The Impact of the *TEACH* (Telehealth After COPD Hospitalization) *Program* on the 30-day Readmission Rate for Medicare Advantage Patients with COPD

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CanoHealth

MDFlow — We Make Your Medical Information Flow

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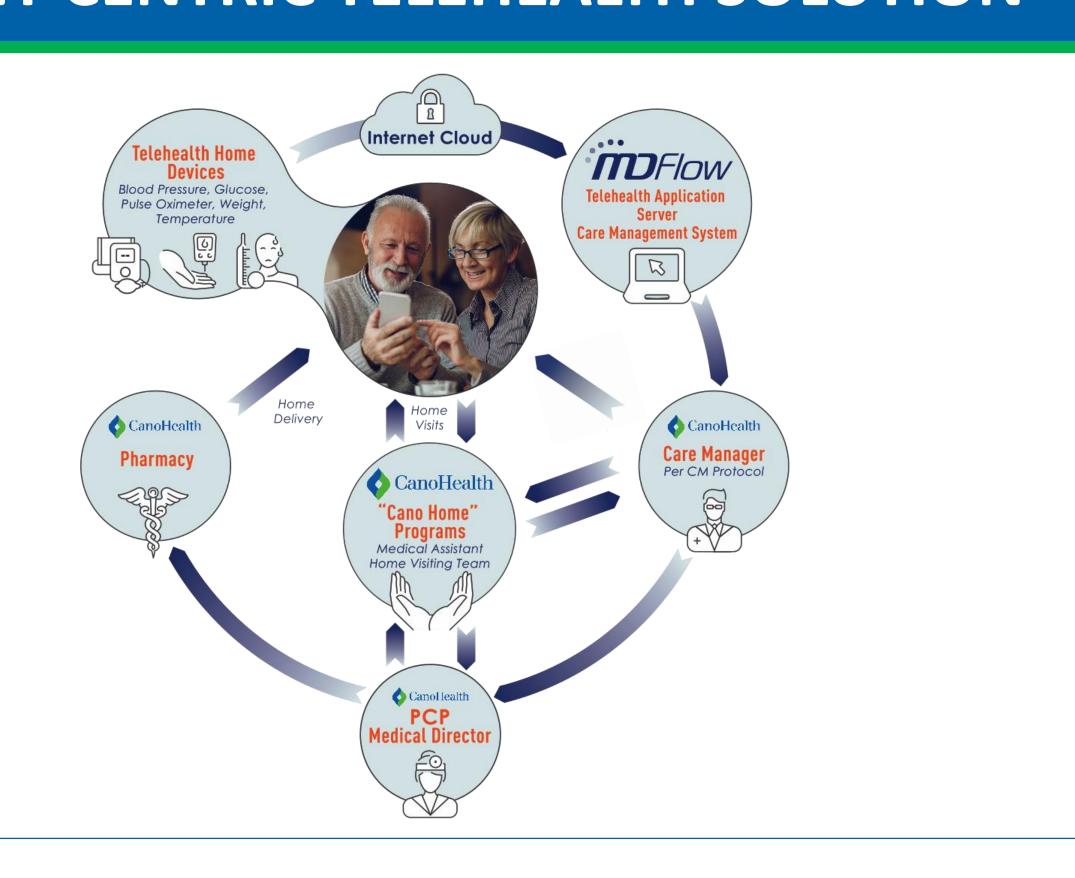
OBJECTIVE

- Evaluate the impact on the 30-day readmission rate of Medicare Advantage (MA) patients with COPD by utilizing a combination of daily Telehealth monitoring by Care Management (CM) team with alternating days of home visits (HV) by medical assistant (MA).
- MA and CM team acted on HV evaluation and Telehealth alerts to assist in timely execution of relevant interventional CM protocols.

