



Background

- Only 13% of young adults (YA) with type 1 diabetes (T1D), nationally, achieve the American Diabetes Association glycemic target of <7%.
- YA with T1D of low socioeconomic status (SES) have incrementally worse glycemic control, due to personal, social, and healthcare system factors.
- Engagement in regular diabetes follow-up has been shown to be beneficial in preventing acute complications and improving glycemic control in YA with T1D, but little is known whether disparities exist in follow-up care based on SES.

Objectives

The purpose of this study was to:

- compare differences in follow-up rates between low and higher SES YA with T1D
- evaluate the impact of interrupted care on glycemic control

Methods

Population

- 203 YA with T1D, ages 18-30 years old
- Diabetes Center at University of Pennsylvania

Measures: extracted from medical charts

- **Demographic**
 - Age, sex, race, medical insurance coverage, current education/job status, living situation
- **Clinical**
 - Diabetes duration, HbA1c, comorbidities, complications, psychiatric disorders
- **Follow-up visit and healthcare utilization data**
 - No show rate (number visits showed/scheduled), loss to care after 6 months, duration of time in care (days), ED visits per year

Analytic Plan

- Multilevel mixed effects logistic and linear regression models were used to compare differences in follow-up rates and the impact on glycemic control
- All models were adjusted for age, sex, race, diabetes duration, insulin regimen, and time in diabetes provider's care.

Results

TABLE 1. Participant Characteristics

	Overall N=203	Public Insurance N=95	Private Insurance N=108	P-value
DEMOGRAPHICS				
Age (years)	23.5±3.2	23.06±3.2	24.0±3.1	0.037
Sex (female)	111 (55)	54 (57)	56 (52)	0.391
Race				<0.001
White	129 (69)	45 (47)	83 (77)	
Black	51 (27)	40 (42)	12 (11)	
Asian	6 (3)	2 (2)	4 (4)	
Native Hawaiian/ Pacific Islander	1 (1)	0 (0)	1 (1)	
School/Job Status				0.002
Student	108 (53)	46 (49)	61 (56)	
Full-time Job	55 (27)	19 (20)	36 (33)	
Part-time Job (no school)	9 (4)	7 (7)	2 (2)	
Unemployed	31 (15)	22 (23)	9 (8)	
Living situation				<0.001
With parents	81 (41)	55 (59)	26 (25)	
Independent	117 (59)	38 (41)	79 (75)	
CLINICAL CHARACTERISTICS				
Diabetes Duration (years)	11.8±5.6	11.7±5.6	11.8±5.6	0.42
Average HbA1c (%)	9.0±2.4	9.9±2.8	8.1±1.5	<0.001
Insulin Regimen				<0.001
Insulin Pump	98 (49)	26 (28)	72 (67)	
Basal-bolus	84 (42)	51 (55)	33 (31)	
Pre-mixed	18 (9)	15 (17)	3 (2)	
≥1 Comorbidity	81 (40)	43 (45)	38 (35)	0.82
≥1 Diabetes-related Complication	54 (27)	31 (33)	23 (21)	0.16
Presence of Major Psychiatric Diagnosis	60 (30)	33 (31)	27 (25)	0.13
HEALTHCARE UTILIZATION				
Duration of care (days)	190± 7	158 ± 6	222± 9	0.04
Probability of no show (%)	62±9	70±4	52±7	<0.001
ED Visits				0.001
1	35 (17)	22 (23)	13 (12)	
≥2	20 (10)	17 (18)	3 (3)	

TABLE 2. Odds ratios of diabetes care follow-up variables, comparing public vs. privately insured

Variable	Unadjusted OR	95% CI	Adjusted OR	95% CI
No show	1.85	1.39, 2.48	1.53	1.11, 2.11
Lost to follow-up after 6 months	2.52	1.55, 3.45	2.31	1.14, 4.32

Adjusted for age, sex, race, average HbA1c, diabetes duration, insulin regimen, time in diabetes provider's care

- Publicly insured YA were 1.5 times more likely to no show for scheduled visits (OR=1.53, p=0.009)
- Publicly insured YA were 2.3 times more likely to be lost to diabetes follow-up after 6 months (OR 2.3, p<0.001), compared to privately insured YA.

TABLE 3. Effect of inconsistent care on glycemic control (HbA1c)

Variable	β	p-value
No show	1.10	0.001
Lost to follow-up after 6 months	0.85	0.048

Adjusted for age, sex, race, diabetes duration, insulin regimen, time in diabetes provider's care

- Glycemic control worsened with each successive no show to a scheduled visit (p=0.001)
- Glycemic control worsened if lost to diabetes follow-up after 6 months (p=0.048)

Conclusions

- Low SES YA with T1D are
 - 1) less likely to consistently follow up in diabetes care
 - 2) more likely to be completely lost to diabetes care after 6 months
 - 3) more likely to have worse glycemic control as a result of inconsistent follow-up, compared to higher SES YA
- Limitations include small sample size, single center, retrospective nature
- Strengths include new proof of concept on disparities in care, identification of potentially modifiable variable of follow-up care, ability to pursue survival analysis of follow-up given detail of data
- Further research needs to focus on why disparities in follow-up exist, as well as explore healthcare delivery modalities which extend beyond the traditional healthcare system for this at-risk population.