Implementing a Medication Reconciliation Protocol for Adult Cystic Fibrosis Patients in an Integrated Outpatient Clinic

Sarah Slack PharmD[1], Alison N. Miller MD[2], Susan Eastman NP[2], Michelle Gordon RN[2], Katie Hinton RDN MS[3], Stacy Jones LMSW[4], Stephany Glenn RRT[2], Brijesh Patel PharmD[2], James J. Tolle MD[2]

[1] Specialty Pharmacy, Departments of [2]Medicine, [3]Nutrition Services, [4]Social Work/Transition Management, Vanderbilt University Medical Center, Nashville, Tennessee

Background and Objectives

- **Cystic Fibrosis is a genetic disease that affects approximately 30,000 people in the United States, and 70,000 people worldwide.[1]**
- **Most CF patients take at least 10 ± 5 medications.[2]**
- **There is a high rate of medication non-adherence.**
- **We recognized a lack of cohesive provider approach to medication use during complex clinic visits.**
- **Medication decisions are typically made at clinic visits.**
- **We wanted to improve the communication related to medications at each clinic visit.**
- **Our QI team developed a medication reconciliation sheet, under the direction of a specialty pharmacist, to identify if patients are on standard of care therapies, including CFTR modulators.**

Medication Reconciliation Form

Vanderbilt Adult Cystic Fibrosis Clinic

Date: _____

CF Medication Reconciliation

Patient MRN: _____ Patient Name: _____ Genotype: _____ / _____

Inhaled Meds	CFTR Modulator	Start Date	Stop Date
1. Tobi	1. Symdeko (Tez/Iva)		
2. Tobi Podhaler	2. Kalydeco (Iva)		
3. Colistin	3. Orkambi (Luma/Iva)		
4. Cayston	Comments: _____		
5. Hypertonic Saline 7%	_____		
6. Dornase alfa (Pulmozyme)	_____		
7. Inhalers: _____			

Allergy/Sinusitis:

1. _____
2. _____

Airway Clearance Techniques (ACTs):

1. Chest physical therapy (CPT or Chest PT)
2. Active cycle of breathing technique (ACBT) or Others: _____

GI meds: Enzymes:

1. Creon®: _____
2. Pancreaze®: _____
3. Zenpep _____

Dose (# capsules) _____ with meals _____ with snacks _____ with tube feedings

Oral Macrolide Antibiotics:

1. Azithromycin: _____mg PO
2. Others: _____ _____mg PO

Acid-suppression therapy:

1. Esomeprazole (Nexium®) _____ mg PO
2. Famotidine (Pepcid®) _____ mg PO
3. Other therapy _____ _____ mg PO

Mental Health:

1. _____
2. _____
3. _____

Other GI Medications:

1. Polyethylene glycol (MiraLAX®) 17 grams PO _____
2. Ursodiol (Actigall®) _____ mg PO _____
3. Other: _____ _____mg PO _____

Vitamins: Take with meals and enzymes:

1. _____ 2._____ 3._____ 4. _____

Clinical Pharmacist Comments:

_____

_____.

Actions Taken:

_____.

Methods

- **Medication reconciliation protocol began on June 1, 2018.**
- **Medication reconciliation sheet was used at each clinic visit.**
- **Primary endpoint: Change in percent of eligible patients receiving standard of care therapies, including CFTR modulators from 2017 to 2018.**
- **Secondary endpoints: Change in FEV_1 and use of oral and intravenous antibiotics in patients initiating CFTR modulator therapy in 2018.**
- **Baseline FEV_1 was defined as highest value in the 6 months prior to initiation.**
- **Follow-up FEV_1 was the highest value at 6-month intervals up to 12 months from initiation.**
- **Statistical analysis: data are expressed as mean ± SEM. Comparisons were made via paired t-test.**

Results

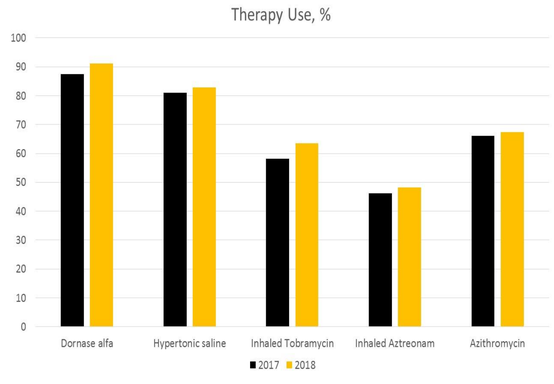

Figure 1: Percentage of eligible patients taking standard CF therapies.

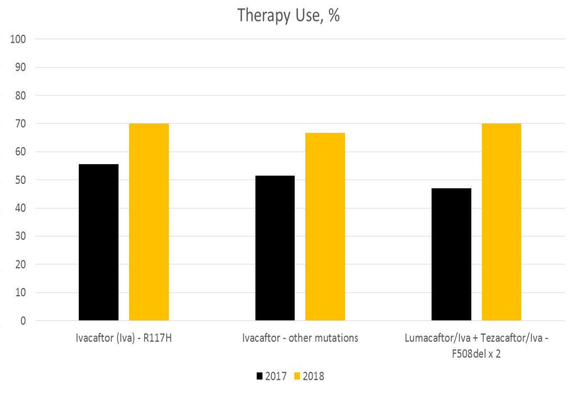

Figure 2: Percentage of eligible patients taking CFTR modulators.

Results

n=30	Pre-treatment	6-month post	12-month post
FEV1 (% predicted)	65.6 ± 4.5	66.7 ± 4.5	66.2 ± 4.7 (p NS, vs pre)
Exacerbation/patient – oral antibiotics	1.07 ± 0.19	0.73 ± 0.17	0.70 ± 0.13 (p 0.058, vs pre)
Exacerbation/patient – IV antibiotics	0.63 ± 0.19	0.60 ± 0.23	0.47 ± 0.15 (p NS, vs pre)

Data displayed as mean ± standard error of measurement
FEV1: forced expiratory volume in the first second
NS: non-significant

Table 1. Physiologic and outcome data for patients who initiated CFTR modulators in 2018.

Conclusions

- **With implementation of a medication reconciliation protocol, directed by a specialty pharmacist, the rate of standard of care medication use increased for all patients.**
- **The highest rate of increase was with CFTR modulator use.**
- **There was a trend towards a reduction in the number of exacerbations requiring oral and intravenous antibiotic use in patients initiating CFTR modulators.**

References

1. Abraham O, et al. The pharmacist's role in supporting people living with cystic fibrosis. *Journal of the American Pharmacists Association.* 2018; 58(3): 246 – 249.

2. Quittner AL, Zhang J, Marynchenko M, et al. Pulmonary medication adherence and health-care use in cystic fibrosis. *Chest*. 2014;146(1):142-151.

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