

# Adherence to Diabetes Standards of Care in Integrated Healthcare Clinics Serving Patients with Serious Mental Illness

Joni Weidenaar<sup>1</sup>, Asma Jami<sup>1</sup>, Heather Phillips<sup>1</sup>, Dennis D. Grey<sup>1</sup>, Emily Brigell<sup>1</sup>, Kathryn Christiansen<sup>1</sup>, Jessica A. Jonikas<sup>1</sup>, Kristin E. Davis<sup>2</sup>,

Crystal M. Glover<sup>1</sup>, Judith A. Cook<sup>1</sup>

<sup>1</sup>University of Illinois at Chicago, <sup>2</sup>Thresholds Psychiatric Rehabilitation Centers

## Background

The high prevalence of diabetes among people with serious mental illness (SMI) is well-documented<sup>1</sup>, as are the benefits of integrated health and mental healthcare for this population<sup>2</sup>. Concurrently, while evidence is growing for the use of diabetes registries in improving outcomes of primary care patients, little research has focused on the use of this technology among patients with co-occurring diabetes and SMI. Traditional primary care is often difficult to access and inadequate to serve the more complex medical and behavioral concerns of co-occurring diabetes and SMI<sup>3</sup>. Disease registries could be effective to cut significant medical costs to individuals, as well as the healthcare system<sup>4</sup> by utilizing identification and tracking technology to alert the care team of fragmented care<sup>5</sup>. Alongside disease registries, care coordination has been shown to significantly increase the likelihood of evidenced-based care<sup>6</sup>, improve care management, and enhance patient outcomes<sup>7</sup>.

This study aims to measure patient- and clinic-level outcomes at Integrated Healthcare Clinics (IHCs) following implementation of care coordination using a diabetes registry.

## Methods

UIC College of Nursing (CON) and Thresholds Psychiatric Rehabilitation Centers in Chicago collaboratively operate 2 IHCs.

IHCs are located at Thresholds' program sites on the north and south sides of Chicago; CON staff provide medical care.

IHCs serve 220 patients with co-occurring diabetes and SMI; the diabetes registry consists of data from these patients.

The registry includes data from labs, services, and visits over the past 3 years and generates reports at patient- and clinic-levels. This allows for assessment of clinic-wide adherence to diabetes standards of care, as well as monitoring of the quality of patient's medical outcomes.

Preliminary analyses include correlations between demographic variables, IHC site, and patient-level outcomes.

Data come from clinic visits during calendar year 2011 and consist of measures made at the most recent visit.

## Subjects (N = 220)

- 67% male
- 2/3 members of racial/ethnic minority groups: 59% African American; 30% Caucasian; 4% Hispanic/Latino; 2% Asian; 1% American Indian
- Age range: 18 to 73 years (mean=50; sd.=10)
- 51% are patients at the north clinic; 49% at the south clinic

## Results

Across both clinics, 78% of patients exhibited glycemic control meeting ADA standards ( $A1c < 7$ ). The large majority (88%) had total cholesterol at the normal level ( $< 200$ ), with 73% achieving acceptable HDL ( $\geq 35$ ), 88% acceptable LDL ( $< 130$ ), and 88% normal triglyceride levels ( $< 200$ ). Over three-quarters (78%) had blood pressure in the normal range ( $< 135/85$ ), and 86% had microalbumin/creatinine ratios in the normal range ( $\leq 30$ ).

**Table 1: Zero-Order Correlations Indicating Relationships Between Gender, Race/Ethnicity, Age, and IHC Site with A1c, ACR, Total Cholesterol, HDL, LDL, Triglycerides, and Blood Pressure**

