

# Assessment of Implementing Disease State Education Modules on Specific Pharmacist Interventions: 'AIMS' Study

Brett Hamilton B.Sc.(Pharm); Richard Slavik B.Sc.(Pharm), ACPR, PharmD, FCSHP; Victoria Slavik B.Sc.(Pharm), ACPR, PharmD

## Background

- Priority disease states account for a significant number of emergency department visits, hospital admissions, prolonged lengths of stay and increased costs
- Randomized controlled trials (RCTs) have shown that hospital pharmacists resolving drug related problems (DRPs) for patients with priority disease states can improve the overall quality of drug therapy, health care utilization and costs
- Compared to traditional continuing education, continuous professional development (CPD) for pharmacists has been shown in RCTs to improve 'self-reported' knowledge, skills, attitudes, and patient care
- Pharmacist CPD not proven to cause objective improvements in care

### Disease State Education Modules (DSEMs)

- Four week DSEMs were developed in 2009 at Interior Health (IH) using the principles of adult learning to improve the knowledge, skills, abilities, competence, and confidence of pharmacists caring for patients with priority disease states
- Week #1* - Tertiary References, *Week #2* - Clinical Practice Guidelines, *Week #3* - Interactive Clinical Case, *Week #4* - Debrief

### Eight DSEMs Completed (2009-2012)

- Pneumonia, Heart failure, Chronic obstructive pulmonary disease, Ischemic heart disease, Diabetes mellitus, Urinary tract infection, Gastroesophageal reflux disease/Peptic ulcer disease, Atrial fibrillation
- At IH, it is unknown if DSEMs cause objective improvements in patient care

### DRP Tracker

- Previously implemented to capture DRPs resolved by IH pharmacists

## Definitions

### Total DRP

- Any DRP resolved by an IH pharmacist

### DSEM DRP

- DRP resolved for any diseases covered in the eight DSEMs

### Key Pharmacist Intervention (KPI)

- Evidence-based intervention proven to reduce morbidity, mortality, or health-resource utilization, based on lists created for each DSEM

## Objective

- To evaluate the impact of DSEMs on the resolution of DSEM DRPs and KPIs

## Methods

### Design

- Retrospective, observational study
- DRP Tracker via iPod Touch devices was utilized to capture DRPs resolved
- Key data fields populated: site; pharmacist; disease; drug; DRP action

### Inclusion Criteria

- DRP Tracker data from all IH pharmacists from PRE module (Oct 2008 to Mar 2009) to POST module (Oct 2011 to Mar 2012) phase

### Exclusion Criteria

- DRP Tracker data not interpretable due to manipulation of standard pull-down field options, free-text data entry, or incomplete DRP entry

### Primary Outcomes

- Proportion of total DRPs that are DSEM-related DRPs (DSEM DRP/total DRP) and KPIs (KPI/total DRP) at baseline compared to after completion of DSEMs

### Secondary Outcomes

- Analysis of primary outcome by individual DSEM
- Analysis of primary outcome by hospital site

### Statistical Analysis

- Chi-square to compare proportions at baseline and after completion of the DSEMs
- Two-tailed p-value set at less than 0.025 (97.5% CI) for dual primary outcomes
- p-values corrected for multiple comparisons for secondary outcomes

