

Community Pharmacy Care Management, provided by pharmacists, Financial Impact on Patient Care

Community Pharmacy Care Management is a series of **value-based patient care services** provided by pharmacists at local pharmacies.¹ These services have shown to **improve** patient medication management, **adherence**, optimize management of disease states, and **prevent hospital readmissions** from effective transitions of care.²⁻⁴ According to *Consumer Reports*, patients prefer to go to **independent pharmacies** because of the **personalized pharmacist-patient relationships** and implementation of these **value-based patient care services**.⁵ An overview of these services is below.

Service: Supporting Medication Adherence		
Article	Summary	Outcome
<p>How Much Does Medication Nonadherence Cost the Medicare Fee-for-Service Program? Med Care. 2019 Mar;57(3):218-224.</p>	<p>This study values the cost of non-adherence and can be utilized to value a medication adherence program. Specifically, Medicare fee-for-service claims data were used to calculate the prevalence of medication nonadherence among individuals with diabetes, heart failure, hypertension, and hyperlipidemia.</p>	<p>Estimated cost savings per beneficiary per year (Medicare):</p> <ul style="list-style-type: none"> • Diabetes: \$5170 • Heart failure: \$7893 • Hypertension: \$5824 • Dyslipidemia \$1847
Article	Summary	Outcome
<p>Effect of a Pharmacist on Adverse Drug Events and Medication Errors in Outpatients with Cardiovascular Disease Arch Intern Med. 2009;169(8):757-763.</p>	<p>Assessed the impact of community pharmacists on medication adherence and relevant health outcomes in patients with heart failure and hypertension. Compared outcomes of patients who received a comprehensive medication history, continuous monitoring, oral and written instructions on medications, and discussion with physicians by the pharmacist to those who didn't receive these benefits.</p>	<p>Lower actual direct health care costs associated with the overall effects of the intervention compared with usual care</p> <ul style="list-style-type: none"> • \$2,676 saved per patient
Service: Comprehensive Medication Management		
Article	Summary	Outcome
<p>Community Care of North Carolina. Clinical Program Analysis. May 2015 Community Care of North Carolina</p>	<p>Assessed impact of primary care case management programs (i.e. medical homes) within the network that includes collaboration of care managers, a pharmacist, psychiatrist, medical director, and other health care professionals on Medicaid reimbursement.</p>	<p>Improved access to primary care and preventative services, and better management of chronic conditions</p> <ul style="list-style-type: none"> • The Medicaid program generates \$3 in savings for every \$1 invested



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<p>Estimated Cost-Effectiveness, Cost Benefit, and Risk Reduction Associated with an Endocrinologist-Pharmacist Diabetes Intense Medical Management "Tune-Up" Clinic J Manag Care Spec Pharm. 2017 Mar;23(3):318-326.</p>	<p>To estimate the cost-effectiveness and cost benefit of a collaborative endocrinologist-pharmacist Diabetes Intense Medical Management (DIMM) "Tune-Up" clinic for complex diabetes patients versus usual primary care provider care from 3 perspectives (clinic, health system, payer) and time frames.</p>	<p>Estimated medical cost avoidance due to improved A1c</p> <ul style="list-style-type: none"> • \$8793 per patient cared for by DIMM • ROI of \$9.01 per dollar spent <p>DIMM patients had:</p> <ul style="list-style-type: none"> • Estimated lower total medical costs • Greater number of QALYs gained • Risk reductions for diabetes-related complications over 3-, 5-, and 10-year time frames
Article	Summary	Outcome
<p>A Sustainable Business Model for Comprehensive Medication Management in a Patient-Centered Medical Home J Am Pharm Assoc. 2019 Jan. S1544-3191(18)30474-6.</p>	<p>The study assessed the impact of embedding pharmacists into a patient-centered medical home by analyzing interventions made, patient outcomes, and cost avoidance by having a pharmacist in the practice. The majority of interventions made by the pharmacist included medication reconciliation, identifying/clarifying/preventing medication allergies, ordering and evaluating laboratory tests, switching/adding medication, altering medication dose, identifying and fixing adverse medication reactions, and providing therapeutic lifestyle change counseling.</p>	<p>A pharmacist would make, on average, 1075 interventions during 225 patient encounters per month. This estimates to a cost avoidance of:</p> <ul style="list-style-type: none"> • \$164,551.50 per month • More than \$1.9 million annually
Article	Summary	Outcome
<p>The Asheville Project: Long-Term Clinical and Economic Outcomes of a Community Pharmacy Diabetes Care Program J Am Pharm Assoc (1996). 2003 March. 43(2): 173-84.</p>	<p>A Quasi-experimental, longitudinal pre-post cohort study that was designed to assess the clinical and economic outcomes of a community pharmacist-led care service for patients with diabetes. Interventions included education by certified diabetes educators, long-term community pharmacist follow-up using scheduled consultations, clinical assessment, goal setting, monitoring, and collaborative drug therapy management with physicians.</p>	<p>Total mean direct medical costs decreased by \$1,200 to \$1,872 per patient per year compared with baseline.</p>



