Development and Evaluation of a Primary Care Nurse Practitioner Directed Telemedicine Program to Reduce 30-Day Hospital Readmission Rates

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Abbydek Family Medical
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Problem description

- Unplanned Hospital readmission with 30 days after discharge rate 17.3% (Alper et. al., 2018)

- Medicare spends excess of $17 billion annually (Alper et. al., 2018)

- 27% of 30-day hospital readmissions are preventable (Auerbach et. al., 2018 & Wiest et. al., 2019)

- 31 percent of readmissions in the ED are avoidable (Auerbach et. al., 2018)

Available Knowledge

- Ambulatory TCM reduce 30-day readmission (Ballard et. al., 2018)

- Primary care follow-up within 7 days of hospital discharge reduces hospital readmissions (Wiest et al., 2019)

- Follow-up transitional care after hospital discharge reduces patients' readmission risks (Ridwan et al., 2019).

- Major Themes
  - Transitional Care Intervention:
    - Ideal Communication
      - Telephone follow-up is effective (Ridwan et al., 2019, Chen et al., 2019)
      - Follow-up call between 24 and 48 hours (Mwachiro et al., 2019)
  - Optimal Timing of Provider Visit:
    - Timely follow-up
      - 20% of 30-day readmission are preventable (Wiest et al., 2019)
      - Follow up within 7/14-days reduced risks of 30/90-day readmissions (Wiest et al., 2019, Carmel et al., 2019, Murtaugh et al. 2017, Shen et al. 2017)
- Combined intervention

- APN-led intervention effective in reducing readmission rates (Blucher V., 2019)

PICOT Question

In patients aged 18 and over, who are discharged from the hospital from an unplanned admission, does the addition of a telemedicine visit by a nurse practitioner within the first five days of discharge, followed by an office visit within 14 days of discharge, impact 30-day readmission rates when compared to current practice of an office visit within 14 days of hospital discharge for 6 weeks?
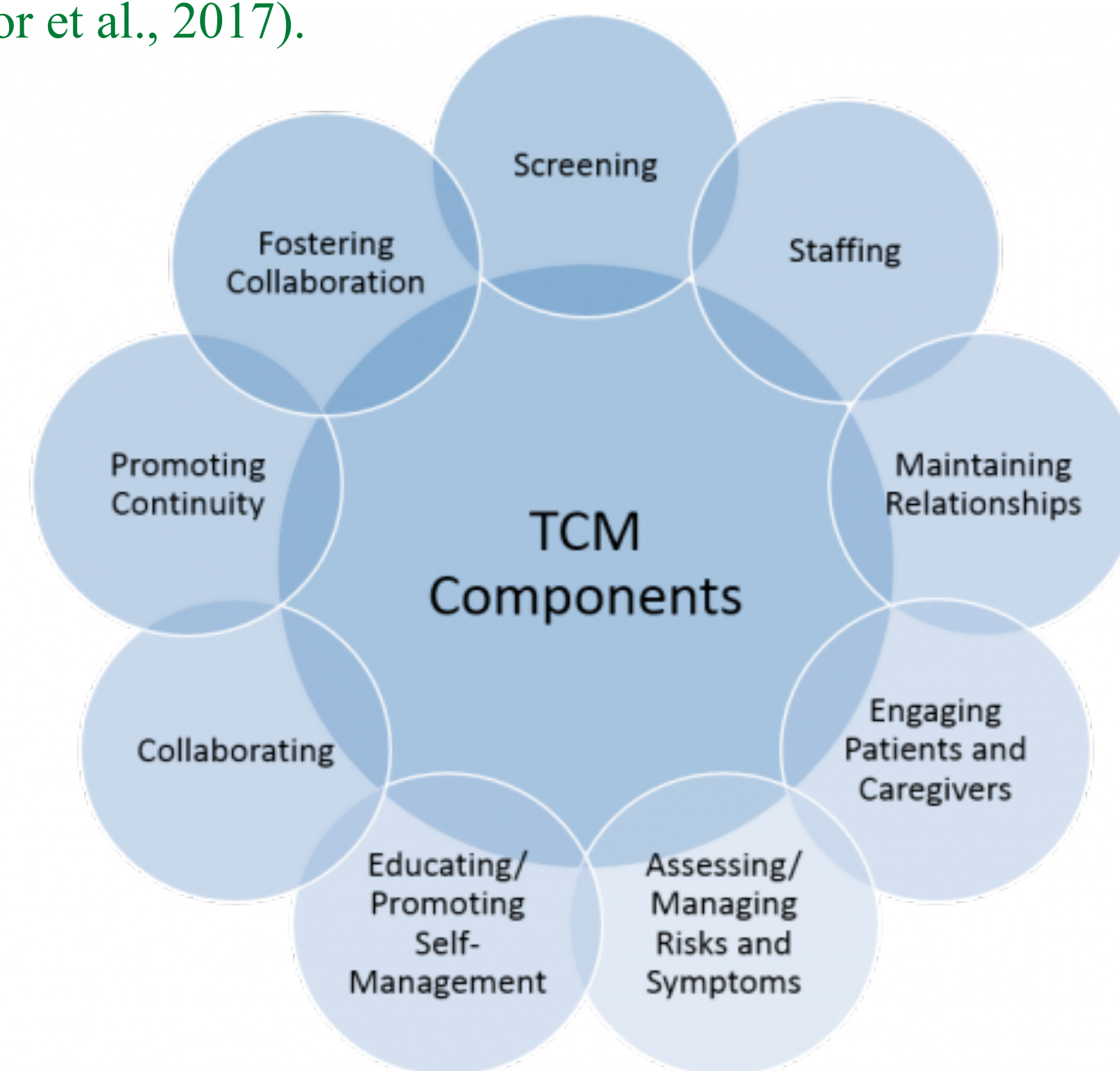
Specific Aim

