

## Introduction

Most research demonstrating the value of palliative care has been performed in the inpatient and hospice settings. Fewer studies have investigated the quality and cost savings associated with upstream palliative care, which targets patients who are not yet at the end-of-life, but can still significantly benefit from symptom management and psychosocial support. Upstream palliative care can be delivered as in-home palliative care (IHPC), and is often administered through various high-touch and low-touch models. There is currently no research in the relevant literature comparing the efficacy of these two approaches. The two models of IHPC in this study, operated by St. Peter's Health Partners (SPHP) in Albany, NY, are described below:

### High Touch Model (Eddy Palliative Care)

- Certified Home Health Agency
- For patients of higher acuity
- Various payers
- \*Resembles programs in the literature\*

### Low Touch Model (Adv. Illness Mgmt)

- Started in 2017 → Grant funded
- For patients of lower acuity
- Heavily relies on Telemedicine
- Smaller team: 1 RN, 1 MSW

This study was a retrospective analysis to evaluate the **value** (Quality ÷ Cost) offered by these two IHPC models. We used hospital utilization rates as a proxy for healthcare costs. More specifically, we investigated hospital utilization for all patients in our sample prior to enrollment, while receiving IHPC services, and post-discharge. Hospital readmissions were also analyzed in the context of the Hospital Readmissions Reduction Program (HRRP), which penalizes hospitals for any 30-day readmission following an admission that fits certain criteria. Quality was assessed using the Edmonton Symptom Assessment Scale (ESAS) and each program's ability to meet patients' desired symptom goals.

## Methods

### Cost Component

Obtained lists of patients from both Eddy VNA and AIM who were admitted and discharged between 4/17 and 4/18 along with their discharge service.

Each patient's Length of Stay was used to define an equivalent amount of time pre-enrollment and post-discharge for collection of metrics.

Using the Health Xchange of New York (HIXNY), a Regional Health Information Organization (RHIO), each patient's ER visits, inpatient admissions, and primary reason for hospital encounter were collected.

Patients' frequency of ER visits, inpatient admissions, and readmissions were statistically compared pre-IHPC, on-IHPC, and post-IHPC

### Quality Component

Edmonton Symptom Assessment Tool was modified to include questions on desired symptom score (ie. "Goal Scores"). This tool was administered by clinicians at every home visit made to all patients.

Obtained results of the modified ESAS from 4/2018 to 6/2018.

Symptom Scores were averaged, and compared between the two programs via independent samples t-tests.

The proportion of instances in which goal scores were being met for pain, dyspnea, and anxiety was also calculated.

## Results

### Cost: Hospital Utilization

#### High-Touch IHPC

- 571 Hospital Encounters across 165 patients
- Average LOS on program = 56 days
- Reasons for Discharge: Hospice (39%), Home Discharge (25%), Expired (21%)

#### Low-Touch IHPC

- 135 Hospital Encounters across 30 patients
- Average LOS on program = 101 days
- Reasons for Discharge: Transfer to CHHA (60%), Hospice (13%), Expired (10%)

	Pre-Enrollment vs. On-IHPC		On-IHPC vs. Post-Discharge*	
	ER	IP	ER	IP
High Touch Model	1.01 ↓ 24% → 0.77 <i>p</i> = 0.04	0.86 ↓ 40% → 0.52 <i>p</i> < 0.01	0.66 ↓ 70% → 0.20 <i>p</i> < 0.01	0.43 ↓ 63% → 0.16 <i>p</i> < 0.01
Low Touch Model	1.07 ↓ 9% → 0.97 <i>p</i> = 0.73	0.63 ↑ 43% → 0.90 <i>p</i> = 0.25	0.97 ↓ 24% → 0.74 <i>p</i> = 0.85	0.90 ↓ 50% → 0.44 <i>p</i> = 0.26

\*Patients who expired on the program were excluded from the t-test

- High-touch IHPC patients exhibited significant declines in both ER visits and IP admissions after enrollment. They also exhibited significant declines in both metrics after discharge.
- Low-touch IHPC patients did not exhibit any significant changes in ER visits and inpatient admissions before, on, and after receiving palliative care services.

