
**Report to the
New York State Legislature**

**The Impact of
Pharmacist-Physician
Collaboration on
Medication-related
Outcomes**

EXECUTIVE SUMMARY

*Results of the New York State
Collaborative Drug Therapy Management
Pilot Project
As Required by Chapter 21 of the Laws of 2011*

Full report is available at:

<http://www.op.nysed.gov/news/cdtmreportmay2014final.pdf>

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EXECUTIVE SUMMARY

Following several years of consideration, the New York State legislature passed S2985/A4579. On May 17, 2011 Governor Andrew Cuomo signed these provisions into law as Chapter 21 of the laws of 2011. The act amended article 137 of the education law to permit certain pharmacists that practice in New York State's teaching hospitals to engage in collaborative drug therapy management (CDTM). The new law defined the parameters of practice in which pharmacists and physicians can voluntarily choose to collaborate, in order to attain more effective therapeutic outcomes. Under the terms of the law, CDTM is defined as "the performance of services by a pharmacist relating to the review, evaluation and management of drug therapy to a patient, who is being treated by a physician for a specific disease or disease state, in accordance with a written agreement or protocol with a voluntarily participating physician and in accordance with the policies, procedures, and protocols of the facility."

The act also requires the Education Department, in consultation with the Department of Health, to prepare a report to the legislature on the implementation of CDTM in New York State. The report shall review the "extent to which CDTM was implemented in New York State and shall examine whether and the extent to which CDTM contributed to the improvement of quality of care for patients, reduced the risk of medication error, reduced unnecessary health care expenditures and was otherwise in the public interest. The report may make recommendations regarding the extension, alteration and/or expansion of these provisions and make any other recommendations related to the implementation of CDTM pursuant to this act." The report that follows fulfills this requirement.

At the time of implementation of the act there were 93 teaching hospitals in New York State. Eleven of these sites chose to participate in CDTM demonstration projects, managing a total of 10 different disease states. However, a number of hospitals declined to formally participate in data-gathering for a variety of reasons, among them being a concern for implementation of provisions that, even if successful, would "sunset" in 2014.

Some other institutions chose to engage in CDTM practices without engaging in formal data collection. Fortunately a number of large, tertiary-care facilities determined to participate and their results are included in this report. In particular, this report documents improved medication compliance, reduced admissions/re-admissions to hospitals, improved quality of life, significant acceptance by physicians and projects significant cost savings. This report quantifies the results of institutions that incorporated CDTM practices in the area of anticoagulation therapy, and treatment of diabetes, heart failure, Human Immunodeficiency Virus (HIV), oncology and pulmonary diseases, each of which is summarized below.

ANTICOAGULATION

Warfarin, or Coumadin®, is the most commonly prescribed oral anticoagulant (blood thinner). Although highly effective for the treatment and prevention of dangerous blood clots, the drug's inherent complexities and potential for life threatening bleeding demand management by knowledgeable and skilled clinicians to maximize effectiveness and safety. This is the basis for the American College of Chest Physicians recommendation to utilize specialized anticoagulation clinics, which are often managed by pharmacists, to improve the quality and safety of anticoagulation care. For the CDTM demonstration project anticoagulation clinics were instituted at four sites throughout the state. A total of 841 patients were managed by pharmacists under collaborative protocols.

Control of anticoagulation, by a test called the international normalized ratio (INR) is necessary to achieve optimal therapeutic outcomes. The best measure of this control is described by the Percent (%) INR Time-in-Range (TTR). Numerous studies have shown that increases in TTR as little as 5% significantly impacts anticoagulation-related hospitalizations, emergency department visits and mortality. The results of this pilot project, which are consistent with previously published literature, demonstrate pharmacist anticoagulation management achieves higher TTR values (71.4 – 84.6%) than expected with usual care (51 – 76%). These differences translate into reductions in adverse events and mortality as well as health care expenditures. Based on the current disease burden of atrial fibrillation (a common reason for anticoagulation) in NYS, it is estimated that increased access to pharmacist-managed anticoagulation could potentially translate into prevention of 9,000 deaths, 15,000 adverse events and a \$214 million savings annually.

DIABETES

In 2011, the Centers for Disease Control and Prevention estimated that 25.8 million people in the US (or 8.3% of the population) are affected by diabetes. The percent affected in NYS is even greater, estimated to be 10.4%. Accordingly, the NYS Department of Health has set improved diabetes management and increased access to high-quality chronic disease preventive care and management as part of the 2013 – 2017 prevention agenda. Despite the importance of attaining treatment goals, many adult diabetics do not receive guideline-recommended therapy. Comprehensive diabetes management programs created to address this problem have demonstrated improvement in clinical and economic outcomes. Many of these programs have included pharmacist-collaborators.

Four hospital-based ambulatory care clinics implemented CDTM programs for the care of diabetic patients. A total of 300 patients were managed, with data reported on 195. The primary objective of the CDTM programs was to reduce Hemoglobin A1C, a blood test used to determine the effectiveness of diabetes treatment. Decreasing HbA1C to within the established therapeutic targets (< 8%) has been shown to reduce complications as well as overall cost of care. The NYS Prevention Agenda goal for increasing the percentage of patients achieving this target is 7% - 10% over five years. The patients managed by the collaborating pharmacist showed an increase in the percentage achieving the therapeutic target by 22% to 39% over a period of four to 12 months. This far exceeds the NYS prevention agenda goal in a fraction of the time. In addition to improved clinical outcomes, the superior results demonstrated by the pharmacist's management would be anticipated to provide economic benefits. Projected estimates of cost savings for the 195 patients receiving care under the CDTM initiatives is \$147,000 - \$537,000 annually. Extrapolating this success to the 10.4% of NYS adults with diabetes could result in an annual savings of as much as \$1.5 to \$5.3 billion.