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<p>The Asheville Project: Long-Term Clinical, Humanistic, and Economic Outcomes of a Community-Based Medication Therapy Management Program for Asthma J Am Pharm Assoc. 2008 March. 46(2): 133-47.</p>	<p>To assess clinical, humanistic, and economic outcomes of a community-based pharmacist-led asthma control medication therapy management program. Interventions included Education by a certified asthma educator; regular long-term follow-up by pharmacists using scheduled consultations, monitoring, and recommendations to physicians.</p>	<ul style="list-style-type: none"> • Direct cost savings averaged \$725/patient/year • Indirect cost savings were estimated to be \$1,230/patient/year • Emergency department visits decreased from 9.9% to 1.3% • Hospitalizations decreased from 4.0% to 1.9% • Patients were 6 times less likely to have an ED/hospitalization event after interventions
Article	Summary	Outcome
<p>Evaluation of Pharmacist-Managed Diabetes Mellitus Under a Collaborative Drug Therapy Agreement. Am J Health Syst Pharm. 2008 Oct 1;65(19):1841-5.</p>	<p>Pharmacists provided diabetes management and education to analyze patient outcomes and hospital admission rates.</p>	<p>Average costs for inpatient hospitalization and ED admissions were significantly higher pre-intervention for patients with diabetes as the primary or secondary diagnosis (\$2434 versus \$636, respectively).</p>
Service: Pharmacist Supported Transitions of Care		
Article	Summary	Outcome
<p>Budget Impact Analysis of a Pharmacist-Provided Transition of Care Program J Manag Care Spec Pharm. 2018 Feb;24(2):90-96</p>	<p>A budget impact analysis was performed to estimate the impact of adding a pharmacist-based transitions-of-care program to a medical benefit from the payer perspective.</p>	<p>Inputs were based on a health plan that services 240,000 lives.</p> <ul style="list-style-type: none"> • TOC program resulted in potential cost savings of over \$25 million to the managed Medicaid plan over a period of 2 years, corresponding to over \$4 per member per month • The inpatient cost savings were estimated at over \$3.5 million in the 6 months after discharge, with a cumulative 2-year inpatient cost savings of \$20.6 million



