

Impact of Walgreens Connected Care[®] Cystic Fibrosis program on adherence and quality of life for enrolled CF patients

Cystic fibrosis (CF) is a complex genetic disease that presents a considerable management challenge to healthcare providers.¹ In patients with CF, a defective gene causes a loss of cystic fibrosis transmembrane conductance regulator (CFTR) protein activity, which leads to a buildup of thick, sticky mucus. CF primarily affects the respiratory and digestive systems.² Patients often experience progressive lung damage, which results in increased rates of morbidity and mortality.² Lung transplantation remains an option for some of these patients.²

Presently, approximately 30,000 children and adults in the United States have CF.³ Treatment advances paired with aggressive management have increased life expectancy in the last 30 years.⁴ As of 2013, the median predicted age of survival is 40.7 years.³ Not surprisingly, CF patients often face many psychosocial challenges.

Due to their increased risk of infection and cross-contamination, many patients are isolated from others.⁵ Patients frequently report high levels of depression and anxiety; this can greatly impact disease severity and outcomes, treatment adherence, self-management and understanding of CF.¹

As with many chronic diseases, a dedicated multidisciplinary team may help enhance CF treatment management and outcomes. Specialty pharmacy programs, such as the Walgreens Connected Care[®] CF program, help provide CF patients with comprehensive care.⁵ To assess the value of such offerings, specifically the Walgreens Connected Care[®] CF program, studies have been conducted to determine its impact on adherence and quality of life for enrolled patients. The findings of these studies will be reviewed in further detail in this paper.

Treatment burden

The goals of CF therapy are to slow disease progression, treat and reduce pulmonary exacerbations, relieve chronic symptoms and improve quality of life. Achieving these goals often warrants aggressive and complex treatment, including a daily administration time that can range between 1 and 2.5 hours.^{1,5} Daily treatments often include inhaled antibiotics and mucolytics, anti-inflammatory medications, enzyme replacement medications, vitamins, CFTR modulators and airway clearance techniques.¹

Treatment complexity presents numerous barriers to optimal treatment, including¹:

- Low motivation and poor adherence^{5,6}
- Adverse effects
- Suboptimal dose delivery related to inadequate training of inhalation technique
- Social embarrassment, particularly for teenagers⁶
- Lack of understanding of medications
- Comorbidities (eg, GI conditions, depression), which require management and complicate treatment
- Balancing family, work, education, etc

Treatment burden and subsequent nonadherence are key issues that affect daily CF management.⁶ Until recently, therapies did not target the underlying genetic defect in CF. Instead, they primarily mitigated symptoms.¹ In 2012 and 2015, Kalydeco® (ivacaftor) and Orkambi™ (lumacaftor/ivacaftor*), respectively, received FDA approval, and changed the landscape of treatment. While they are important additions to the available treatments for some patients, total average medical and pharmacy costs have increased from \$76,000 to over \$300,000 per year. Patients who receive a lung transplant also face an exponential increase in costs, and can pay nearly \$577,000 in medical and pharmacy costs in the year following transplantation. The complexity of immunosuppressive therapy increases annual costs to an average of \$143,000 for subsequent years.⁷

Impact of adherence on CF outcomes

Patients with chronic diseases typically exhibit poor medication adherence and CF patients are no exception. Nonadherence is a strong predictor of poor clinical outcomes, as it often results in increased emergency department (ED) visits and hospitalizations. It also negatively impacts medical costs. Quittner et al (2014), studied adherence among CF patients by looking at the 12-month medication possession ratio (MPR) for each pulmonary medication the patient was taking, as well as the composite MPR (CMPR) for all medications. Average CMPR in the study sample showed an adherence of less than 50%. Results of this study showed that worse medication adherence was associated with increased acute healthcare utilization by CF patients.⁶

A multidisciplinary approach to CF management and care may improve adherence and the quality of life of CF patients. Targeted drug therapies, counseling of patients, improved nutrition support and screening of newborns may also improve outcomes.⁵

*Drug information is available at dailymed.nlm.nih.gov

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Walgreens Connected Care® CF program

The Walgreens Connected Care® CF program was implemented in May 2014, and utilizes a multidisciplinary approach to help people with CF live healthier lives. As described below, the program is designed to provide comprehensive support services and medication management from pharmacists and staff who are trained in CF care.