- To examine if primary care follow-up by APN reduces readmissions within 30-day in adults after unplanned hospital admission by
  - Use of a tele-visit within 5 days of discharge
  - Office visit within 14 days of discharge

Rationale / Framework

Transitional Care Model (TCM) – Naylor et al. (1989)
- Evidence-based, and Nurse-led model / Interventions
- Aimed at improving patient and health outcome
- Quality of life

The TCM mandates nurses and other healthcare providers to deliver high-quality care to achieve improved clinical outcomes while reducing the cost of care (Naylor et al., 2017).

TCM Components: Screening, Staffing, Maintaining Relationships, Engaging Patients and Caregivers, Assessing/ Managing Risks and Symptoms, Educating/ Promoting Self-Management, Collaborating, Promoting Continuity, Fostering Collaboration

Context

Abbydek Family Medical Practice, P.C.
- 3 Providers (1 MD, 1 PA, and 1 FNP)
- 3 offices: 1 in East Brooklyn, 2 in Queens
- Low social economic community
- Mixture of Medicaid, Medicare, and Commercial

Pre-implementation 30-day readmission percentage rate–25% readmission rate
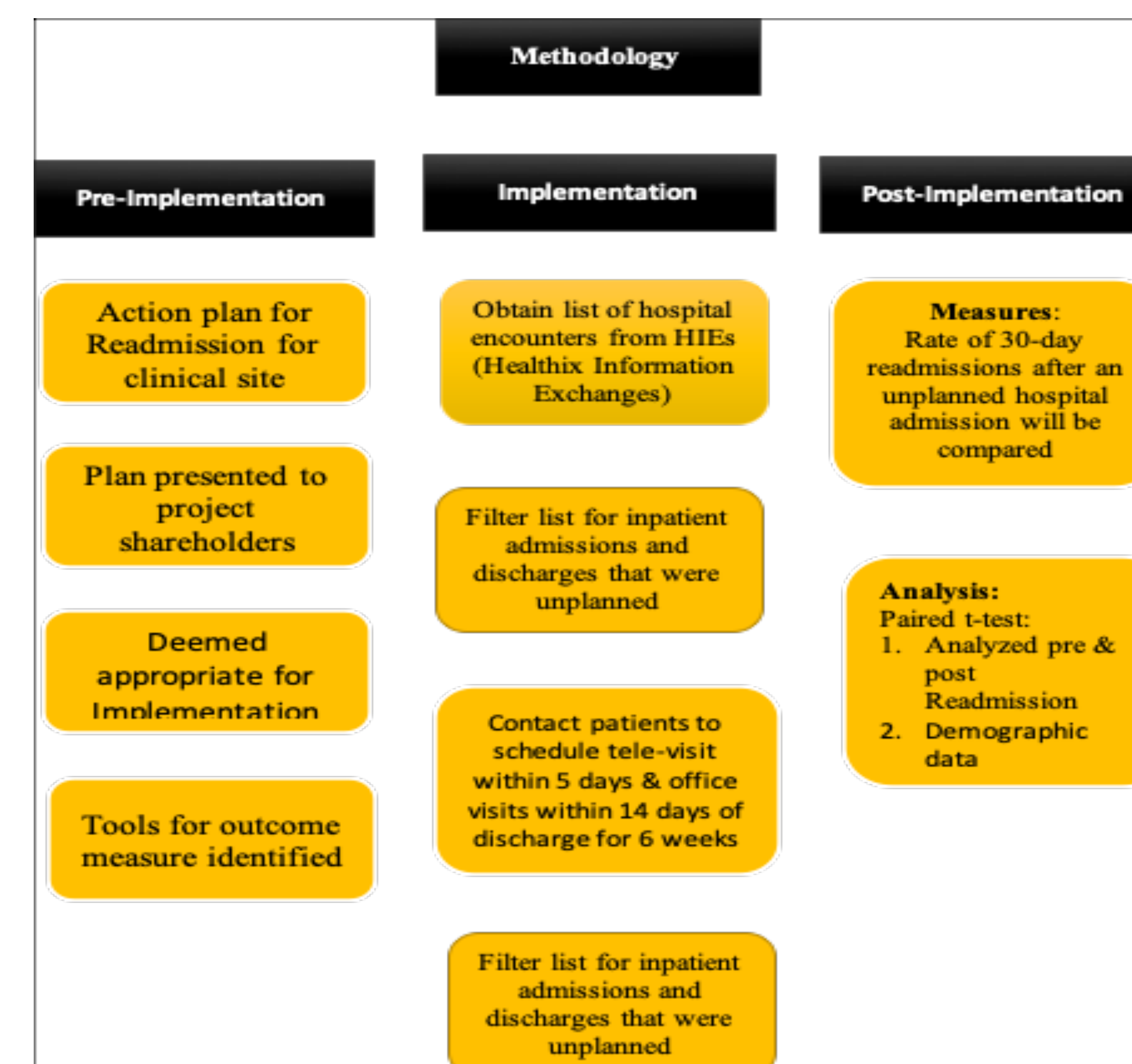
Data Analysis

