in the number of Medicare beneficiaries assisted with Part D plan optimization services since the partnership with CMS first began.

In total 4,717 patients were provided MTM services at Clinic sites between 2010 and 2016. A total of 8,184 MRPs were identified, or roughly 1.74 MRPs/MTM intervention (**Table 3**).

Approximately 15.3% of patients who were provided with MTM services had a severe MRP that warranted prescriber contact and follow-up. A noticeable increase in MRPs identified per patient was observed since the interprofessional collaboration with USF's nurse practitioner program began in 2015.

In total, 3,643 vaccines (72.9% of which were for the flu vaccine) were administered to Clinic patients. The number of vaccines provided to Clinic patients increased between 106% and 225% each year since the partnership with County Public Health was first forged. The number of health screenings (e.g., blood glucose, blood pressure, and cholesterol testing) totaled 19,441 at Clinic sites between 2011 and 2016 (Table 4). As such, on average 3,240 free health screenings were provided to the community each year and the average patient took advantage of 2.5 such screenings during their attendance at a Clinic site.

Discussion

There was a 1,815% increase in the number of Clinic patient attendees from 2007 to 2016. The exponential growth in those served is most likely attributable to the support, and collaborative nature, of our external partners.

With regard to Part D plan optimization, the number of beneficiaries assisted grew every year since the CMS partnership began in 2011 (Table 1). The most likely reason for the observed growth is that CMS's onsite/phone support during Clinics enabled more efficient beneficiary eligibility verification. This significantly reduced the average length of time per intervention and allowed for a greater number of beneficiaries to receive Part D services at each Clinic site. The fact that a smaller (72.8% vs. 95.2%) percentage of patients were observed to have potential OOP cost-savings by switching Part D plans in 2016 versus 2007 is likely attributable to the number of plan offerings. In 2007, there were 55 stand-alone Part D prescription drug plans available in California. In contrast, there were only 24 such plans in 2017.²⁸ The decrease in plan offerings means that beneficiaries now have fewer plans from which to choose that could result in lower OOP cost savings.

The number of patients receiving MTM services consistently increased every year the service was offered (Table 3). There was a notable increase in the average number of MRPs identified per MTM intervention starting 2014 and continuing through 2016. We posit that this uptick occurred because of the interprofessional collaboration with the USF Nurse Practitioner program. Starting in 2014, nurse practitioner students assisted pharmacy students in providing the MTM intervention and helped collect medical and medication information from the patient while drawing on their own expertise and training focus. This comprehensive approach was much more thorough than that which would be possible

by any one type of health care professional student alone. Despite the increase in the number of MRPs identified, the percentage of severe MRPs remained constant during this time. This suggests that the collaboration mostly helped identifying problems that were less severe in nature and/or that once identified and addressed it was unlikely that those same severe MRPs would be found when patients returned the following year.

The number of vaccines administered in a given year increased from 208 to 677 following collaboration with Public Health (Table 4). In a typical year, between 150 and 250 doses of the flu vaccine were secured from County Public Health departments. This flu vaccine supply enabled us to provide the influenza vaccine to Clinic patients regardless of their insurance coverage or ability to pay. The number of administered pneumococcal vaccinations increased by 44% from 2013 to 2015 and made up about 30% of provided vaccinations in 2015. The pneumococcal vaccine uptake increased and plateaued with a peak in 2015 which is likely attributable to the 2014 CDC recommendations to provide adults age 65 years and older with one dose of each vaccine (13-valent pneumococcal conjugate vaccine [PCV13] and the 23-valent pneumococcal polysaccharide vaccine [PPSV23]) six to twelve months apart.²⁹ While there has been an overall increase in vaccines administered since 2010, a steady decline from 2013 has been observed. A plausible reason for this finding is that once patients have received the shingles, Tdap and both pneumococcal vaccines they have been brought up-to-date and thus only need an annual flu vaccine. Vaccine delivery and uptake are multifactorial and requires much more logistical, financial and faculty support to ensure its growth and sustainability compared to lower cost health screenings or cognitive services (e.g., MTM).

Partnership between a school of pharmacy, governmental health organizations, community partners and other health professional programs can effectively provide much-needed health care screenings/services to underserved and underrepresented communities. In doing so, collaborations of this type have the potential to reduce OOP health care costs, promote medication safety, improve access to preventative health screenings, and aid communities in achieving public health goals. Viewing this collaborative model in the frame of pharmacy education can transform the way students perceive current healthcare challenges and integrate their skills to effectuate change. Raising student awareness of public health is key to improving healthcare access to underserved communities. By partnering with public health, pharmacy students have the opportunity to participate in public health initiatives and provide services that can benefit targeted communities.³⁰

In November 2015, recognizing the increasing synergy between public health and pharmacy, the American Public

Health Association's Governing Council approved the development of a Pharmacy Public Health Special Primary Interest Group (SPIG). This group focused on advancing the pharmacist's role in promoting public health, encouraging safe medication use, and improving patient outcomes. Due to an aging population and rising healthcare costs, pharmacists and by extension, pharmacy students are well positioned to have a meaningful role impacting patient care. Offering services such as Part D optimization, MTM, vaccinations and health screenings can help reduce patient and the healthcare system costs, increase medication adherence, and improve health outcomes.