### Inpatient Readmission

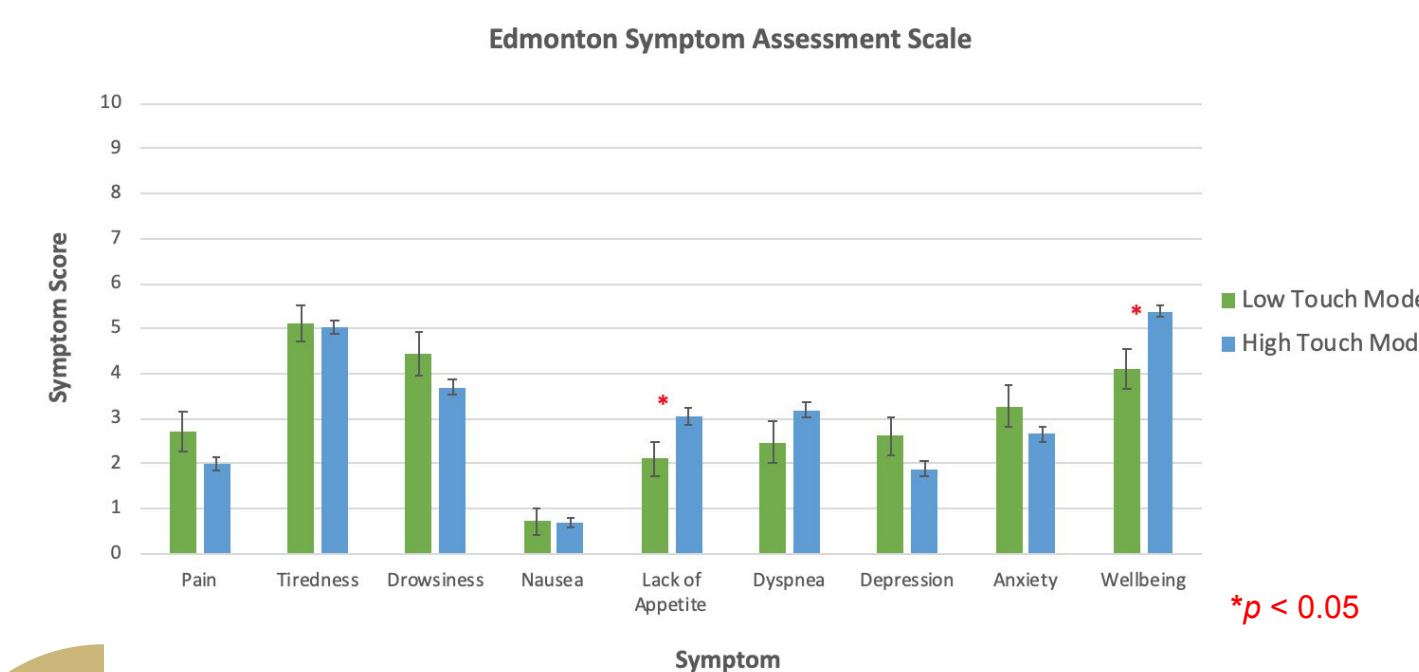
	HRRP Diagnoses	HRRP Readmissions	All-Cause Readmissions
High Touch Model	0.28 ↓ 54% → 0.13 <i>p</i> = 0.01	0.12 ↓ 67% → 0.04 <i>p</i> = 0.02	0.36 ↓ 74% → 0.08 <i>p</i> < 0.01
Low Touch Model	0.23 ↑ 30% → 0.30 <i>p</i> = 0.68	0.10 ↑ 130% → 0.23 <i>p</i> = 0.33	0.27 ↑ 48% → 0.40 <i>p</i> = 0.46

HRRP Diagnosis = Number of hospitalizations based on CMS criteria  
HRRP Readmission = Any readmission within 30 days of an initial HRRP discharge  
All-Cause Readmission = Any readmission within 30 days

- High-touch IHPC patients were re-admitted to the hospital significantly less often after enrollment.
- Low-touch IHPC patients did not exhibit any significant changes in re-admissions after enrollment.

### Quality: Symptom Management

High Touch Model → 271 ESAS surveys administered across 79 patients  
Low Touch Model → 49 ESAS surveys administered across 30 patients



The High Touch and Low Touch models had similar scores for all symptoms, although the High Touch program was slightly better at managing patients' lack of appetite and wellbeing. All scores had generally low averages, but patients on both programs reported higher levels of tiredness and drowsiness.

### Percentage of Goal Scores being Met:

	Pain	Dyspnea	Anxiety
High Touch Model	64%	39%	48%
Low Touch Model	47%	55%	36%

The High Touch Model had a greater percentage of patient goal scores being met for pain and anxiety, while the Low Touch Model had more goal-concordant scores for dyspnea.

## Discussion

- Results of the high-touch model (Eddy VNA) suggest cost savings for the patient, hospital, and third party/governmental payers.
  - **Patients** → Fewer expensive ER and inpatient services. Hospital encounters are also not pleasant experiences for patients, and are associated with higher levels of iatrogenic illnesses.
  - **Hospitals** → Reduction in CMS HRRP penalties as a result of fewer 30-day readmissions. Shared Savings ACOs such as St. Peter's Health Partners also share in the CMS' savings when patients go to the hospital less frequently.
  - **Third-party payers/governmental agencies (eg. CMS)** → Federal and private Managed Care Organizations stand to financially benefit the most from limiting patient use of expensive ER and inpatient services.
- The low touch model (AIM) did not demonstrate these same cost savings. Possible explanations include:
  1. These patients have lower acuity, and therefore go to the hospital less often in the first place.
  2. Limited sample size of 30 patients
  3. The low-touch model's narrow spectrum of services truly does not provide significant cost-savings.

- Patient-perceived symptom severity was generally low for both IHPC models. The goal-concordance of scores for pain, dyspnea, and anxiety also appear to be similar between the two programs.
  - Suggests that both models are well equipped to provide comparable levels of high quality care to their respective patient populations

## Conclusions & Future Directions

- A high-touch model of IHPC offers substantial overall value by providing significant cost savings to various healthcare stakeholders and offering high quality patient-centered care.
- Although a low-touch model of IHPC offers similar levels of quality, the overall value of a low-touch model is limited given that no significant cost savings are observed.
- Future research can considerably build on these results by:
  - Improving the sample size of patients on the low-touch model to achieve greater statistical power
  - Probing hospital costs directly rather than using hospital utilization and readmissions as a proxy for costs
  - Establishing benchmarks for symptom goal-concordance in order to provide a context for the quality of care offered by palliative care programs.

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