- SPSS version 27.0
- Descriptive statistics
- Fisher's Test
- Pearson's Chi-square

Ethical Considerations

- CITI Program Completion: HSR
- Willington University Human Subject Review Committee Approval
- Abbydek Family Medical Practice Approval

- Patient Confidentiality
- Conduct as part of patients usual care
  - No consent of participant required

Intervention

- Pre/post intervention 30-day readmission percentage rate will be calculated
  - Pre-Implementation – 25% readmission rate

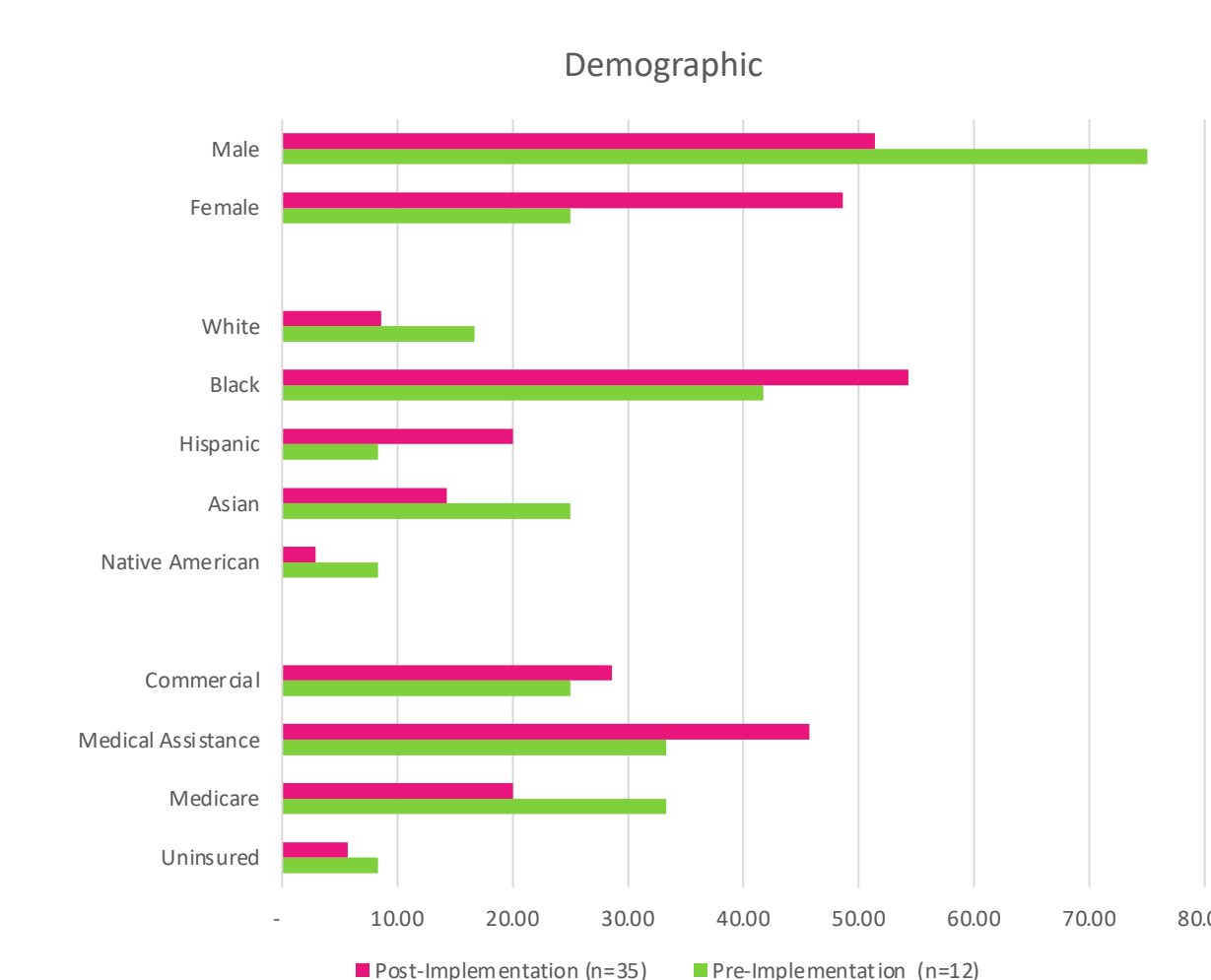- Analyzed to determine if adding 5-day tele-visit reduced rate

