

# ASHP BEST PRACTICES AWARD

## Impact of a Novel Diabetes Stewardship Pharmacist Model on Enhancing Inpatient Safety, Outcomes, and Cost Avoidance

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Authors have nothing to disclose.



### Introduction

#### Health-Care Facility

- 718-bed acute care, academic medical center
- Serves as the region's only 24/7 Level 1 Trauma Center
- International reputation in oncology, transplant, and biocontainment
- Founded via merger in 1997
- Inpatient and outpatient pharmacy services include:
  - Inpatient (service-line integrated clinical practice model)
  - Emergency Department
  - Mental Health
  - NCCN Cancer Center
  - URAC-accredited Specialty Pharmacy
- More than 36,606 discharges and 95,040 ER visits annually

#### Background

- Diabetes and stress-induced hyperglycemia impact an estimated 30-45% of all hospitalized patients
- Hyper- and hypoglycemia occurrence in hospitalized patients have demonstrated adverse outcomes including:
  - Increased healthcare expenditure
  - Longer lengths of stay
  - Higher mortality
  - Great odds of being discharged to a skilled nursing facility
- Insulin is the recognized treatment of choice but is also identified as a high-risk medication
  - Highest probability of causing a preventable adverse drug event (ADE) of all injectable medications
    - Estimated increased cost of \$3,100 per preventable ADE per patient
- Professional organizations have endorsed pharmacist involvement in the delivery of acute glycemic management of hospitalized patients
- Dearth of currently available literature describing this pharmacy stewardship model within this hospitalized patient population.
- Institution of a pharmacist led diabetes stewardship is a novel approach, but one that is essential and highly impactful.

#### Purpose

- Develop a pharmacy stewardship model
  - Reduce patient harm related to insulin administration
  - Optimize institutional glucometric outcomes
  - Ensure healthcare providers within the institution are up-to-date in their knowledge and approach to treating glycemic excursions in the hospital
  - Enhance education efforts across all interprofessional service-lines within the organization

### Introduction (continued)

- Construct a real-time surveillance tool embedded within the EHR allowing:
  - Efficient identification of patients with glycemic excursions
  - Enhanced ability to triage patient care
  - Improved delivery of evidence-based pharmacotherapeutic recommendations
- Implement EHR system enhancements to aid frontline pharmacy colleagues caring for this complex patient population

### Description of the Program

#### Program Development

- Stewardship initiated in January of 2016
- Pharmacy stewardship collaborates with:
  - Service-line aligned clinical pharmacists
  - Diabetes, Endocrine, and Metabolism (medicine specialty service line)
  - Medical residents across the organization
  - Diabetes education coordinators
  - Medication safety coordinators (pharmacy and nursing)
  - EHR system analysts

#### Service Overview

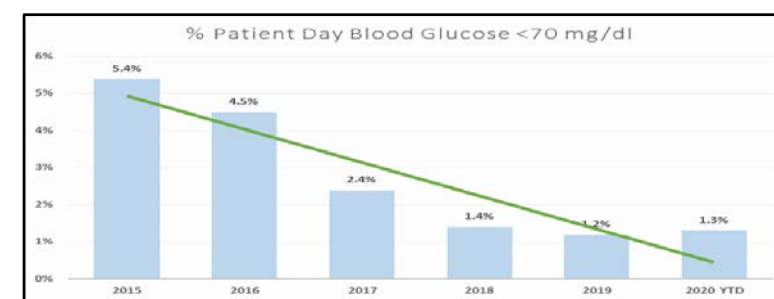
- Construct, develop and maintain institutional policies, procedures, and order-sets related to acute glycemic management
- Construct and deliver enhanced educational efforts across all interprofessional service-lines within the organization
- Serves as co-chair on the Glucose Management Team (GMT) that has led to the organization attaining Joint Commission Disease Specific Care (DSC) certification in Advanced Inpatient Diabetes Management
- Actively monitors and delivers just-in-time intervention, recommendation and education to front-line colleagues
- Serve as the preceptor for a PGY-1 elective rotation
- Delivers lectures for area colleges of pharmacy (UNMC and Creighton University SPAHP)

### Experience with the Program

#### Institutional Glucometric Outcomes: Society of Hospital Medicine (SHM) Glycemic Control eQUIPS Program

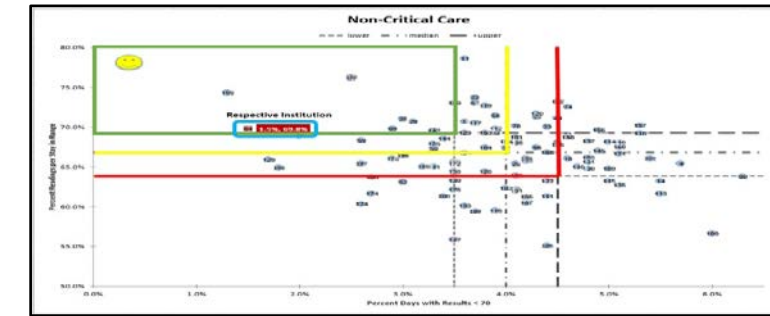
- Data collected January 2015 – June 2020
- % of patient days with hypoglycemia occurrence (blood glucose < 70 mg/dL)
  - Institution: greater than 75% relative risk reduction
- % of patient stays with hypoglycemia occurrence (blood glucose < 70 mg/dL)
  - Critical care: relative risk reduction of 64.2%
  - Non-critical care: relative risk reduction of 48.76%