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Reduction of Healthcare Costs through a Transitions-of-Care Program Am J Health Syst Pharm. 2018 May 15;75(10):613-621.	Use of a pharmacy-based transitions-of-care program leads to a reduction in 180-day total healthcare costs in high-risk patients	180-day total healthcare costs were \$2,139 lower in patients who received an intervention versus the control group. <ul style="list-style-type: none"> Estimated savings of nearly \$1.8 million for the managed care plan.
Reductions in Medication-Related Hospitalizations in Older Adults with Medication Management by Hospital and Community Pharmacists: A Quasi-experimental Study J Am Geriatr Soc. 2017 Jan;65(1):212-219.	A state-wide system of medication management services provided by specially trained hospital and community pharmacists serving high-risk individuals (≥65 years old) from hospitalization through transition to home and for up to 1 year after discharge.	<ul style="list-style-type: none"> Estimated annual cost of avoided medication-related admissions (≥65 years old) associated with intervention: \$6,626,913 Actual annual cost of pharmacist services: \$1,820,454 Estimated ROI in pharmacist services: 2.6:1
Reductions in 30-day Readmission, Mortality, and Costs with Inpatient-to-Community Pharmacist Follow-up J Am Pharm Assoc (2003). 2019 Jan 14. pii: S1544-3191(18)30478-3.	Patients discharged from any of 4 hospitals with chronic obstructive pulmonary disease, pneumonia, heart failure, acute myocardial infarction, or diabetes within Pennsylvania. Patients in the intervention group received consultative services from inpatient pharmacists before discharge and inpatient-to-community pharmacist communication of hospitalization information facilitated with the use of a secure messaging system. After discharge, patients received up to 5 in-person or telephonic medication management consultations with their community pharmacists.	Observed lower 30-day readmission rate, 30-day all-cause mortality, and composite 30-day end point (readmission, ED visit, or death) in intervention group Estimated average ROI of 8.1 per discharge
Economic Value of Pharmacist-Led Medication Reconciliation for Reducing Medication Errors After Hospital Discharge Am J Manag Care. 2016 Oct;22(10):654-661	A pharmacist-led medication reconciliation service at a hospital can reduce medication discrepancies by around 52%, which would lead to an increased cost savings by preventing adverse drug events (ADEs)	The cost of preventable ADEs could be reduced to \$206 per patient



Service: Point of Care Testing		
Article	Summary	Outcome
<p>Impact of Point-of-Care Implementation in Pharmacist-Run Anticoagulation Clinics Within a Community-Owned Health System: A Two-Year Retrospective Analysis Hosp Pharm. 2015 Oct; 50(9): 783-788.</p>	<p>Point-of-care INR testing was implemented in pharmacist-managed anticoagulation clinics within a community-owned health system. Compared outcomes of patients managed utilizing point-of-care-testing compared to standard venipuncture which was not analyzed onsite.</p>	<ul style="list-style-type: none"> • Increase in number of INRs in range after implementation • Observed decrease in hospitalizations after implementation • Decreased need for patient follow-up visits due to immediate INR results • Estimated total cost savings associated with point-of-care INR testing <ul style="list-style-type: none"> ○ \$27,557
Background: Cost Saving Estimates when Effectively Managing Type 2 Diabetes		
Article	Summary	Outcome
<p>Economic Costs of Diabetes in the U.S. in 2017 Diabetes Care. 2018 May;41(5):917-928.</p>	<p>This study updates previous estimates of the economic burden of diagnosed diabetes and quantifies the increased health resource use and lost productivity associated with diabetes in 2017.</p>	<p>Estimated average annual medical expenditures attributed to diabetes (total: institutional care, outpatient care, outpatient meds and supplies)</p> <ul style="list-style-type: none"> • \$9,600 per person
Article	Summary	Outcome
<p>Medical claim cost impact of improved diabetes control for Medicare and commercially insured patients with type 2 diabetes. J Manag Care Pharm. 2013 Oct;19(8):609-20,</p>	<p>This article provides new information on the cost and event impact of better control for all 3 metrics (A1c, blood pressure, and lipids) for the commercial population and Medicare population separately.</p>	<p>Cost savings associated with decreasing risk of complications – savings per patient per month</p> <ul style="list-style-type: none"> • Decrease 1% A1c, 10 mmHg, increase HDL 20%, decrease cholesterol 20% = <ul style="list-style-type: none"> ○ \$66.73/mo Commercial ○ \$58.85/mo Medicare • Decrease 1.25% A1c, 20 mmHg, increase HDL 35%, decrease cholesterol 35% = <ul style="list-style-type: none"> ○ \$86.06/mo Commercial ○ \$82.33/mo Medicare • Decrease 1.5% A1c, 30 mmHg, increase HDL 50%, decrease cholesterol 50% = <ul style="list-style-type: none"> ○ \$105.47/mo Commercial ○ \$106.04/mo Medicare