		High A1c	High ACR	High Total Cholesterol	Unacceptable HDL	Unacceptable LDL	High Triglycerides	High Blood Pressure
<b>Gender</b>	Male	-0.00	0.00	0.10	<b>0.32**</b>	0.09	0.05	0.05
<b>Race/Ethnicity</b>								
	White	0.05	-0.01	-0.09	<b>0.15*</b>	-0.07	<b>0.18**</b>	0.02
	Black	<b>-0.15*</b>	-0.02	0.02	-0.12	0.06	<b>-0.19**</b>	0.08
	Minority	-0.10	0.01	0.05	<b>-0.16*</b>	0.04	<b>-0.14*</b>	0.02
<b>Age</b>		0.04	-0.02	<b>-0.13*</b>	0.05	<b>-0.20**</b>	0.05	-0.05
<b>IHC Site</b>	South	0.05	-0.10	0.01	-0.05	-0.04	<b>-0.17*</b>	<b>0.21**</b>

\* $p < .05$  (2-tailed); \*\* $p < .01$  (2-tailed)

Regarding Table 1, IHC-North patients were significantly more likely to have high triglyceride levels; however, when controlling for race/ethnicity this difference became non-significant ( $r = -0.13$ ,  $p = 0.06$ ). South patients were significantly more likely to have high blood pressure and this difference remained significant even controlling for race/ethnicity ( $r = 0.20$ ,  $p = 0.00$ ).

**Table 2: Zero-Order Correlations Between A1c, ACR, Total Cholesterol, HDL, LDL, Triglycerides, and Blood Pressure**

	High A1c	High ACR	High Total Cholesterol	Unacceptable HDL	Unacceptable LDL	High Triglycerides	High Blood Pressure
<b>High A1c</b>	1	0.06	0.11	0.01	0.05	0.07	-0.10
<b>High ACR</b>		1	0.07	0.02	0.02	0.05	0.02
<b>High Total Cholesterol</b>			1	-0.07	<b>0.70**</b>	0.12	0.04
<b>Unacceptable HDL</b>				1	-0.01	<b>0.14*</b>	0.04
<b>Unacceptable LDL</b>					1	0.01	-0.01
<b>High Triglycerides</b>						1	0.00
<b>High Blood Pressure</b>							1

\* $p < .05$  (2-tailed); \*\* $p < .01$  (2-tailed)

## Conclusion

This study suggests that integrated health clinics operated collaboratively by medical and mental health personnel achieve positive outcomes at both the patient- and clinic-levels. Additionally, use of a diabetes registry allows for close monitoring and ongoing assessment of the extent to which standards of care are adhered to, and can help identify patients for whom additional medical and mental health services are required. These processes can translate into positive medical outcomes and improve the quality of life for patients with co-occurring diabetes and SMI.

More specifically, the registry may improve IHC medical outcomes by creating reports with patient-specific longitudinal data that highlight at-risk labs and behaviors, as well as missed services. Registry use may also increase patient-centered care by informing the care team of a patient's personal barriers to healthcare (i.e. failure to follow through with medical referrals due to nervousness, lack of transportation, inadequate financial resources for nutritious food, etc.). Second, registry use may increase awareness of clinic barriers to standards of care (i.e. time constraints on patient education, EMR's inability to track personalized education and self-management goals, lack of reporting tools for routine visits and standards of care). Third, registry use may increase preventive care through creation of reports using diabetes-specific data and may alert providers to uncontrolled labs and missed services, reducing provider's time searching through the EMR during visits. For example, based on our study's findings, registry data can be used to identify male patients' with unacceptable HDL levels at each clinic and give patient-specific reports regarding cholesterol medications, nutritional barriers, and exercise habits. In this way, registry information can be used to increase the potential for well-informed, patient-centered care and a proactive approach to disease management.

In the project's next stage, a care coordinator will be introduced to the IHCs to aid incorporation of registry data into regular care. The care coordinator will work with IHC and Thresholds staff to facilitate services that require extra time, such as patient education and referral follow-up. Currently, IHC staff has limited resources for such tasks, with less than 4% of IHC patients receiving recommended annual dental exams. The care coordinator will use the diabetes registry to track and record outcomes directly related to patient- and clinic-level outcomes. The introduction of a diabetes registry and care coordinator may increase IHC potential for patient-centered care and a proactive approach to the management of co-occurring diabetes and SMI.

## References

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