One limitation of this study is the exploratory nature of the outcomes measured, such as potential savings and MRPs identified as opposed to realized savings or hospitalizations avoided. Due to the nature of the mobile health clinics, there was no quantitative way to measure the impact of each individual organization. Further research is needed to determine the impact of services provided on the public health sector as well as clinical and economic benefits.

Conclusion

This study described the nature of support and resultant outcomes from a collaborative approach between a school of pharmacy, public health, and governmental organizations to improve the economic and clinical outcomes of community-dwelling Medicare beneficiaries. We found that the number of patients served increased greatly through this collaborative approach and benefits to Clinic attendees included lower OOP drug costs, identification and minimization of medication-related problems, increased vaccine uptake and increased utilization of preventative healthcare screenings.

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Table 1. Clinic Partners and the Nature of their Provided Support Either Prior to and/or During Each Mobile Medicate Clinic

Partners (first year of partnership)	Prior to Clinic	At Clinic
Health Insurance Counseling & Advocacy Program (2007)	<ul style="list-style-type: none"> Assisted in disseminating Clinic flyers throughout the community Helped establish new Clinic host sites 	<ul style="list-style-type: none"> Provided in-person Clinic support to answer beneficiary questions about Medicare Advantage plan offerings in their county, Medigap policies, and Medicare's general benefit structure
County Public Health Services (2010)	<ul style="list-style-type: none"> Hosted focus groups to test the effectiveness of Clinic marketing material Funded event(s) flyer production and distribution to increase awareness of Clinics Advertised Clinics throughout the community Funded a sensitivity training program for pharmacy students 	<ul style="list-style-type: none"> Supplied influenza vaccines for county residents
Centers for Medicare & Medicaid Services (2011)	<ul style="list-style-type: none"> Assisted in disseminating Clinic flyers throughout the community 	<ul style="list-style-type: none"> Provided direct support during each Clinic to assist in beneficiary eligibility verification and technical questions
Social Security Administration (2012)		<ul style="list-style-type: none"> Provided onsite Clinic support for beneficiaries needing help in applying for the Low-Income Subsidy (LIS)
California Department of Aging (2012)	<ul style="list-style-type: none"> Assisted in disseminating Clinic flyers throughout the community Provided grant funding to help subsidize the cost of Clinic offerings 	<ul style="list-style-type: none"> Provided onsite Clinic support to share resources available to beneficiaries
University of San Francisco (USF) Nurse Practitioner Program (2014)	<ul style="list-style-type: none"> Participated in simulation exercises to prepare students (pharmacy and nurse practitioners) for interprofessional collaborative patient care at Clinic sites 	<ul style="list-style-type: none"> Provided interprofessional collaboration during Clinic MTM interventions
Individual Clinic Host Sites	<ul style="list-style-type: none"> Coordinated Clinic patient appointments Provided assistance with Clinic advertisement Educated students on effective communication and cultural awareness of the target population 	<ul style="list-style-type: none"> Provided venue space Provided logistical support Provided food for volunteers

Table 2. Resultant Outcomes from Medicare Part D Plan Optimization Services from 2007-2016

	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of Clinics	6	8	11	9	13	12	14	13	13	13
Number of patients assisted with Part D	72	315	286	395	540	621	676	754	888	1,002
Patients with potential OOP cost savings by switching Part D plans (%)	95.2	85.8	77.8	75.2	81.2	80.2	77.7	69.4	74.5	72.8
Total potential OOP savings by switching Part D plans (\$)	35,696	146,627	140,276	174,688	368,660	713,502	660,315	1,043,429	1,320,073	1,121,370
Avg. annual potential OOP savings per patient (\$)	496	646	754	562	814	1,149	972	1,628	1,487	1,282

OOP=out-of-pocket
Avg.=average

Table 3. Medication Therapy Management (MTM) Services and Identified Medication Related Problems (MRP's) from 2007 to 2016

	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of MTM services provided	-	-	-	339	543	583	659	731	865	997
Total MRPs identified				501	431	998	775	1,139	1,992	2,348
Avg. MRP per patient	-	-	-	1.5	0.8	1.7	1.2	1.6	2.3	2.4
Total severe MRPs identified				78	103	62	137	79	102	162
(%) of MRPs identified severe	-	-	-	15.6	23.9	6.2	17.7	6.9	5.1	6.9

MRP=medication related problems
MTM=medication therapy management
Avg.=average

Table 4. Vaccine Administration and Aggregate Health Screenings Provided at Clinic Sites from 2007 to 2016

	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total clinic patients	72	315	286	401	1,013	1,547	1,279	1,369	1,335	1,379
Total vaccines administered	-	-	-	208	429	563	677	629	612	525
Flu										
Number administered				208	294	441	491	436	397	387
(%) of total vaccines	-	-	-	100	68.5	78.3	72.5	69.3	64.9	73.7
Pneumococcal										
Number administered					59	74	125	138	180	122
(%) of total vaccines	-	-	-	-	13.8	13.1	18.5	21.9	29.4	23.2
Tdap or Zoster										
Number administered					76	48	61	55	35	16
(%) of total vaccines	-	-	-	-	17.7	8.5	9.0	8.7	5.7	3.0
Health screenings										
Number provided					2,270	2,886	3,223	3,775	3,685	3,602
Avg. screenings per patient	-	-	-	-	2.2	1.9	2.5	2.8	2.8	2.6

Tdap=tetanus, diphtheria, and pertussis vaccine

Avg.=average