HEART FAILURE

Heart failure is a major cardiovascular syndrome that affects over five million people in the United States. It is a significant cause of hospitalization and subsequent readmissions, costing New Yorkers over two billion dollars annually. Suboptimal medication utilization, which includes inappropriate medication regimens and poor medication adherence, is a major driver of disease progression and often leads to acute decompensation and hospitalization. Given the fact that medication plays such an important role in the management of heart disease and that up to 50% of patients are non-adherent to therapy, the inclusion of interventions to improve adherence such as by pharmacist collaborations in CDTM will aid in therapy optimization.

Collaborative Drug Therapy Management Programs in heart failure were conducted at two sites. In addition to providing patient focused counseling on medication adherence, the pharmacists optimized therapeutic outcomes by adjusting medication regimens and monitoring physical signs and symptoms as well as ordering and monitoring laboratory results.

Both CDTM heart failure pilot programs demonstrated a substantial reduction in readmission rates at 30 days (9% and 0, respectively), especially when compared to the government-reported nationwide readmission rate of 24%. This represents a decrease in re-hospitalizations of at least 62%. Additionally, readmission rates at 90 days were substantially lower, ranging from 6– 15%. Utilizing cost data provided by the AHRQ Health care utilization project and NYS DOH the expected economic impact for the patients managed by the demonstration project would be \$319,000. Extrapolating this to NYS expenditures would give a potential reduction of \$600,000,000 annually.

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

The Department of Health and Human Services (DHHS) guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents recommend the use of a multidisciplinary team approach to improve patient adherence to antiretroviral therapy, including a pharmacist. As part of the HIV multidisciplinary team, pharmacists can provide not only strategies for medication adherence, but can also provide therapeutic care plans for chronic disease state management.

The pilot CDTM program in HIV demonstrates that pharmacists play a significant role in the development of appropriate medication regimens and in improving the understanding of and adherence to medications for both HIV as well as concomitant disease states. Patient perceptions indicate that they believe the pharmacist plays a significant role in their care and improves their understanding of medications and the need for adherence to their drug regimens.

ONCOLOGY

Integrated clinical pharmacists in the hematology/oncology setting initiate and manage supportive therapies, provide therapeutic drug monitoring, manage drug interactions, and facilitate access to high cost chemotherapy medications. Through the implementation of CDTM programs, clinical pharmacists at two pilot sites were able to serve as an extension of the physician's care and utilize their specialized drug therapy expertise to provide supportive care for cancer patients undergoing intense chemotherapy treatments. Chemotherapy complications

such as cancer pain, nausea and vomiting, constipation, and diarrhea were successfully managed by a clinical pharmacist.

Both oncology based CDTM programs demonstrated benefits to patients and physicians. Interventions initiated by the pharmacist resulted in optimization of efficacy and safety measures which will likely translate into improved patient outcomes. Satisfaction was high for both physicians and patients, with all physicians surveyed strongly agreeing that such programs should be continued.

ASTHMA

Half of the New Yorkers with asthma have disease that is not well controlled, and half of those patients do not use their medications appropriately. The results of the CDTM program demonstrate that medication utilization and adherence are more than twice what would have been expected, and that improvements in asthma medication regimens were appropriately identified and addressed by the pharmacist. Although the data collected in this pilot project did not include information about hospitalizations, published historical data indicate that through improved adherence to asthma medication regimens, pharmacist-managed asthma programs have shown a reduction in the number of hospital and emergency department visits by 30 to 75%. Extrapolating this data to approximate the economic impact of pharmacist-managed asthma in NYS reveals an annual potential savings of \$150 – 400 million dollars.

PATIENT AND PRACTITIONER SATISFACTION

Patient and provider satisfaction were previously stated for both HIV and Oncology patients. In addition to the disease-specific survey data, patient satisfaction surveys were conducted at five of the CDTM sites. A total of 131 surveys were received. All respondents described a positive professional relationship with their pharmacist with 82% indicating the relationship was excellent. When asked if working with their pharmacist improved their understanding of their disease and medication regimen, 99% of the patients responded in the positive. Ninety-eight percent of the patients surveyed felt that the time spent with the pharmacist was adequate to discuss their medication related concerns. The majority (95%) of patients rated the quality of care received by their pharmacist as excellent. Finally, 96% of patients felt their care improved as a result of having a pharmacist on their health care team. Several patients chose to provide additional comments, and are included in the report.

REPORT CONCLUSION

The CDTM demonstration projects undertaken pursuant to Chapter 21 of the Laws of 2011 suggested positive clinical, therapeutic and fiscal advantages of team-based delivery of care, with CDTM as a key facet. Satisfaction surveys demonstrated that CDTM in these settings was supported not only by pharmacists, but physicians and patients as well. These findings are consistent with a 2011 Report to the United States Surgeon General, prepared by the Office of the Chief Pharmacist entitled “Improving Patient and Health System Outcomes through Advanced Pharmacy Practice”.