

Implementing Prediabetes Screening During Hospitalization in an Internal Medicine Unit

Roxana Bustamante, MSN, APRN; Joanne Iennaco, Ph.D., APRN, FAAN; Linda S. Ferro, MSN, FNP-BC, CDCES; Elizabeth Molle, Ph.D., RN

INTRODUCTION

- Prediabetes is a serious health condition affecting about 1 in 3 US adults (96 million people).¹
- More than 8 in 10 of people with prediabetes are unaware.¹
- Without preventative action, ~25% of individuals with prediabetes will progress to type 2 diabetes (T2DM) within 3-5 years.²
- T2DM is the 7th leading cause of death and most expensive chronic condition in the US.³
- Individuals with prediabetes have 1.3 times higher rates of hospitalization than individuals without T2DM due to prevalence of comorbid conditions.⁴

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 and innovative opportunity to identify undiagnosed prediabetes and initiate education.

OBJECTIVES

Project Goal: Identify undiagnosed prediabetes among hospitalized individuals and initiate education.

Aims:

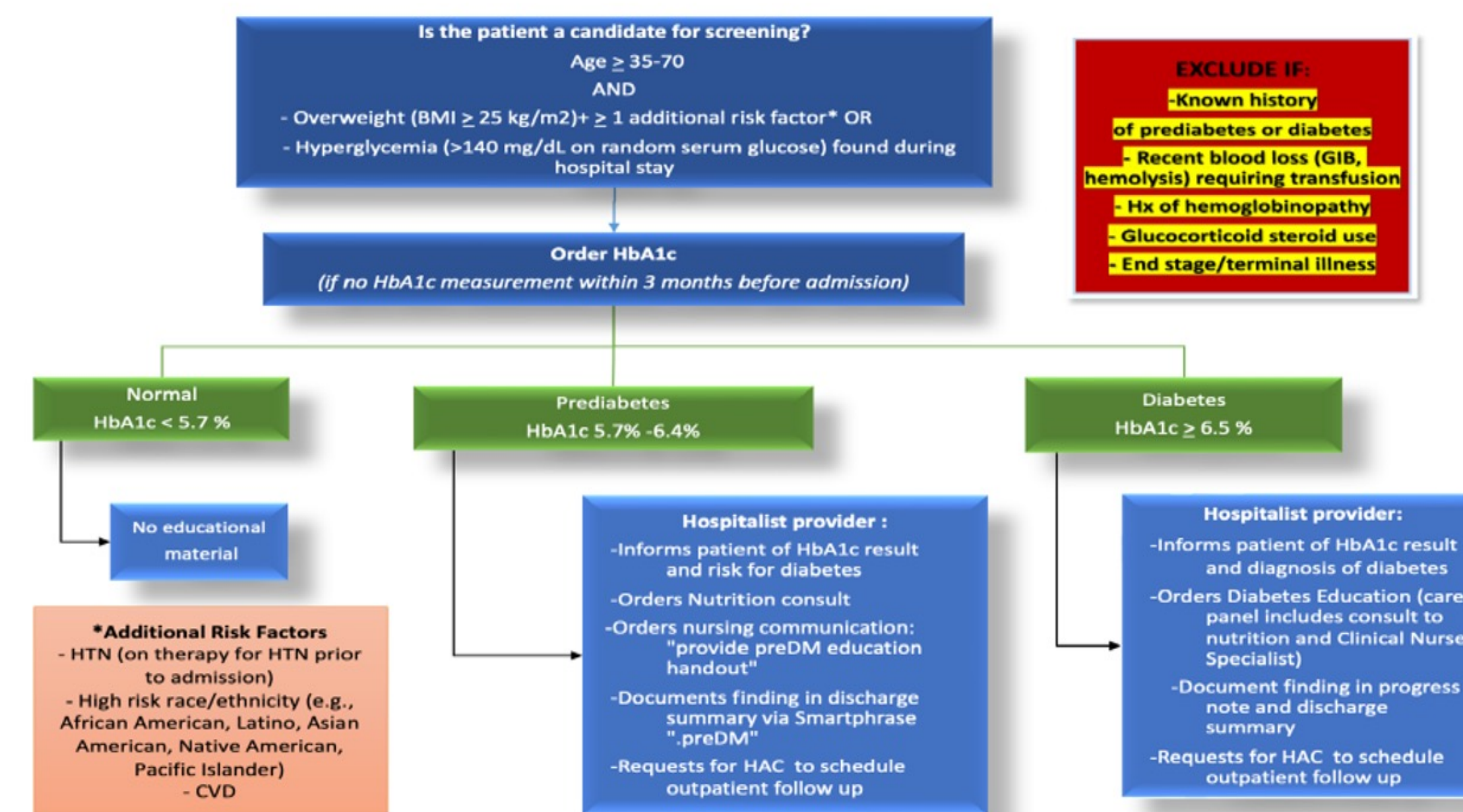
1. Develop an evidence-based prediabetes screening algorithm for an internal medicine hospitalist unit.
2. Implement prediabetes screening algorithm and evaluate impact, feasibility, and clinician engagement.
3. Make recommendations for sustainability, scaling, and dissemination of prediabetes screening algorithm.