#### Institutional: Percent of Patient Days with Hypoglycemia Occurrence (defined as a blood glucose < 70 mg/dL)

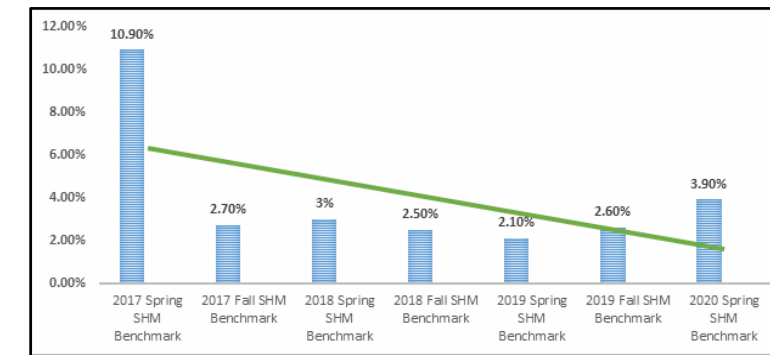


### Experience with the Program

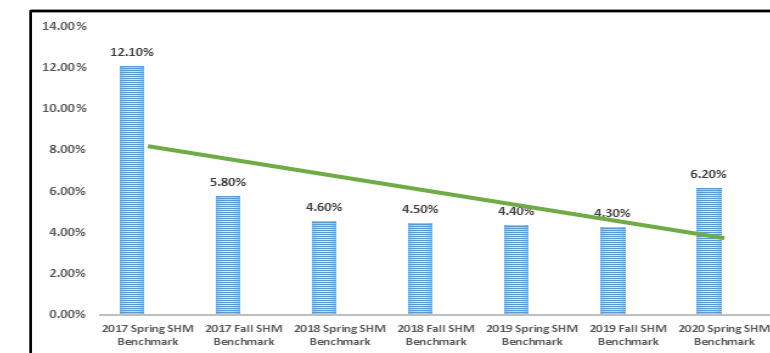
#### Scatter-Plot Demonstrating Sustained Safe Blood Glucose Control



#### Critical Care: Percent of Patient Stays with Hypoglycemia Occurrence (defined as a blood glucose < 70 mg/dL)



#### Non-critical Care: Percent of Patient Stays with Hypoglycemia Occurrence (defined as a blood glucose < 70 mg/dL)

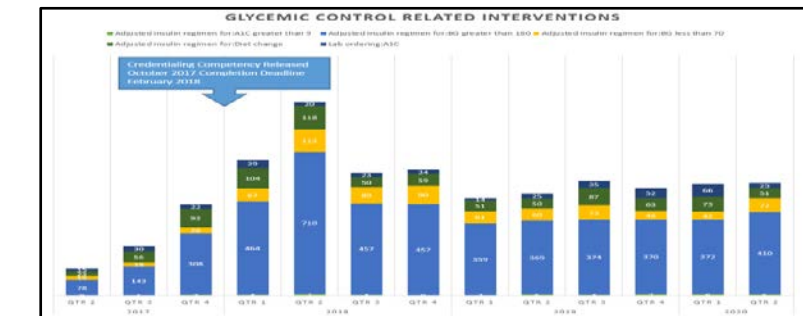


#### Clinician Empowerment

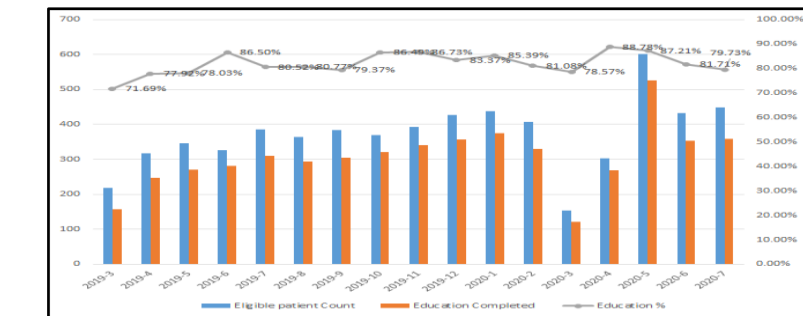
- Pharmacy
  - Pharmacist credentialing series related to acute glycemic management
    - Two-part series (mandatory for all inpatient pharmacists)
  - EHR system enhancements
    - Pharmacy rounding checklist
    - Rx quick documentation tool to capture interventions
- Nursing
  - Retooled delivery of diabetes education
    - Nursing audits captured a 178% improvement in the % of education provided to eligible inpatients
      - January 2019: 48% of patients educated
      - July 2020: 82% of patients educated
  - Construction and delivery of live, in-person insulin titration course
    - Ongoing, over 500 nurses have completed the course

### Experience with the Program (continued)

#### Inpatient Pharmacist Interventions



#### Increased Nursing Diabetes Education Provided



#### Fiscal Impact

- Estimated annual institutional cost-savings from reduced adverse drug events, hypoglycemia occurrence, and formulary management
  - Greater than \$600,000
  - Reduction in length of stay by 0.46 days
  - \$150,000 in formulary management strategies

### Discussion/Conclusion

- The Diabetes Stewardship is an innovative pharmacy model that utilizes the talent and expertise of pharmacists to improve and optimize glycemic outcomes within a large, at-risk patient population.
- This program has demonstrated vast improvements in patient safety, cost avoidance and clinical efficacy outcomes.
- This pharmacy stewardship model is easily translatable to other organizations or other high-risk patient populations.

### Acknowledgement

The collective Nebraska Medicine clinical pharmacy team

### References

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