Methodology

Pre-Implementation:
- Action plan for Readmission for clinical site
- Plan presented to project shareholders
- Deemed appropriate for Implementation
- Tools for outcome measure identified

Implementation:
- Obtain list of hospital encounters from HIEs (Healthx Information Exchanges)
- Filter list for inpatient admissions and discharges that were unplanned
- Contact patients to schedule tele-visit within 5 days & office visits within 14 days of discharge for 6 weeks
- Filter list for inpatient admissions and discharges that were unplanned

Post-Implementation:
- Measures: Rate of 30-day readmissions after an unplanned hospital admission will be compared
- Analysis: Paired t-test:
  1. Analyzed pre & post Readmission
  2. Demographic data

Results

Result overview at Glance!

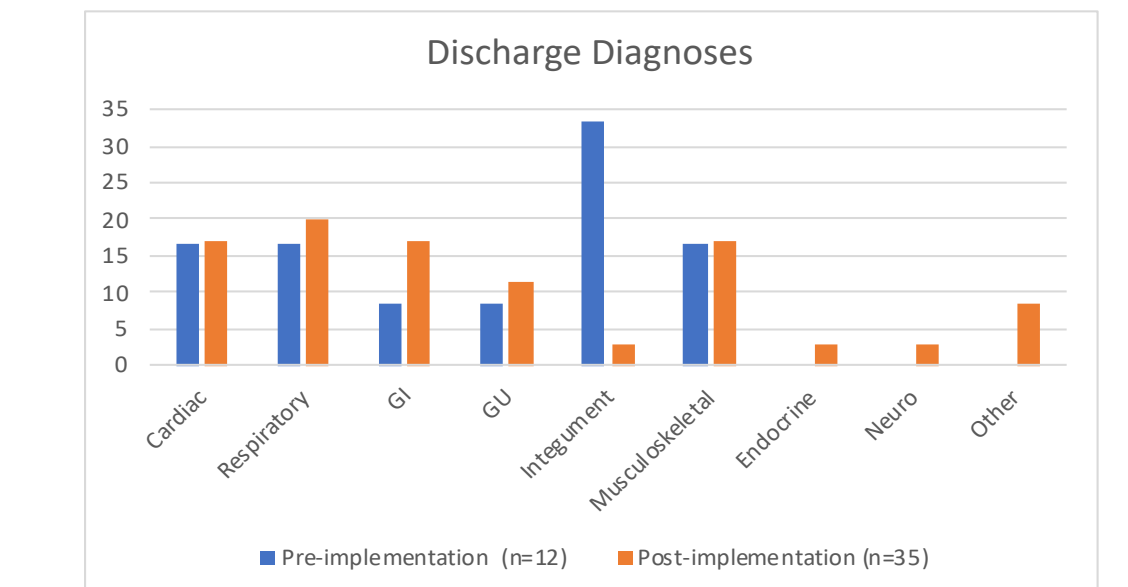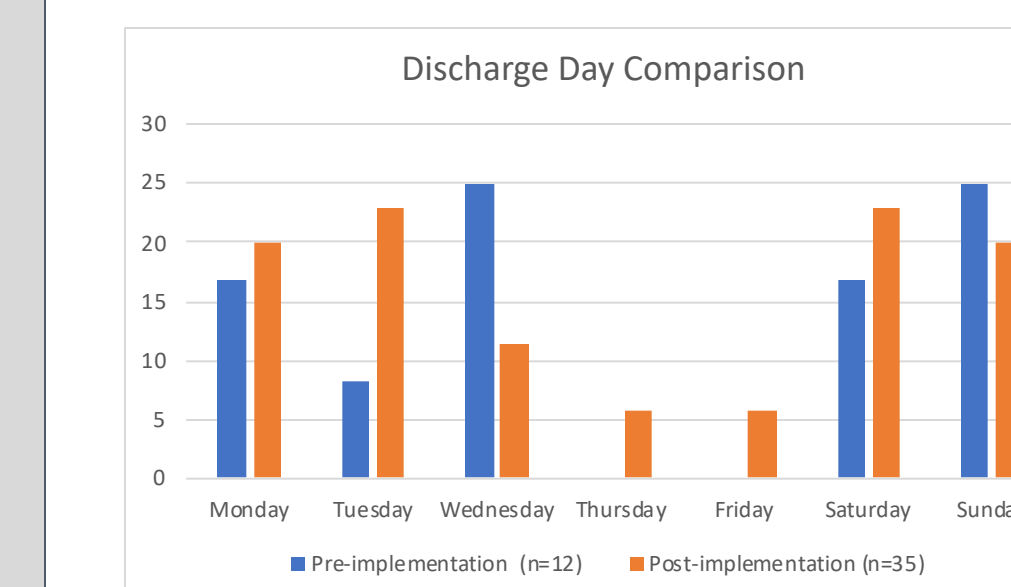| Project Result	Pre-implementation (n=12)	Post-implementation (n=35)
5 days televisit Intervention	0	11%
14 days office follow up	58% (n=7)	69% (n=24)
30 days Readmission	25% (n=3)	6% (n=2)
Average Readmission Days	17.3 days	12 days
Cost	42300	28200
Gender	Male (n=9)	Male (n=18)
Race	Black (n=5)	Black (n=19)
Diagnosis	Integumentary (n=4)	Respiratory (n=7)
Mean Age	54	49.21
Insurance	Medicaid (n=4) / Medicare (n=4)	Medicaid (n=16)
HIE	0%	100%
Discharge Day	Wednesday (n=3)	Monday (n=10)

Demographic Data

- Mean Age
  - Pre-I: 54
  - Post-I: 49.21
- Gender
  - Pre-I: Male 75% (n=9)
  - Post-I: Male 51% (n=18)
- Race
  - Pre-I: Black 41% (n=5)
  - Post-I: Black 54% (n=19)
- Insurance
  - Pre-I : 33% Medicare
    - 33% Medicaid
  - Post-I: 46% Medicaid

		AGE			
