

Assessment of the Effect of Behavioral Change Strategies on Knowledge Translation and Pharmacist Interventions for Antimicrobial Stewardship: PIAS-KT Study

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Background

Priority Disease States

- Priority disease states are prevalent diseases with significant burden to patients and the health care system
- Pharmacists resolving priority disease drug therapy problems (DTP) improve the quality of drug therapy and reduce health care costs

Disease State Education Modules (DSEMs)

- DSEMs for 8 priority diseases were implemented to support pharmacists in providing high value interventions
- Target infectious disease-related DSEMs are urinary tract infection (UTI) and pneumonia
- The UTI and pneumonia DSEMs identified 5 key pharmacist interventions (DSEM KPI) proven to improve clinical and economic outcomes:
 1. Initiate appropriate antibiotics; 2. Discontinue antibiotics that are not indicated; 3. De-escalate antibiotics; 4. Perform IV to PO step-down; 5. Promote appropriate antibiotic duration

Antimicrobial Stewardship

- Antimicrobial stewardship aims to ensure appropriate antimicrobial prescribing while minimizing unintended antimicrobial collateral damage
- UTI and pneumonia are associated with a high rate of suboptimal antimicrobial utilization
- Clinical pharmacists are positioned to provide significant contributions to antimicrobial stewardship as part of routine pharmaceutical care by resolving UTI and pneumonia DTP and KPI

Knowledge Translation (KT) and Behavioral Change

- KT is "...synthesis, exchange, and application of knowledge to accelerate the benefits of global and local innovation... and improve people's health"
- DSEM-KT study showed that multifaceted behavioral change strategies significantly improved heart failure therapeutics knowledge and modified behavior of clinical pharmacists caring for heart failure patients
- It is not known whether behavioral change interventions targeting pharmacists improves antimicrobial stewardship-related knowledge translation, DTP resolution and KPI

Objectives

- To evaluate the impact of proven behavioral change strategies on pharmacist knowledge translation and interventions for UTI and pneumonia
- To evaluate pharmacist interventions for a disease not targeted for knowledge translation and behavior change during study period

Methods

Design

- Prospective, quasi-experimental, one group, pre/post study to evaluate the impact of behavioral change strategies on pharmacists caring for UTI and pneumonia patients

Setting

- Tertiary (KGH, RIH), regional (PRH, VJH, EKH, KBH), and community (SOH, SLH, KLH, OMH, CMH) pharmacy departments across IH (July 1/13 – June 30/14)

Inclusion Criteria

- 58 clinical pharmacists and pharmacy residents were administered a PRE and POST UTI and pneumonia quiz to assess knowledge translation
- DTP Tracker data from PRE (Jul 1/13 – Dec 31/13) and POST (Jan 1/14 – June 30/14) intervention phases were included to assess behavioral change

Intervention

- Bundle of six proven multifaceted behavioral change strategies provided over an 8-week intervention period (Jan 30/14 – Mar 28/14):
 1. Audit and feedback; 2. Local opinion leaders; 3. Educational meeting; 4. Educational outreach; 5. Printed education materials; 6. Reminders

Primary Outcome

- Change in proportion of UTI + pneumonia DSEM DTP resolved from PRE to POST intervention

Secondary Outcomes

- Change in proportion of UTI + pneumonia DSEM KPI resolved from PRE to POST intervention
- Change in pharmacists' UTI + pneumonia quiz scores from PRE to POST intervention
- Change in proportion of heart failure DSEM DTP from PRE to POST intervention

Statistical Analysis

- Behavioral outcomes analyzed with a test of proportions, two-tailed $p \leq 0.05$
- Mean differences in 20-question quiz scores with a paired t-test, two-tailed $p \leq 0.05$