Facilitating medication access

Walgreens and Cystic Fibrosis Services (CFS) help patients promptly initiate therapy by efficiently coordinating with clinical practices and CF Care Centers to facilitate prescription prior authorization (PA) approval. Many life-saving CF medications are limited-distribution drugs (LDDs). Walgreens and CFS have extensive access to these medications; patients can obtain LDDs even if they are not enrolled in the Walgreens Connected Care® CF program.

CF-trained pharmacist assistance

CF patients receive comprehensive and individualized care from pharmacists specially trained in CF. Pharmacists undergo extensive training with a curriculum developed in collaboration with reputable schools of pharmacy. They provide CF-specific care to patients by monitoring regimens for drug-related issues, as well as providing drug and disease-specific education. In addition to receiving counseling from pharmacists, patients and caregivers are also given CF-specific education materials.

Medication adherence

The Walgreens Connected Care® CF program provides individualized education at the start of therapy and throughout treatment—including topics such as administration, serious and common adverse events, gender-specific counseling, and storage and handling. Patients also receive monthly refill reminder calls, which include screening and counseling on adherence, associated barriers and side effects.

Patients on Bethkis® (tobramycin inhalation solution), Kitabis Pak® (tobramycin inhalation solution and PARI LC PLUS® Reusable Nebulizer), Tobii® or generic (tobramycin inhalation solution), Tobii® Podhaler™ (tobramycin inhalation powder), Cayston® (aztreonam for inhalation solution), Kalydeco®, Orkambi™, Pulmozyme® (dornase alfa) and pancreatic enzymes are eligible to participate in the Walgreens Connected Care® CF program.

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The impact of the Walgreens Connected Care[®] CF program on enrolled CF patients

Through the Walgreens Connected Care[®] CF program, Walgreens and CFS have the ability to capture data for outcomes reporting. The following observational studies looked at treatment parameters, including medication adherence and patient-reported outcomes (PROs) such as quality of life (QOL), depression and anxiety. Self-reported outcomes were obtained from patients who consented to participate in the 2-year study.

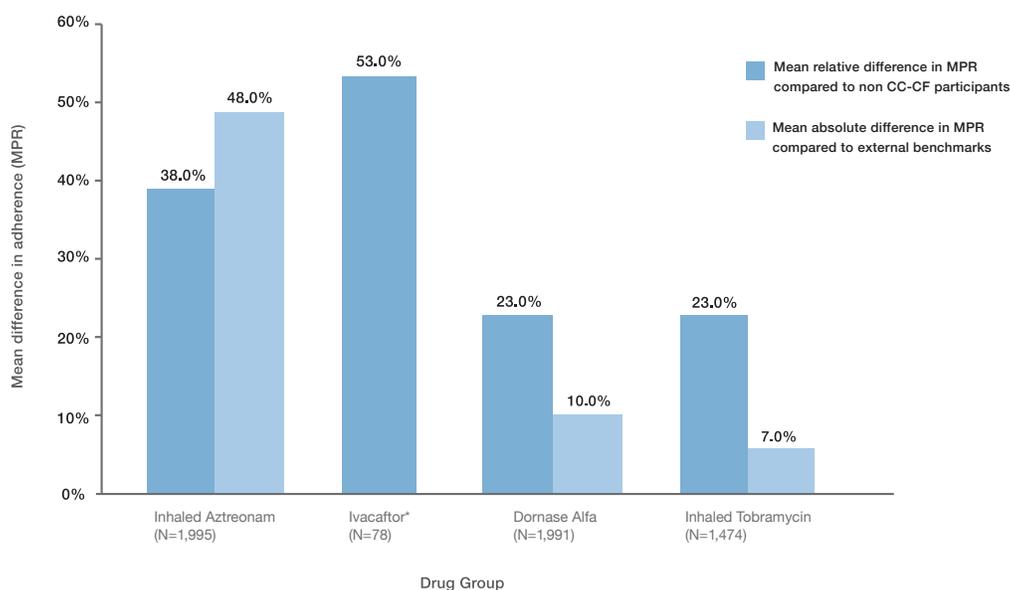
Various treatment parameters were studied, including MPR, CMPR, QOL, depression and anxiety. Based on published literature, adherence was calculated as (MPR) [total days of supply/total days in observation period] and Proportion of Days Covered (PDC) [total days covered/total days in observation period].^{6,8,9} CMPR was obtained by averaging MPRs for all pulmonary medications.^{6,10}