Project Model: Roger's Diffusion of Innovations Theory



METHODS

AIM 1: DEVELOPMENT OF PREDIABETES ALGORITHM

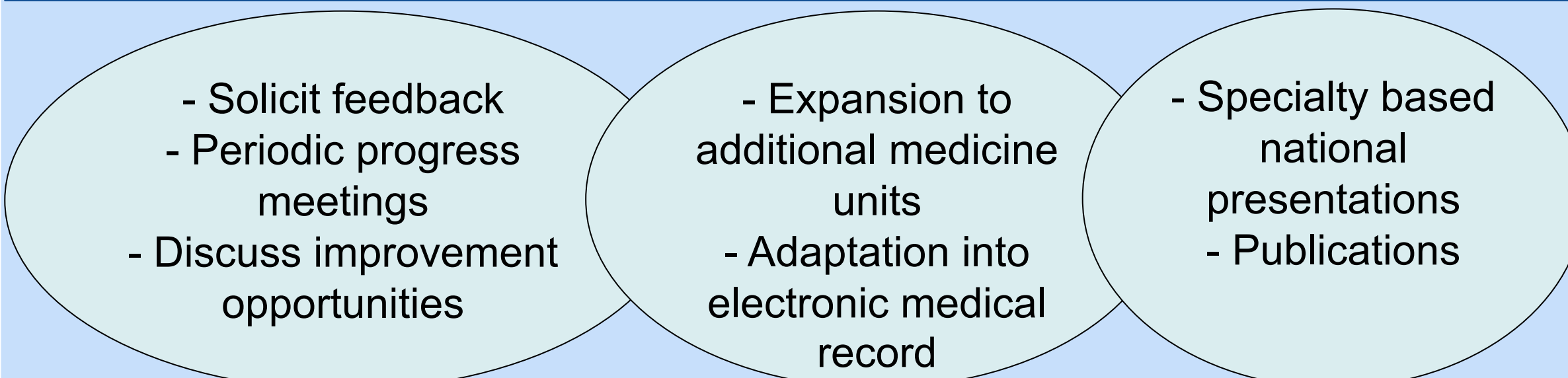


- Adaptation of risk factors per American Diabetes Association recommendations for prediabetes screening using serum HbA1c
- Informal feedback obtained from Endocrinology and Hospitalist Medicine experts
- Project team development : Hospitalists, nutritionists, nurses