Background: Estimated Cost Savings with Provision of Vaccinations

Article	Summary	Outcome
<p>Estimated Human and Economic Burden of Four Major Adult Vaccine-Preventable Diseases in the United States, 2013 J Prim Prev. 2015 Aug;36(4):259-73.</p>	<p>Using data from the peer-reviewed literature, government disease-surveillance programs, and the US Census, authors developed a customizable model to estimate human and economic burden caused by four major adult vaccine-preventable diseases in 2013 in the United States.</p>	<p>Estimated medical costs per case:</p> <ul style="list-style-type: none"> • Influenza <ul style="list-style-type: none"> ○ >50 yo: \$1571 ○ >65 yo: \$1867 • Pneumococcal (non-bacteremic pneumococcal pneumonia) <ul style="list-style-type: none"> ○ Inpatient >50 yo: \$15335 ○ Inpatient >65 yo: \$15221 ○ Outpatient >50 yo: \$676 ○ Outpatient >65 yo: \$721 • Herpes zoster <ul style="list-style-type: none"> ○ >50 yo: \$1974 ○ >65 yo: \$2354 • Pertussis <ul style="list-style-type: none"> ○ >50 yo: \$432 ○ >65 yo: \$432

Article	Summary	Outcome
<p>Evaluation of the Cost-Effectiveness in the United States of a Vaccine to Prevent Herpes Zoster and Postherpetic Neuralgia in Older Adults Vaccine. 2007 Nov 28;25(49):8326-37</p>	<p>An evaluation of cost-effectiveness to support the vaccination of immunocompetent Americans aged ≥60 years was performed. The study showed that the herpes zoster vaccine could eliminate thousands of cases of herpes zoster, hospitalizations, and prescriptions in vaccinated adults.</p>	<p>A savings of \$82 million to \$103 million in healthcare costs associated with the diagnosis and treatment of herpes zoster, postherpetic neuralgia, and other complications associated with herpes zoster</p> <ul style="list-style-type: none"> • Cost per QALY gained (payer perspective): \$18,439 (cost savings of \$50,232)

Background: Assessing Social Determinants of Health

Article	Summary	Outcome
<p>HMS' Jennifer Forster Talks Leveraging Social Determinants of Health to Improve Population Health Outcomes HIT Consultant. 2018 October.</p>	<p>Social determinants of health are often overlooked when providing medical care. Collaborating with other team members, such as social workers and behavioral health workers, can greatly impact a patient's health and well-being.</p>	<p>Addressing social determinants of health reduced healthcare costs by 10%, or \$2,443 in annual savings per member.</p>



Article	Summary	Outcome
Expenditure Reductions Associated with a Social Service Referral Program Pop Health Manag. 2018 Nov.	The retrospective, secondary data analysis linked social service referral data with health care expenditures in 2 annual periods, before and after the first social service referral.	Patients who reported all their social needs were met experienced an 11% reduction (\$2601) in total health care expenditures 12 months post-referral
Background: Adverse Drug Events		
Article	Summary	Outcome
The Cost of ADEs in Ambulatory Care. AMIA Annu Symp Proc. 2007 Oct 11:90-3.	Patients with potential adverse drug events in an ambulatory care setting were identified. Charge and utilization indicators were analyzed to determine charge attributable to an ADE.	The charge attributable to a single ADE is \$643 (2001 US dollars) or \$926 (cost adjusted to 2006 US dollars)

Additional References:

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2. Murray MD, Young J, Hoke S, et al. Pharmacist intervention to improve medication adherence in heart failure: a randomized trial. *Ann Intern Med*. 2007;146(10):714-725.
3. Wright EA, Graham JH, Maeng D, et al. Reductions in 30-day readmission, mortality, and costs with inpatient-to-community pharmacist follow-up. *Journal of the American Pharmacists Association : JAPhA*. 2019.
4. Hirsch JD, Bounthavong M, Arjmand A, et al. Estimated Cost-Effectiveness, Cost Benefit, and Risk Reduction Associated with an Endocrinologist-Pharmacist Diabetes Intense Medical Management "Tune-Up" Clinic. *Journal of managed care & specialty pharmacy*. 2017;23(3):318-326.
5. Gill, L. Consumers Still Prefer Independent Pharmacies, CR's Ratings Show. *Consumer Reports*. 2018