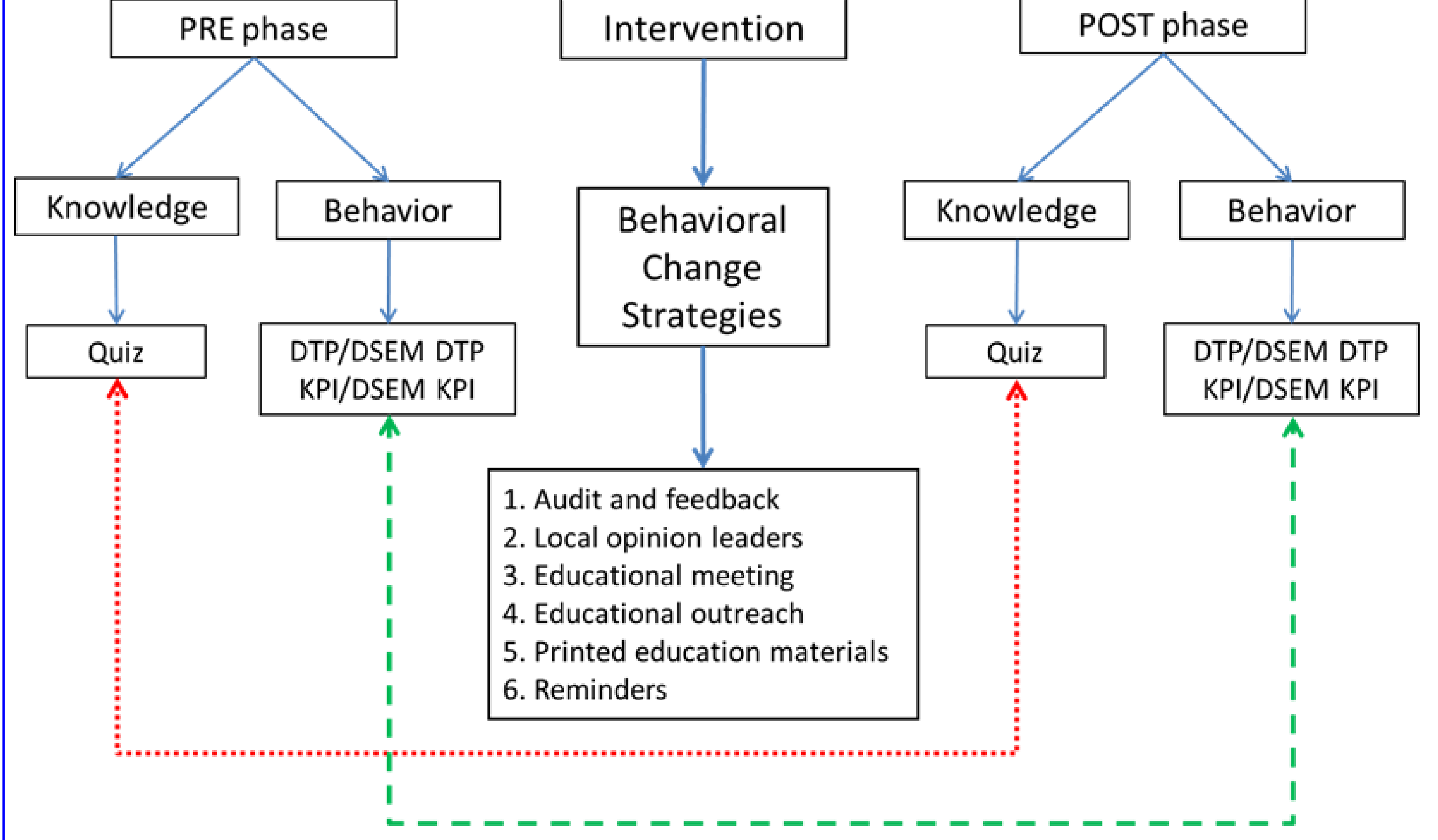


Table 1. Intervention Coverage

Intervention	Provided*	Exposed**
1. Audit and feedback	100%	90%
2. Local opinion leaders	100%	82%
3. Educational meeting	43%	78%
4. Educational outreach	62%	75%
5. Printed education material	100%	95%
6. Reminders	100%	78%

*Based on information provided and initial attendance recorded
**Based on participant POST intervention questionnaire responses