AIM 2: IMPLEMENTATION & EVALUATION

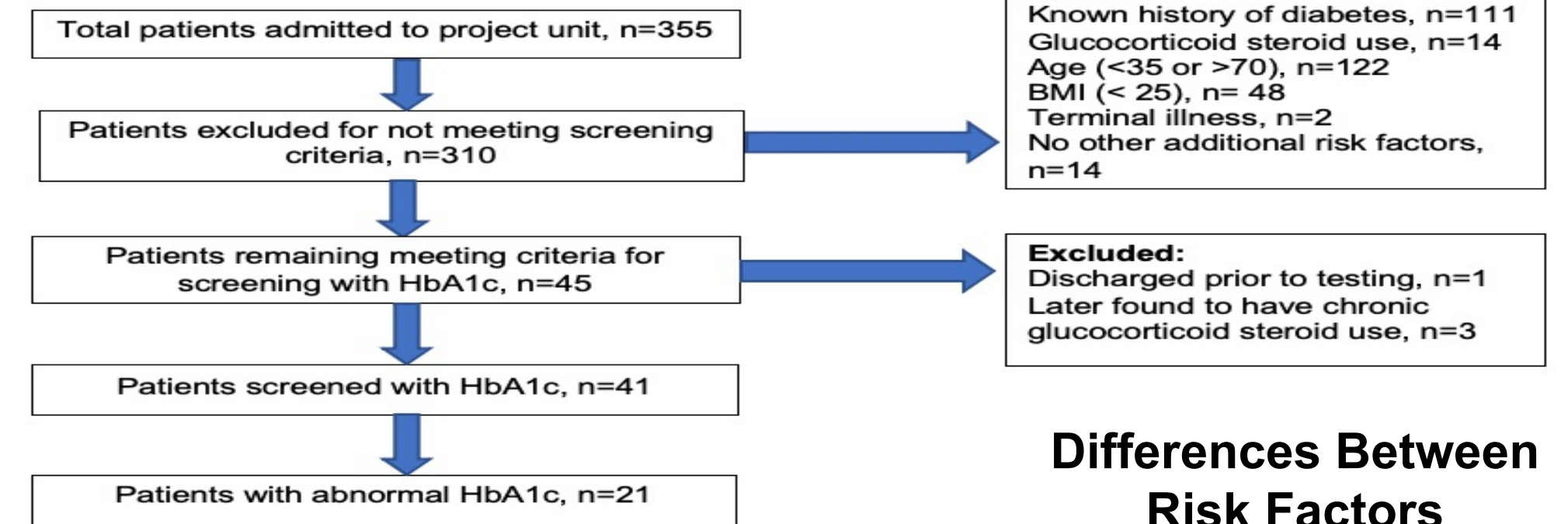
- Educate Project Team and Hospitalist clinicians
- Apply Screening Algorithm on a medicine unit over 12-weeks
- Provision of patient education
- Chart Review and data collection
- Pre and post education assessment survey for Hospitalist clinicians
- Descriptive statistics, Chi-square, independent t-test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

AIM 3: SUSTAINABILITY, SCALING, AND DISSEMINATION



RESULTS

Patient Screening and Flow



Intervention Outcomes

	Nutrition consult	Diabetes Education consult	Discharge note inclusion	Progress note inclusion	PCP follow up arranged	Antidiabetic agents started at discharge
Prediabetes, n=15 (%)	5 (33)	1 (6)	7 (46)	3 (20)	10 (66)	1 (6)
Diabetes, n=6 (%)	3 (50)	2 (33)	3 (50)	4 (66)	6 (100)	2 (33)

Baseline Demographics

Characteristic	Normal HbA1c [HbA1c <5.7%] (n=20)	Prediabetes [HbA1c 5.7%-6.4%] (n=15)	Diabetes [HbA1c ≥ 6.5%] (n=6)
Age, year (mean ± SD)	53 ± 9.5	57 ± 9.5	52 ± 7.5
Male, n (%)	7 (35)	6 (40)	2 (33)
HbA1c (mean ± SD)	5.2 ± .20	6.02 ± 0.27	7.5 ± 1.1
BMI, kg/m2 (mean ± SD)	32.1 ± 6.5	39.4 ± 15.1	34.9 ± 4.34
Risk Factors, n (%)			
Hyperglycemia (>140 mg/dL on random serum glucose)	5 (25)	8 (53)	6 (100)
History of Hypertension	13 (65)	9 (60)	3 (50)
History of Cardiovascular Disease (yes)	6 (30)	1 (6.6)	1 (16.6)
Race, n (%)			
White	8 (40)	5 (33)	3 (50)
African American	5 (25)	9 (60)	1 (16.6)
Asian/Pacific Islander	1 (5)	0 (0)	0 (0)
American Indian	0 (0)	0 (0)	0 (0)
Ethnicity, n (%)			
Hispanic	6 (30)	1 (6.6)	2 (33.3)
Insurance Status, n (%) without insurance	2 (10)	2 (13)	0 (0)
Primary Care Access, n (%) without established PCP on admission	2 (10)	3 (20)	1 (16)

Differences Between Risk Factors

Risk Factor	Normal HbA1c and Prediabetes	Normal HbA1c and Diabetes	Prediabetes and Diabetes
Age ¹	0.161	0.841	0.221
Gender ²	<.001	<.001	<.001
BMI ¹	0.062	0.345	0.486
Hyperglycemia ²	<.001	<.001	<.001
Hypertension ²	<.001	<.001	<.001

1 – Independent t-test (two sided)
2 – Chi- square
Statistical significance was set 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

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4. Schneider, A. L., Kalyani, R. R., Golden, S., Stearns, S. C., Wruck, L., Yeh, H. C., Coresh, J., & Selvin, E. (2016). Diabetes and prediabetes and risk of hospitalization: The atherosclerosis risk in communities (aric) study. *Diabetes Care*, 39(5), 772-779. <https://doi.org/10.2337/dc15-1335>