



## Technology and Data Science

Sub-Domain: Organization-Focused



## Leadership in Medication Use & Safety

Sub-Domain: Organization-Focused

# Center for Pharmacotherapy Research and Quality at Montefiore: Advancing Evidence-Based Medication Use

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## CASE OVERVIEW

As the University Hospital for Albert Einstein College of Medicine, Montefiore is a premier academic medical center nationally renowned for its clinical excellence, scientific discovery, and commitment to its community. In 2018, the Department of Pharmacy at Montefiore established the Center for Pharmacotherapy Research and Quality (CPRQ) – a novel pharmacy-driven learning health system research and quality improvement center. The center was founded with a vision of fostering a data-driven culture and becoming the primary resource for Montefiore clinicians to engage in research and quality improvement initiatives that seek to optimize the clinical outcomes of medications. Today, the center supports collaborative, actionable, methodologically rigorous projects that involve all relevant stakeholders and focus on the unique needs of our patients. Researchers at CPRQ apply state-of-the-art methods in trial design, big data analytics, causal inference, implementation science, and performance improvement to identify the safest and most effective treatments across a span of clinical areas. The center has now expanded to become an integral part of our health system Pharmacy and Therapeutics (P&T) council, tasked with evaluating and improving the implementation and effectiveness of medications utilized across the entire health system.



## KEY ELEMENTS OF SUCCESS

The center's position at the core of the health system's medication use processes offers it a unique advantage and support from leadership. In utilizing research methods to address the most relevant clinical and operational challenges to the health system, the center was able to garner the support of senior leadership and clinicians, which proved to be a key element of success. Furthermore, the foundation of the center was grounded in a stakeholder-involved process for chartering its bylaws and processes. This required the formation of an interdisciplinary steering committee aimed to cut across

departmental silos and ensure that all initiatives are relevant to all key stakeholders. In addition to pharmacy representation, the steering committee consists of physicians, nurses, health economists, hospital administrators, health informaticists, and quality improvement specialists. This transdisciplinary approach has proven to be another key element of success. As new institutions join the Montefiore health system, the center continuously seeks representation from new hospitals to maintain the relevance of its work across all health system sites and clinical areas.

## IMPACT ON PATIENT OUTCOMES

Since its inception, the center has supported over 20 different research and quality improvement initiatives that resulted in meaningful impacts on patient outcomes. Utilizing the methods outlined by the Institute for Healthcare Improvement, the center was able to identify and de-implement inappropriate, low-value clinical practices, such as routine use of intravenous acetaminophen (resulting in utilization decrease from 900 doses to under 100 doses per month) and sub-optimal use of neuromuscular blockade reversal (40% reduction over months). Furthermore, by applying rigorous program evaluation designs, the center helped demonstrate more rapid achievement of diabetes and blood pressure goals in patients treated by ambulatory care pharmacists. Pharmacists conducting research with the support of CPRQ also reported an increased rate of publications in peer-reviewed journals and general satisfaction with the research process, while the educational components have significantly improved the research and quality improvement training for our residents. In surveys administered before and after completing the program, the residents scored significantly higher in their research-related competencies across all domains of the survey.

## PHARMACY AND PHARMACIST ROLES

Most of the research and quality improvement projects initiated at the CPRQ are led by clinical pharmacy specialists who are residency trained and board-certified. Pharmacists interested in expanding their research portfolios can obtain an academic appointment at the Albert Einstein College of Medicine in their respective clinical departments, which presents additional opportunities for interdisciplinary collaboration. CPRQ also encourages training in research methods provided by Montefiore Performance Improvement fellowship and the Clinical and Translational Research Program.

## LESSONS LEARNED

The winning element of the program was its role in supporting evidence-based, high-quality care at a lower cost to the institution, which garnered support from clinicians, researchers, and health system administrators. This is reflected in the key champions that have enabled CPRQ to grow, including the director of pharmacy, the chief medical officer, as well as the vice president of clinical informatics research and development. The center also continues to evolve its priorities and focus to better meet the changing needs of its key stakeholders. This flexibility played an important role in ensuring the relevance and sustainability of the center's mission. As a result, CPRQ shifted from its initial focus on pharmacy resident and preceptor training and is now prioritizing multidisciplinary high-stakes projects led by experienced teams of clinician researchers. As of this year, the center directly supports the efforts of multiple clinical departments and the Montefiore Health System Pharmacy and Therapeutics council.

## BUDGET & RESOURCE ALLOCATION

The program is supported through a hybrid model of financing, which consists of departmental resources (0.5 pharmacist FTE) as well as external grant funding. Due to a limited scope of resources directly supporting the center's operations, its success largely depends on existing resources provided by the health system and the College of Medicine. These include a self-service analytic platform supported by the Center for Health Data Innovations, faculty training programs provided by Network Performance Group, and methodological support provided by the Department of Epidemiology and Population Health. This hybrid model of funding enables the center to draw on multiple sources of revenue and therefore ensures sustainability in the long run.

## FUTURE GOALS

In response to the expanding scope and responsibilities of the center, CPRQ leadership is developing a strategic plan for scaling up and sustaining its efforts. We have identified a strong need for project management and data science support to help expand the analytic services to many of the most pressing medication utilization challenges across the health system. However, the economic effects of the COVID-19 pandemic on health systems may require innovative means of supporting the center's most critical health systems research. In addition to increased resource allocation, the new strategic plan seeks to establish processes for formal faculty appointments, foster collaboration with other academic institutions, and develop a blueprint for how pharmacists can lead data science and advanced analytics initiatives across different organizational structures and funding models.