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-implementation Group	12	28	79	54	15.606
Post-implementation Group	35	20	85	49.71	18.374

Demographic

Results

Most Common Discharge Day and Diagnosis

Result	Pre-Implementation	Post-Implementation
Discharge Day	Wednesday 25% (n=3)	Monday 29% (n=10)
Diagnosis	Integumentary 33% (n=4)	Respiratory 20% (n=7)

Discharge Day Comparison

Discharge Diagnoses

Readmission Data

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Pearson's Chi-square and Fisher's Exact Test: Readmission Rate

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.274a	1	0.601		
Fisher's Exact Test				1.000	0.782

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 0.23.
b. Computed only for a 2x2 table

There was no statistically significance in proportions, $X2 (1) = 0.6$, $p = 0.782$

Limitations

- Participant size
  - 12 vs 35 (Total Patients)
  - 3 vs 2 (Total Readmission Patients)
- Participant population – Black males with Medicaid
- Short time for implementation

Implications for Future Practice and Recommendations

All DNP 1-8 Essentials were addressed

DNP III	DNP IV
Clinical Scholarship and Analytical Methods for EBP	Information Systems/Technology and Patient Care Technology
• Develop proposal • Attend meetings: HIES, HSRC • Implementation • Data collection and analysis • Consult with statistician • DNP project manuscript • Develop tools for sustainability (e.g, PPT, dissemination of project findings)	• Web training CITI, HIEs • Data extraction activities from patient EMR and HIEs

Conclusion

30-days Readmission rate: 25% to 6%

Similar study benefit from more participants and longer implementation time (duration)