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TexMed 2017 Clinical Abstract

Please complete all of the following sections and include supporting charts and graphs in this document. Submit a total of two documents - this document and the Biographical Data and Disclosure Form to posters@texmed.org by midnight March 17, 2017.

Procedure and Selection Criteria

- Submissions not directly related to quality improvement or research may be accepted and should follow the standardized format outlined below. Content should enhance knowledge in the field of clinical care and be relevant to a given patient population.

PROJECT NAME: Prevalence of Psychiatric Disorders in Patients Admitted for Diabetic Ketoacidosis and Their Risk of Readmission

Institution or Practice Name: Memorial Family Medicine Residency

Setting of Care: Memorial Hermann Southwest Hospital, Houston, TX

Primary Author: Marc Andres, MD

Secondary Author: Monica Kalra, DO; Geraldine Gossard, MD

Other Members of Project Team:

Is the Primary Author, Secondary Author or Member of Project Team a TMA member (required)?

☒ Yes ☐ No

Please provide name(s) and their role in the project:

TMA Member Name: **Marc Andres, Monica Kalra, Geraldine Gossard**

TexMed Poster Session Specialty Subject Area: Please check if these apply.

☐ **Enhanced Perioperative Recovery**

☐ **Disaster Medicine and Emergency Preparedness**

Clinical

Background (15 points max): *Describe the purpose for sharing the content. What caused this subject matter to be approached? Why is this content important to share? What is the potential impact if this content is not shared?*

Due to the increasing cost of healthcare and increased risk of morbidity and mortality among patients with recurrent DKA admissions, physicians should recognize risk factors put patients at increased risk for recurrent readmissions.[i] There is currently limited information examining the correlation between psychiatric illness and recurrent DKA, however, at least four recent articles have shown drug abuse and psychosocial factors as risk factors such as depression for DKA readmissions.[ii,iii,iv] Our goal is to determine whether psychiatric illness is a risk factor for recurrent DKA admissions in our patient population in order to improve discharge planning and prevent avoidable DKA readmissions.

Intended Stakeholders (15 points max): *Identify those individuals, organizations, or interest groups that could be potentially impacted by this information or benefit by obtaining this information.*

Information from this research may be used by physicians who work in the inpatient setting and care for patients with diabetic ketoacidosis recognize the prevalence of psychiatric illness in this population.

Description of Accomplished Work (25 points max): *Provide an overview of the work that was accomplished, including any specific methods, tools or techniques. Also, include any milestones or key accomplishments. Note charts, graphs and tables here and send as addendum with abstract form.*

Primary Objective:

- Determine correlation between psychiatric illness and rate of DKA readmissions

Secondary Objectives:

- Determine glycemic control based on among patients admitted for DKA with and without concurrent psychiatric illness
- Determine whether social work consultation during hospitalization helps reduce readmission
- Determine rate of drug use prior to DKA admission based on urine drug screen

Methods:
A retrospective chart review was performed on patients admitted for DKA between 1/2014–12/2015. We compared the incidence of psychiatric disorder, psychiatric diagnoses, rate of readmission twelve months after the index hospitalization, duration of hospitalization, effect of social work consultation, and patient characteristics. Chi-square, T-test, Odds ratio, and Relative risk were used to calculate statistical significance.

Results:
A total of 91 patients were admitted for DKA, of which, 43% were Black, 43% Latino, 9% White, and 5% Asian, p=0.02. The most common causes of DKA were medication noncompliance (65%), new diagnosis of diabetes (13%), sepsis (12%), and suboptimal treatment (5%). Out of 91 patients, 32 (35%, p=0.0003) had at least one diagnosis of psychiatric disorder including Depression (29%), Alcohol abuse (16%), Cannabis abuse (16%), and Cocaine abuse (10%). Patients with psychiatric disorder had higher odds of readmission (OR 6.53, 95 % CI: 2.51-16.98, p=0.0001) and mean annual readmissions (1.22/year vs 0.39/year, p=0.0008) predominantly due to medication noncompliance (84% vs 54%, p=0.004). There was no significant difference in A1C (12.5% vs 12.6%, p=0.44) and duration of hospitalization (5 vs 4 days, p=0.17) in patients with and without psychiatric disorder. There was no significant difference in incidence of DKA readmissions (38% vs 27%, RR 1.43, 95% CI: 0.71-2.89, p=0.32) among patients who did and did not receive social work consultation.

Conclusion:
Diabetic patients with comorbid psychiatric disorder have higher odds of DKA readmission within 12 months following the index hospitalization largely from medication noncompliance. Social work consultation to help patients navigate the healthcare system and improve access to resources had no effect on the readmission rate.

Timeframe and Budget (20 points max): *Provide the start and end dates for the work along with any financial implications that were incurred due to the work accomplished. Note charts, graphs and tables here and send as addendum with abstract form.*

This study is a retrospective chart review of patients who were admitted between 1/2014 – 12/2015. The study was completed on 12/2016. No financial support was obtained for this study. There are no financial disclosures.