Figure 1. Knowledge Translation

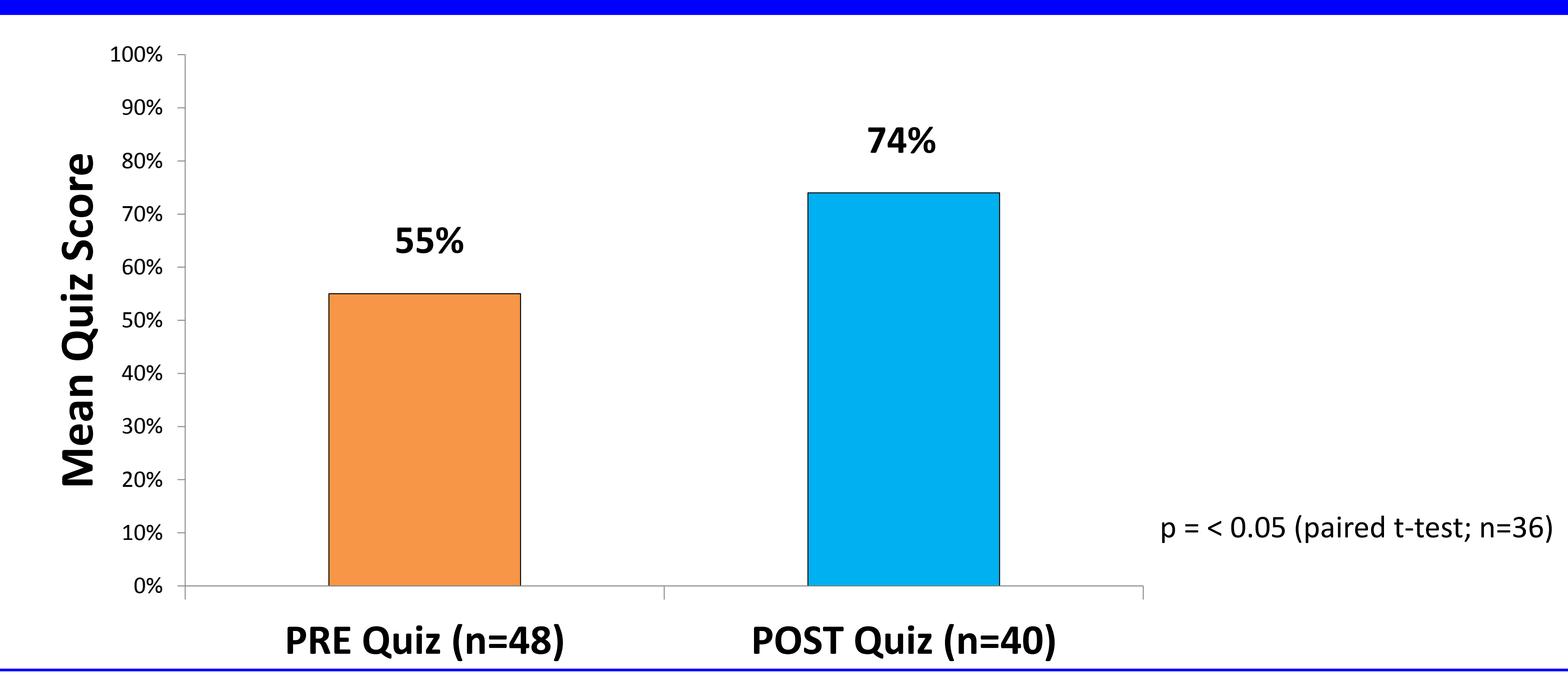


Table 2. Behavioral Change

Outcome	PRE	POST	p-value	RRI (95% CI)	ARI (95% CI)
1° Combo DTP/DSEM DTP	1067/6000 (17.8%)	862/3196 (27.0%)	< 0.05	51.7% (40.0 – 64.2%)	9.3% (7.4 – 11.0%)
2° Combo KPI/DSEM KPI	457/3754 (12.2%)	411/2083 (19.7%)	< 0.05	62.1% (43.1 – 83.5%)	7.6% (5.6 – 9.6%)
2° HF DTP/DSEM DTP	856/6000 (14.3%)	293/3196 (9.2%)	< 0.05	RRR 35.7% (27.0 – 43.5%)	ARR 5.1% (3.7 – 6.4%)

PRE: Jul 1/13 to Dec 31/13; POST: Jan 1/14 to Mar 31/14
Combo: UTI and Pneumonia; HF: Heart Failure

Conclusions

- Bundled multifaceted professional behavioral change strategies significantly increased pharmacist knowledge translation and interventions for UTI and pneumonia
- The increase in DSEM KPI for UTI and pneumonia reflects improvements in antimicrobial prescribing appropriateness which is a core aim of antimicrobial stewardship
- Heart failure interventions by pharmacists significantly decreased during study period



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