METHOD

- Enroll the first 20 Medicare Advantage (MA) patients with spirometry confirmed COPD within 72 hours of hospital discharge
- Provide personalized instructions in Spanish, written and oral, of Telehealth devices and *TEACH Program* monitoring protocols.
- After informed consent, the patient was assigned a Cano Health (CH) medical staff, a MA, to provide HVs every other day until 30 days after hospital discharge. The HVs were assigned to either Visit A: Mon, Wed, and Fri or Visit B: Tue, Th, and Sat.
- **MDFlow's** Telehealth application server was integrated with CHs CM team with real time dashboard and phone alert monitoring.
- Telehealth devices were provided by Health Monitoring Optimum Services (HMOS) ForaCare and included: blood pressure, glucose, pulse oximetry and weight scales along with paired Bluetooth Gateway device. After medication reconciliation, needed medications were relayed to CM and prescriptions were delivered to patient's home by Cano pharmacy within 24 hours.
- All Telehealth data was transmitted from medical devices to **MDFlow** system & CH Pop Health Management platform via a secure connection and encrypted using SSL 2048 bit SSL.

PATIENT CENTRIC TELEHEALTH SOLUTION

PATIENT'S 30-day POST DISCHARGE PERIOD

Table 1. *TEACH Program* Index admission diagnosis, participation dates, interventions and data results

Patient #	Reason for Index Admission	Date Enrolled	Date Disenrolled	Age	FEV1/FVC	GOLD COPD Classification*	Exacerbations	Type of Exacerbation Support ‡	Readmit
1	L Knee Replacement	6/8/18	7/8/18	74	0.44	2	No	None	0
2	Syncope	6/9/18	7/9/18	82	0.56	2	No	None	0
3	COPD AE	6/13/18	7/13/18	82	0.65	2	Yes	ABC	0
4	COPD AE	6/21/18	7/21/18	75	0.47	4	Yes	BC	0
5	COPD AE	7/12/18	8/12/18	83	0.72	3	Yes	B	0
6	AV Replacement	7/19/18	8/18/18	82	0.67	3	No	None	0
7	COPD AE	7/20/18	8/19/18	82	0.48	3	No	None	0
8	COPD AE	7/31/18	8/13/18	71	0.68	2	No	None	1
9	CHF/COPD	8/13/18	9/12/18	71	0.63	2	No	None	0
10	COPD AE	8/22/18	9/21/18	79	0.50	3	No	None	0
11	COPD AE	9/18/18	10/18/18	79	0.70	2	No	None	0
12	Carotid Angioplasty	9/27/18	10/26/18	82	0.52	2	Yes	AB	0
13	COPD AE	10/3/18	10/27/18	82	0.44	3	Yes	ABC	0
14	COPD AE	10/4/18	11/4/18	82	0.58	2	No	None	0
15	DVT	10/11/18	11/10/18	77	0.65	2	No	None	0
16	ACS	10/29/18	11/28/18	71	0.68	2	Yes	B	0
17	COPD AE	11/7/18	12/6/18	79	0.50	3	Yes	ABC	0
18	COPD AE	11/28/18	12/23/18	66	0.69	2	Yes	B	0
19	Gastroenteritis	12/6/18	1/7/19	85	0.64	2	No	None	0
20	Cough Fever	1/7/19	2/6/19	73	0.64	1	No	None	0

AE: Acute Exacerbation, DVT: Deep Vein Thrombosis, ACS: Acute Coronary Syndrome, AV: Aortic Valve
#8-Readmission for angina pectoris, #13 Expired at home, sudden death
*GOLD Classification: FEV1> 80% Predicted = 1 (Mild), 50% ≤FEV1< 80% Predicted = 2 (Moderate), 30% ≤FEV1< 50% Predicted = 3 (Severe), FEV1 <30% Predicted = 4 (Very Severe)   ‡Type of Exacerbation Support: A= Antibiotics, B= β-agonist treatment, C=Corticosteroids

