The pharmacist’s role in delivering patient care services continues to evolve, with the body of evidence supporting pharmacists’ impact growing daily. The American Pharmacists Association (APhA) convened a group of scientific experts and charged them with identifying examples of the best evidence of pharmacists’ impact on patient medication–related and other health outcomes. The panel limited the search of the medical literature to a 10-year period from 2000 to 2010. Focusing on medication therapy management (MTM) outcomes, the panel extracted key examples from the literature and created summary statements supported by the research data.

The articles below, organized topically, reflect some of the key MTM examples identified by the expert panel. Each example includes a concise statement of key findings, title of the manuscript, and source from which the full manuscript can be obtained.

**Section 1: Multiple chronic diseases**

- More than 300 published studies in which pharmacist-provided MTM services resulted in significantly improved outcomes in disease management, cost savings, or quality of life measures.

- A 1-year study of a pharmacist-directed MTM in a managed care system demonstrated that for every $1 spent on MTM, $12 was saved. Of importance is that these savings occurred along with significant improvements in cholesterol and blood pressure control. Expansion of similarly structured, targeted, pharmacist-provided MTM to all Minnesota’s Medicare recipients projects a savings of $7.8 million.

- An analysis of 10 years of results demonstrated the benefit of pharmacist-delivered MTM to more than 9,000 patients. Pharmacists resolved nearly 40,000 drug-related problems with a calculated savings to the health care plan of $750,000. This translated to $1.29 in benefit for every $1 invested in MTM, an excellent rate of return.

- In a study involving more than 2,500 medically complicated patients, a collaborative pharmacist–physician MTM program demonstrated a significant increase in those patients who were able to achieve their therapy goals.

Section 2: Patient safety/medication errors
- In 2006, Congress directed CMS to work with the Institute of Medicine to reduce medication errors, with a special emphasis on Medicare Part D enrollees. Pharmacist-provided MTM reduced medication costs an average of $840 per patient in year 1 and $1,061 per patient in year 2. In terms of preventing unnecessary hospital admission, patients receiving MTM were admitted to the hospital 60% less often with a diagnosis of bleeding ulcers (a $5,000 charge per admission) than those patients not receiving MTM. Every year nearly 500,000 patients are admitted to hospitals in the United States for upper GI bleeds due to peptic ulcers. If pharmacist-directed MTM targeting those with peptic ulcers were delivered across the United States, the health care system could save $995 million annually.

Section 3: Chronic Conditions

Cardiovascular diseases
- A study demonstrated that pharmacists providing MTM for more than 5,500 older adult veterans with congestive heart failure reduced hospitalizations by 45% compared with those veterans who received only physician-based care.

- Patients with diabetes who had uncontrolled high blood pressure and received MTM from a community pharmacy supplementing their physicians’ care were nearly 13 times more likely to achieve their health care goals compared with those who did not take part in the program.
High blood pressure (Hypertension)

- Over the course of a year, a clinical trial demonstrated a statistically significant improvement in blood pressure control and maintenance through community pharmacy–based MTM services.

- A study of a pharmacist–physician collaborative approach to managing high blood pressure demonstrated that within a year and a half, nearly twice as many patients had control of their blood pressure when pharmacists helped the patients manage their medications, compared with those not assisted by pharmacists.

High cholesterol

- More than 200 Florida Medicare Part D enrollees took part in a study evaluating pharmacist-provided MTM focused on cholesterol management. After 1 year, over two-thirds had reached their goal for cholesterol levels compared with just half of those not receiving MTM. Even more powerful was the finding that this group used less medicine and reduced their out-of-pocket expenses. If all 3 million of Florida’s Medicare Part D enrollees participated in focused, pharmacist-provided MTM, using 2012 population figures, the projected out-of-pocket savings for these seniors is nearly $12 million.

Diabetes

- African Americans make up 51% of the 23 million Americans battling diabetes. This one group (11.7 million African-Americans with diabetes) accounts for $90 billion in annual health care costs, or $7,600 per African American. In a year-long study of a pharmacist-provided MTM program for persons with diabetes, more than half (56.3%) of the African Americans with diabetes significantly improved their diabetes control. This control made them less likely to develop costly complications like dialysis, amputations, and transplants. If MTM were applied to all African Americans with diabetes, reducing their health care costs by even $1 per patient would save $6.6 BILLION annually.

- In a 2009 pilot study, 50 type 2 patients with diabetes patients receiving pharmacist-directed MTM made significant and sustained improvement in blood glucose, weight loss, and blood pressure. While these patients spent an additional $300 on medications
over this period, they actually reduced their total health care costs from the previous year by approximately $2,500 per patient or $125,000 overall.
  

• Patients participating in a pharmacist MTM diabetic program for 1 year had significant improvement in their blood pressure, cholesterol, and diabetes. In addition, because pharmacists also taught the patients how to care for themselves, significantly more had their annual eye examinations and diabetic foot checks and received influenza vaccinations, resulting in significant cost savings.
  

Chronic kidney disease

• A 2-year study involving 104 patients with severe kidney disease and on dialysis demonstrated that pharmacist-provided MTM resulted in significantly fewer and shorter hospitalizations and reduced medication use compared with dialysis patients not receiving pharmacists’ care.
  

• Minorities are disproportionately afflicted with chronic kidney disease requiring dialysis, and because fewer transplants are available, they must remain on dialysis for longer periods than nonminorities. Minority dialysis patients receiving pharmacist-provided MTM reported having a better quality of life, improved diet, more physical activity, and a better time with their families compared with those who did not receive MTM.
  

Smoking cessation

• A study of military veterans found that a smoking cessation program provided by pharmacists was 2.5 times more successful than customary VA care.
  

• Allowing pharmacist MTM in a VA (change medications and formally educate patients) produced significant improvements in control of cholesterol, blood pressure, and diabetes and more patients successfully stopping smoking.

Section 3: Special populations

Older adults
- Pharmacist-provided MTM to older adult patients in long-term care facilities saved more than $1.3 million dollars.

Multiple sclerosis
- By participating in a pharmacist-managed MTM program, Medicare patients with multiple sclerosis took their medications more regularly and correctly, providing for much more cost-effective management of their disease.

Section 4: Health policy

Health policy articles on medication therapy management
- The Journal of the American Medical Association has called for enhanced collaboration between pharmacists and physicians, particularly for older adults, who are at very high risk for poor medical outcomes.

- In Health Affairs, noted experts from Yale, University of California at San Francisco, Brigham Women’s Hospital, and the University of Connecticut reviewed the available scientific evidence and called for the inclusion of pharmacists as the provider of medication therapy management.

APhA recognizes the need for an ongoing effort to collect and summarize the best examples of pharmacist-provided MTM. Working closely with APhA’s Science Officer, experts will continue to survey the literature for pharmacist-delivered patient-care outcome publications routinely. As the evidence expands, this compendium of pharmacist provision-of-care publications will grow. Have comments, inquiries, suggestions, and/or potential corrections? E-mail APhA’s Science Officer, Patrick Clay, at PClay@aphanet.org.
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