Clinical Outcomes in Cystic Fibrosis Patients Enrolled in an Integrated Hospital System Specialty Pharmacy Care Model

Tatyana Cohen, PharmD; Carolkim Huynh, PharmD; Michaela Wachal PharmD; Shreevidya Periyasamy, MS HIA; Kate Smullen, PharmD; Martha Stutsky, PharmD

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Background

- Cystic fibrosis (CF) is an autosomal recessive disease caused by variants in the CFTR gene and affects the lungs, pancreas, digestive system, and other organs in the body[1].
- Proper selection and application of tools measuring disease activity are vital for determining the effects of treatment and providing guidance for interventions.
- CF patients' reported outcomes (PRO), combined with the data retrieved by pharmacists from the electronic medical record (EMR), such as ppFEV1, CF-related hospitalizations, pulmonary exacerbations, and pulmonary exacerbations treated with IV antibiotics, provide valuable information about disease management.

Methods

Objectives: To evaluate outcomes in CF patients within a health system specialty pharmacy (HSSP) care model by comparing them to established benchmarks.

Study Design: Multisite, retrospective analysis of patients enrolled in HSSPs' CF patient management programs from 10/1/2022 until 9/30/2023.

Data Collection: Total number of eligible patients stratified by age (<18 y/o [pediatrics] and ≥18 y/o [adults]), sex, health system, health system regions, and primary and secondary outcomes.

Outcomes:

Primary Outcomes are compared with benchmarks from the CF Foundation's Patient Registry[2]:

- Percent predicted forced expiratory volume in one second (ppFEV1)
- Number of pulmonary exacerbations
- Pulmonary exacerbations treated with IV antibiotics

Secondary outcomes:

- CF-related hospitalizations and absenteeism

Results

A total of 298 patients from CF patient management programs across 12 health systems were analyzed. The ppFEV1 was 99% for pediatrics and 78% for adults, compared to the benchmarks of 97.5% and 75%, respectively. Exacerbation rates were 7% for pediatrics and 14% for adults, both below the benchmarks[2] of 20% and 25%. The percentage of patients treated with IV antibiotics was 2% for pediatrics and 13% for adults, also below the benchmarks[2] of 15% and 20%. Hospitalization rates were 4% for pediatric and 7% for adult patients, while absenteeism rates were 5% for pediatric patients and 3% for adults.

Table 1: Patient Characteristics and Clinical Outcomes

Characteristic	N=298
Age, n (mean, years)	
Pediatrics	111 (10)
Adults	187 (33)
Sex	
Female, n (%)	137 (46%)
Male, n (%)	160 (53.7%)
Other, n (%)	1 (0.3)
Health System Region (%)	
New England	60%
New York	27%
Frontier	8%
Southwest	5%
Secondary Clinical Outcomes	
Hospitalization (n, %) Pediatric Adult	 4/110 (4%) 13/181 (7%)
Absenteeism (n, %) Pediatric Adult	 4/73 (5%) 4/147 (3%)

Figure 1: Pediatric Primary Outcomes[2]

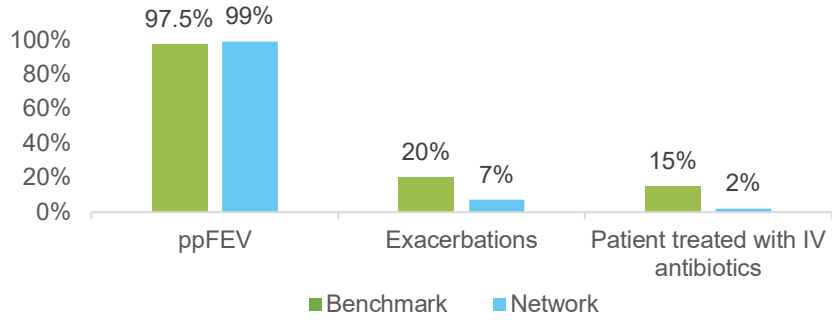
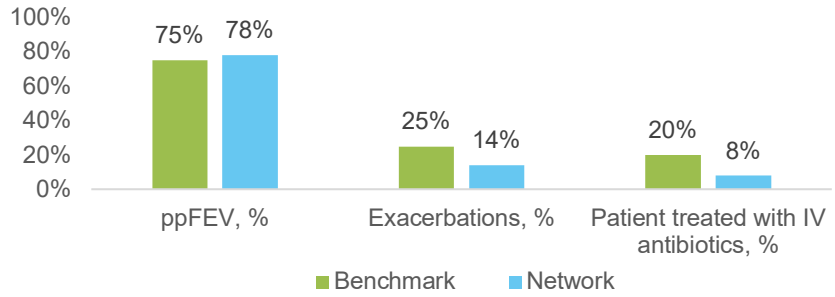


Figure 2: Adult Primary Outcomes[2]



Conclusions

- In an integrated HSSP care model, clinical pharmacists closely monitor CF patients to assess medication efficacy, administration, adherence, and other pertinent information to improve outcomes.
- Compared to the CF Foundation's Patient Registry benchmarks, both pediatric and adult CF patients in the integrated HSSP care model had similar ppFEV1 and fewer exacerbations and exacerbations treated with IV antibiotics. These measures, along with absenteeism and hospitalization rates, provide a comprehensive understanding of disease management, disease burden, and quality of life, contributing to a holistic approach in ensuring optimal patient care and outcomes. The integrated HSSP care model demonstrated improved outcomes compared to established benchmarks, highlighting its effectiveness in managing CF patients.

REFERENCES
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2. Cystic Fibrosis Foundation Patient Registry. 2021 Annual Data Report. Bethesda, Maryland. ©2022 Cystic Fibrosis Foundation. Published September 2022. Accessed January 17, 2024

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