TELEHEALTH DATA Table 2

Patient #	# of Days Enrolled	Total Data Points Expected Per Device	DATA POINTS COLLECTED PER DEVICE				Total Data Points Collected Per Patient	Average Data Points Collected Per Day
			Blood Pressure	Glucose	Pulse Ox	Weight		
1	30	60	14	7	12	14	47	1.6
2	30	60	71	6	46	45	168	5.6
3	30	60	62	6	36	32	136	4.5
4	30	60	56	3	24	169	252	8.4
5	31	60	28	0	11	13	52	1.7
6	30	60	38	0	6	27	71	2.4
7	30	60	44	3	11	28	86	2.9
8	30	60	29	1	11	2	43	1.4
9	10	20	69	2	52	22	145	14.5
10	30	60	41	1	10	22	74	2.5
11	30	60	74	0	6	40	120	4.0
12	30	60	35	1	17	63	116	3.9
13	29	58	29	1	20	13	63	2.2
14	30	60	27	1	9	38	75	2.5
15	29	58	59	2	30	11	102	3.5
16	24	48	90	1	50	77	218	9.1
17	31	60	15	2	15	18	50	1.6
18	25	50	42	2	10	4	58	2.3
19	32	60	28	0	26	6	60	1.9
20	30	60	45	2	11	7	65	2.2
TOTAL	1,134		896	41	413	651	2,001	x̄ 3.9/day
% Of Total Expected Data Points			78%	4%	36%	56%	44%	

DEMOGRAPHICS AND DATA SUMMARY

- Mean age was 78 y/o, 55% Female, 100% Latino
- Preferred language, 100% Spanish
- Mean FEV1/FVC 0.591, Mean COPD Gold Criteria 2.4
- Twelve (60%) had moderate COPD and seven (35%) had severe or very severe COPD, Gold Criteria 3 or 4
- Percent of total projected Telehealth monitoring performed; 78% blood pressure, 56% weight, 36% pulse ox, and 4% glucose
- Average time in study was 28.6 days
- 17% of the data points were flagged as "Alerts" and forwarded to CM

RESULTS

- Seventeen patients (85%) completed through day 30 post discharge
- Eight patients (40%) experienced exacerbations with the majority of them occurring in the first week of enrollment. Each was treated with 1-3 different support measures per CM protocols and all exacerbation resolved. Table 1
- None of the 8 patients that experienced exacerbations were re-admitted during the 30-day post discharge period.
- One patient (5%), was readmitted for unstable angina on day #13
- One patient expired at home from sudden death on day #24.
- On average, only 44% of the required testing of Telehealth devices were performed ranging from 4% for glucose to 78% for blood pressure. Table 2

CONCLUSION

- The translation of written and personalized verbal instructions into Spanish resulted in all patients being able to perform the tests at the onset of the study. Even so, only blood pressure (78%) and weight (56%) were performed >50% of the time. Most of the drop off in testing occurred after the first two weeks of enrollment.
- Home delivered medications by Cano pharmacy and HV treatments provided by MA improved the patient's clinical condition and likely impacted the re-admission rate.
- The use of Telehealth devices along with alternating days of HVs by a MA who followed prespecified CM protocols resulted in a 30-day readmission rate of 5%. The 30-day national average readmission rate for Medicare Advantage patients is 13-20%.
- Future considerations to reduce Telehealth monitoring solely to blood pressure and pulse oximetry may be warranted in patients without Diabetes or Congestive Heart Failure.
- Expansion of this *TEACH Program (*alternate day visits by MA along with Telemedicine data collection) may be considered in a broader post discharge population and not only for those with COPD.

REFERENCES

- World Health Organization. (COPD). Available from: http://www.who.int/respiratory/copd/en/index.html
- Hang Ding H, et al. A pilot study of a mobile-phone-based home monitoring system to assist in remote interventions in cases of acute exacerbation of COPD Journal of Telemedicine and Telecare 2014, Vol. 20(3) 128–134.