## Results

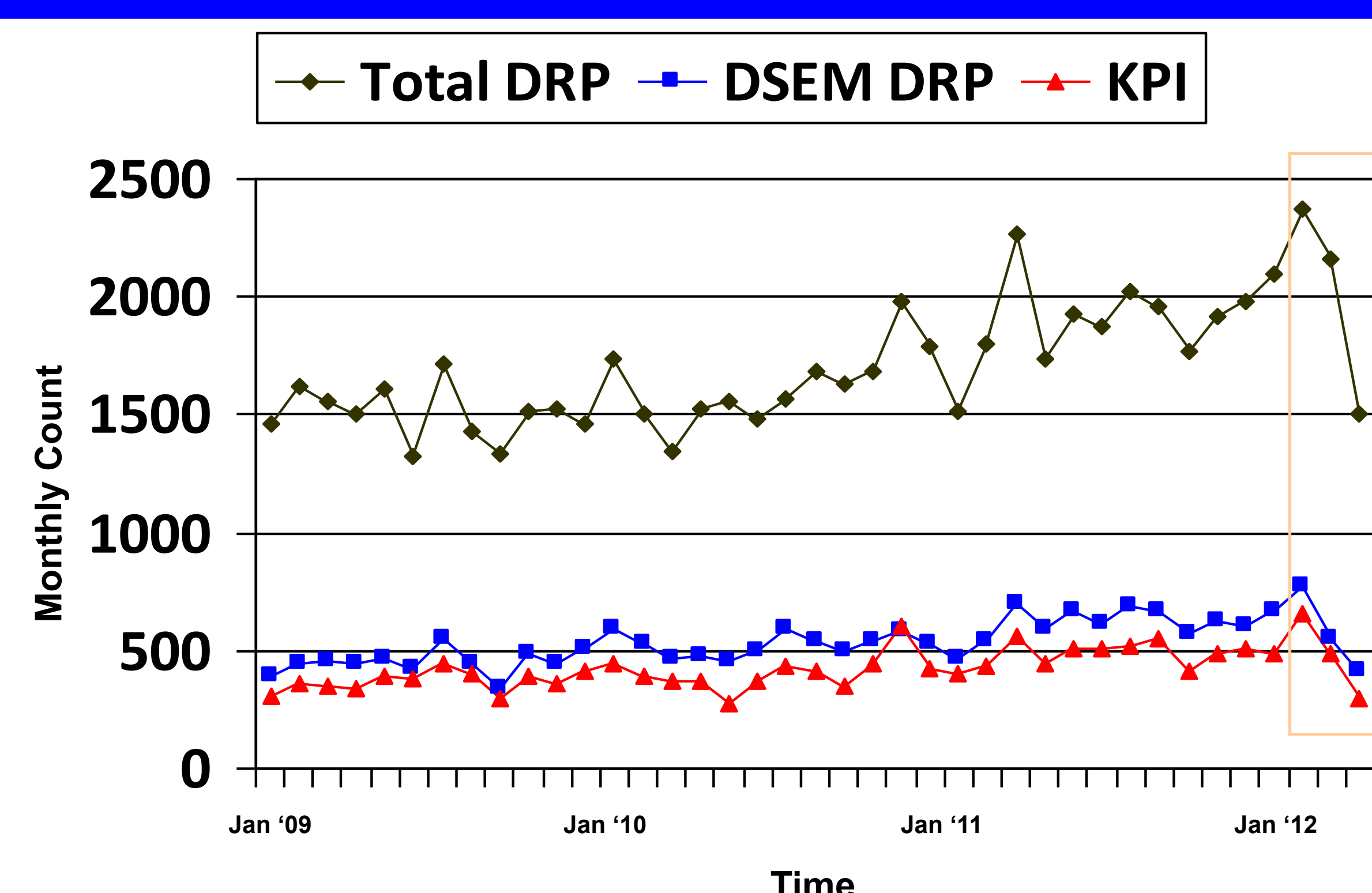


Figure 1. Total DRP, DSEM DRP, and KPI

Table 1. Change in Proportion of DSEM DRP/Total DRP

Primary Analysis	PRE (DRP=4,655)	<sup>1</sup> POST (DRP=12,044)	p-value	RRI (97.5% CI)
DSEM DRP	1298 (27.9%)	3638 (30.2%)	0.003	8.3% (1.9 to 15.3%)
Exploratory Analysis	PRE (DRP=4,655)	<sup>2</sup> POST (DRP=8,374)	p-value	RRI (97.5% CI)
DSEM DRP	1298 (27.9%)	2667 (31.9%)	<0.001	14.2% (7.1 to 21.8%)

Legend PRE: Oct 1/08 to Mar 31/09, <sup>1</sup>POST:Oct 1/11 to Mar 31/12, <sup>2</sup>POST:Oct 1/11 to Jan 31/12

Table 2. Change in Proportion of KPI/Total DRP

Primary Analysis	PRE (DRP=4,655)	<sup>1</sup> POST (DRP=12,044)	p-value	RRI (97.5% CI)
KPI	1012 (21.7%)	2940 (24.4%)	<0.0001	12.3% (4.5 to 20.8%)
Exploratory Analysis	PRE (DRP=4,655)	<sup>2</sup> POST (DRP=8,374)	p-value	RRI (97.5% CI)
KPI	1012 (21.7%)	2158 (25.8%)	<0.0001	18.5% (9.9 to 27.9%)

Legend PRE: Oct 1/08 to Mar 31/09, <sup>1</sup>POST:Oct 1/11 to Mar 31/12, <sup>2</sup>POST:Oct 1/11 to Jan 31/12

## Limitations

- Retrospective and observational design
- Potential sources of bias: selection; intervention; measurement; attrition

## Conclusions

### Figure 1

- Total DRPs, DSEM DRPs and KPIs dropped dramatically after February 1, 2012 due to clinical staffing shortages and appeared to confound study results

### Table 1 and Table 2

- Observed a statistically significant and clinically important increase in proportion of DSEM DRPs and KPIs after completion of DSEMs

### Final Conclusions

- Investment in DSEMs for priority disease states is justified to improve patient care
- Application of proven knowledge translation strategies is required to promote sustained clinical benefits of DSEMs

