Implementing Prediabetes Screening During Hospitalization in an Internal Medicine Unit

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INTRODUCTION

- Prediabetes is a serious health condition affecting about 1 in 3 US adults (96 million people).  
- More than 8 in 10 of people with prediabetes are unaware.  
- Without preventative action, ~25% of individuals with prediabetes will progress to type 2 diabetes (T2DM) within 3-5 years.  
- T2DM is the 7th leading cause of death and most expensive chronic condition in the US.  
- Individuals with prediabetes have 1.3 times higher rates of hospitalization than individuals without T2DM due to prevalence of comorbid conditions.

PROBLEM STATEMENT

There is a gap in timely diagnosis of prediabetes, limiting awareness of risk for T2DM, self-management, and referral to preventative interventions. Extending prediabetes screening to the inpatient hospital setting offers a unique opportunity to identify undiagnosed prediabetes and initiate education.

OBJECTIVES

- Project Goal: Identify undiagnosed prediabetes among hospitalized individuals and initiate education.  
  
  **Aims:**  
  1. Develop an evidence-based prediabetes screening algorithm for an internal medicine hospitalist unit.  
  2. Implement prediabetes screening algorithm and evaluate impact, feasibility, and clinician engagement.  
  3. Make recommendations for sustainability, scaling, and dissemination of prediabetes screening algorithm.

  **Project Model:** Roger’s Diffusion of Innovations Theory

AIM 1: DEVELOPMENT OF PREDIABETES ALGORITHM

- Adaptation of risk factors per American Diabetes Association recommendations for prediabetes screening using serum HbA1c  
- Informal feedback obtained from Endocrinology and Hospitalist Medicine experts  
- Project team development: Hospitalists, nutritionists, nurses

AIM 2: IMPLEMENTATION & EVALUATION

- Educate Project Team and Hospitalist clinicians  
- Apply Screening Algorithm on a medicine unit over 12-weeks  
- Provision of patient education  
- Chart Review and data collection  
- Pre and post education assessment survey for Hospitalist clinicians  
- Descriptive statistics, Chi-square, independent t-test  
- Implementation Outcome Survey

AIM 3: SUSTAINABILITY, SCALING, AND DISSEMINATION

- Solicit feedback - Periodic progress meetings - Discuss improvement opportunities  
- Expansion to additional medicine units - Adaptation into electronic medical record  
- Specialty based national presentations - Publications

METHODS

AIM 1: DEVELOPMENT OF PREDIABETES ALGORITHM

- **Project Model:** Roger’s Diffusion of Innovations Theory

AIM 2: IMPLEMENTATION & EVALUATION

- **Operational and Clinical Impact:** 
  - Chart Review and data collection  
  - Pre and post education assessment survey for Hospitalist clinicians  
  - Descriptive statistics, Chi-square, independent t-test  
  - Implementation Outcome Survey

AIM 3: SUSTAINABILITY, SCALING, AND DISSEMINATION

- Solicit feedback - Periodic progress meetings - Discuss improvement opportunities  
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RESULTS

**Patient Screening and Flow**

- Total patients admitted for project unit, n=305  
- Patients excluded for not meeting screening criteria, n=294  
- Patients screened for prediabetes screening using serum HbA1c, n=11  
- Patients screened with HbA1c, n=21

**Intervention Outcomes**

- **Nutritional Interventions**
  - Dietary education and discharge education: 50% (23/46)  
  - Personalized nutrition advice: 17% (1/6)

- **Discharge Interventions**
  - Prescription of medication: 33% (15/46)  
  - Smoking cessation counseling: 11% (5/46)

- **Outcome Measures**
  - Based on randomized controlled trial

- **Baseline Demographics**

<table>
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<tr>
<th>Characteristic</th>
<th>Median HbA1c (%</th>
<th>Prediabetes (n=11)</th>
<th>Prevalence of Prediabetes (%)</th>
<th>Diabetes (n=21)</th>
<th>Prevalence of Diabetes (%)</th>
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<td>Age (years)</td>
<td>50.1 ± 9.7</td>
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<td>Weight (kg)</td>
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<td>BMI (kg/m²)</td>
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<td>Waist (cm)</td>
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<td>Systolic BP (mmHg)</td>
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<td>Diastolic BP (mmHg)</td>
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<td>Heart Rate (bpm)</td>
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**Differences Between Risk Factors**

1. Independent t-test (two sided)
2. Chi-square

Statistically significant setting was up at p <0.05 for all analyses:

- Statistically significant differences across groups limited by small sample size and large standard deviation.
- Clinical significance associated with higher prevalence of modifiable risk factors (hypertension and hyperglycemia).
- Findings may support targeted screening criteria to detect undiagnosed prediabetes and diabetes among hospitalized populations.

REFERENCES


Yale SCHOOL OF NURSING
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