QOL was measured via the parent, child, and teen/adult versions of the CF Questionnaire-Revised (CFQ-R).⁹ The CFQ-R is currently the most widely used and well-validated PRO for CF.¹⁰ Depression and anxiety were measured via the adult, pediatric, and parent proxy versions of the National Institutes of Health (NIH) Patient Reported Outcomes Measurement Information System (PROMIS[®]) Depression and Anxiety Short Forms.⁹

Evaluation of medication adherence among patients in the Walgreens Connected Care[®] CF program

Drug-specific adherence to four pulmonary medications was assessed in a retrospective, observational study of 9,755 patients. Of the 9,755 patients, 5,643 were Walgreens Connected Care[®] CF program (CC-CF) participants. MPR and PDC were studied over a 12-month period, and variations across demographic subgroups and associations with healthcare use were also studied.⁸

Adherence in CC-CF participants by medication⁸

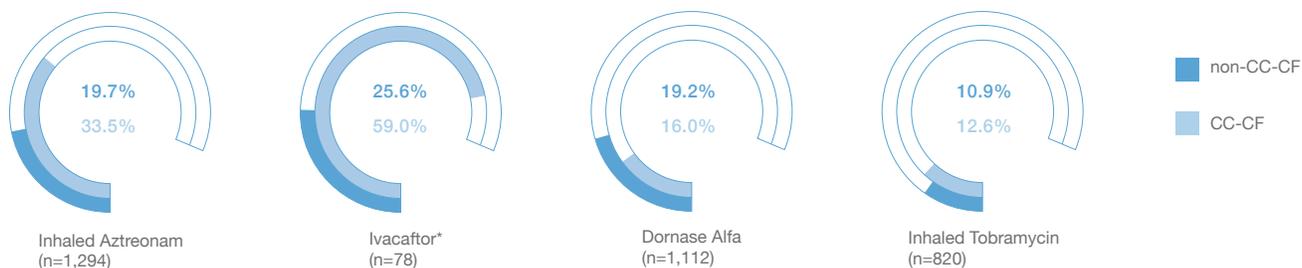


Irrespective of pulmonary medication, CC-CF patients showed higher adherence compared to non-CC-CF participants as well as external national benchmarks

*No benchmark was available for Ivacaftor at the time of the study.

Compared to the published benchmarks, CC-CF participants had higher 12-month MPR rates for domase alfa (10% higher; N=1991), inhaled tobramycin (7% higher; N=1474), and inhaled aztreonam (48% higher; N=1995).⁸ In the propensity-matched results, CC-CF patients had significantly ($p < .001$) higher mean adherence rates compared to non-CC-CF participants for all four drug classes. MPR rates for the CC-CF group were 23% higher for inhaled tobramycin and domase alfa, 38% higher for inhaled aztreonam, and 53% higher for ivacaftor, compared to the matched non-CC-CF group.^{8,10}

Percent of patients adherent at $\geq 80\%$ by medication⁸



CC-CF patients showed greater adherence to ivacaftor and aztreonam compared to non-CC-CF participants

Compared to non-CC-CF patients, the program group had significantly ($p < .0001$) higher proportion of patients who achieved an MPR and PDC $\geq 80\%$ for inhaled aztreonam and ivacaftor.⁸ CC-CF patients showed higher adherence to pulmonary medications compared to non-CC-CF participants as well as external national benchmarks.⁸

Impact of the Walgreens Connected Care[®] CF program on QOL, depression and anxiety

The impact of the CC-CF program on PROs is being studied in a 2-year, observational study. QOL is measured using CFQ-R, and depression and anxiety are measured using the NIH PROMIS Depression and Anxiety Short Forms. As of July 2015, 208 participants had completed at least 1 survey. Interim results of this study are presented below.⁹