Table 1. Prevalence of Psychiatric Illness Among Patients Admitted for Diabetic Ketoacidosis

	No. of Patients Admitted for DKA	Incidence
Patients with history of psych d/o	32	35%
Patients without history of psych d/o	59	65%
Total	91	
N-1 Chi squared Test		
Difference	27%	
95% CI	11.8584 to 40.8716	
Chi-squared	13.3	
DF	1	
Significance level	P = 0.0003	

Table 2. Number of DKA Readmissions per Year:

	Mean No. of Readmissions per Year:	S.D.
Patients with history of psych d/o	1.21875	1.23743687
Patients without history of psych d/o	0.389830508	0.91003882
t-Test: Two-Sample Assuming Unequal Variances		
	(-) Psych	*(+) Psych*
Mean	0.389830508	1.21875
Variance	0.82817066	1.53125
Observations	59	32
Hypothesized Mean Difference	0	
df	50	
t Stat	-3.332022214	
P(T<=t) one-tail	0.000813784	
t Critical one-tail	1.675905025	
P(T<=t) two-tail	0.001627567	
t Critical two-tail	2.008559112	

Table 3. Psychiatric Illness and Odds of Readmission for DKA

	Readmit	No readmit	Readmit Incidence
Patients with history of psych d/o	20	12	63%
Patients without history of psych d/o	12	47	20%
Total	32	59	
Odds Ratio Results			
Odds ratio	6.5278		
95 % CI:	2.50 to 16.98		
z statistic	3.846		
Significance level	P = 0.0001		

Table 4. Mean Duration of Hospitalization

	Mean Duration of Hospitalization (days)	S.D.
(+) Psych	5.0625	7.210823
(-) Psych	3.762712	3.013412
t-Test: Two-Sample Assuming Unequal Variances		
	(-) Psych	*(+) Psych*
Mean	3.762712	5.0625

Variance	9.080655	51.99597
Observations	59	32
Hypothesized Mean Difference	0	
df	37	
t Stat	-0.974566	
P(T<=t) one-tail	0.168052	
t Critical one-tail	1.687094	
P(T<=t) two-tail	0.336105	
t Critical two-tail	2.026192	

Table 5. Reason for DKA Admission

Reason:	No.	Incidence
Noncompliance	59	65%
Suboptimal medication dose/treatment	5	5%
Sepsis	11	12%
Pancreatitis	2	2%
New diagnosis	12	13%
Gastroparesis	1	1%
Gastroenteritis	1	1%
Total:	91	

Table 6. Psychiatric Diagnoses of Patients Admitted for DKA

Diagnosis:	No.	Incidence
Depression	17	29%
Alcohol abuse	9	16%
Cannabis abuse	9	16%
Cocaine abuse	6	10%
Bipolar	2	3%
Opioid abuse	2	3%
PCP abuse	2	3%
Schizophrenia	2	3%
ADHD	1	2%
Anxiety	1	2%
Battered Woman Syndrome	1	2%
Borderline personality	1	2%
Conversion d/o	1	2%
Drug-dependence	1	2%
Meth abuse	1	2%
Somatization	1	2%
Suicidal ideation	1	2%
Total:	58	

Table 7. Noncompliance as Primary Cause of DKA Admission

	Noncompliance	Other cause	Total:	Incidence:
Patients with history of psych d/o	27	5	32	84%
Patients without history of psych d/o	32	27	59	54%
Total:	59	32	91	

Chi square P = 0.004040858

Table 8. Average A1c of Patients Admitted for DKA

	Mean	S.D.
Patients with history of psych d/o	12.5	2.4
Patients without history of psych d/o	12.6	2.1

t-Test: Two-Sample Assuming Unequal Variances

	(-) Psych	*(+) Psych*
Mean	12.60508475	12.53125
Variance	4.316697838	5.884153226
Observations	59	32
Hypothesized Mean Difference	0	
df	56	
t Stat	0.145632034	
P(T<=t) one-tail	0.442367409	
t Critical one-tail	1.672522303	
P(T<=t) two-tail	0.884734818	
t Critical two-tail	2.003240719	

Table 9. Average Age of Patients Admitted for DKA

	Mean Age (years)	S.D.
Patients with history of psych d/o	42	15.734664
Patients without history of psych d/o	37	12.76055

t-Test: Two-Sample Assuming Unequal Variances

	(-) psych	(+) psych
Mean	36.59322	41.9375
Variance	162.83168	248.44758
Observations	59	32
Hypothesized Mean Difference	0	
df	53	
t Stat	-1.6474109	
P(T<=t) one-tail	0.0526953	
t Critical one-tail	1.6741162	
P(T<=t) two-tail	0.1053906	
t Critical two-tail	2.005746	

Intended Use (25 points max): *Describe how this information could be used moving forward to impact patient care.*

Information from this research may motivate physicians to address psychiatric illness among patient with DKA in other to improve outcomes and prevent unnecessary hospital admissions.

[i] Liss DS, Waller DA, Kennard BD, McIntire D, Capra P, Stephens J. Psychiatric illness and family support in children and adolescents with diabetic ketoacidosis: a controlled study. J Am Acad Child Adolesc Psychiatry. 1998 May;37(5):536-44.

[ii] Nyenwe EA, Loganathan RS, Blum S, Ezuteh DO, Erani DM, Wan JY, Palace MR, Kitabchi AE. Active use of cocaine: an independent risk factor for recurrent diabetic ketoacidosis in a city hospital. Endocr Pract. 2007 Jan-Feb;13(1):22-9.

[iii] Randall L, Begovic J, Hudson M, Smiley D, Peng L, Pitre N, Umpierrez D, Umpierrez G. Recurrent diabetic ketoacidosis in inner-city minority patients: behavioral, socioeconomic, and psychosocial factors. Diabetes Care. 2011 Sep;34(9):1891-6.

[iv] Cooper H, Tekiteki A, Khanolkar M, Braatvedt G. Risk factors for recurrent admissions with diabetic ketoacidosis: a case-control observational study. Diabet Med. 2016 Apr;33(4):523-8.