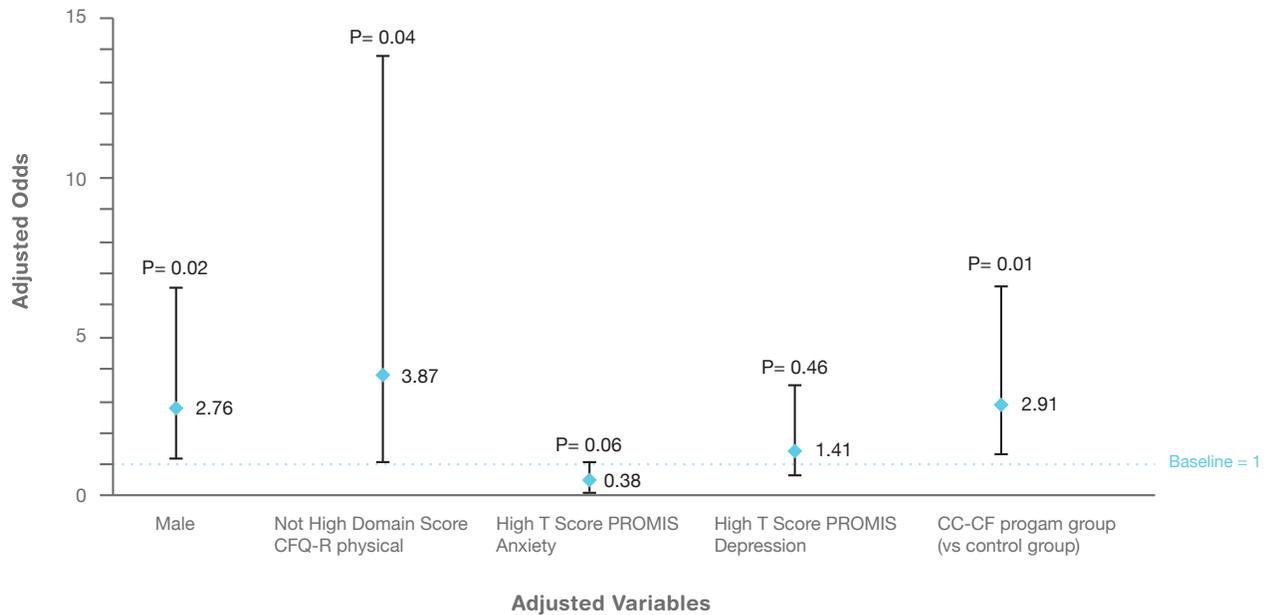
According to Quittner et al (2012), higher CFQ-R scores were significantly correlated with better lung function or fewer exacerbations for the majority of domains.¹¹ Some domains, such as physical functioning and weight, may require more than 6 months of intervention to see a positive change.⁹

The relationship between QOL, depression, and anxiety on medication adherence among CF patients in the Walgreens Connected Care[®] CF program¹⁰

As part of the previously described 2-year observational study to measure QOL, and depression and anxiety in patients enrolled in the CC-CF program, medication adherence was measured using 6-month CMPR for inhaled tobramycin, inhaled aztreonam, and domase alfa.

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Logistic regression modeling likelihood of 6-month CMPR $\geq 80\%$ ¹⁰



CF patients appear to benefit from structured pharmacy-led patient management programs designed to facilitate management of their medications, adherence barriers and related comorbidities.¹⁰

Having at least 60 days in the program (odds ratio [OR]=2.9, 95% CI [1.3, 6.6]), and not scoring above the national average for CFQ-R physical functioning at baseline (3.9, [1.1, 13.7]), were associated with a greater likelihood of being adherent (CMPR $\geq 80\%$), while controlling for age, gender, the number of CF medications, anxiety and depression.¹⁰

Patients with CF appear to benefit from structured pharmacy-led patient management programs designed to facilitate management of their medications, adherence barriers and related comorbidities.¹⁰

The Walgreens commitment and its clinical relevance

Disease complexity in CF patients has been reported to contribute to low adherence, high treatment burden, multiple concurrent prescriptions, low QOL and lower subjective well-being.^{8,12} The results of these preliminary findings help demonstrate the value of the Walgreens Connected Care[®] CF program on adherence rates even when controlling for certain PROs (QOL, depression and anxiety). Preliminary results suggest a positive correlation between various PROs. The multidisciplinary structure of the Walgreens Connected Care[®] CF program, with its medication adherence and other various support services, reinforce that the program is designed to fulfill its mission of helping CF patients live healthier lives. The results of the ongoing 2-year study will help shed light on which components of pharmacy-based interventions are most effective at improving these factors.

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