



Economic and Procedural Burden of Cannabinoid Hyperemesis Syndrome in the U.S. Emergency Department Setting: Unmet Need for a Diagnostic

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BACKGROUND

- Cannabinoid Hyperemesis Syndrome (CHS) is a medical condition associated with daily long-term use of marijuana characterized by nausea, abdominal cramps, and cyclical vomiting which typically presents in the emergency department (ED) setting.^{1,2}
- There is currently no diagnostic or lab test for CHS, with diagnosis by exclusion used to rule out other potential causes of vomiting and nausea.³
- Treatment involves intravenous fluid resuscitation and administration of haloperidol if standard antiemetics fail to relieve nausea and vomiting.⁴

OBJECTIVE

- The purpose of this study was to understand the economic and procedural burden of CHS in the U.S. ED setting.

METHODS

- Data from the 2019 Nationwide Emergency Department Sample (NEDS) database was analyzed with the CHS cohort defined using a combination of primary diagnoses from the F12 series (cannabis related disorders) and secondary diagnosis R11 (nausea and vomiting). (Table 1)

Table 1 - CHS cohort definition by ICD 10	
Primary Diagnosis (ICD 10)	
F1210	Cannabis abuse, uncompl
F1290	Cannabis abuse, unspec, uncompl
F12188	Cannabis abuse w/other cannabis-ind dis
F12988	Cannabis use, unsp w/other cannabis-ind dis
F12288	Cannabis dep w/other cannabis-ind dis
F1220	Cannabis dep, uncompl
and Secondary Diagnosis (ICD 10)	
R11 Series	Nauase and vomiting (All R11 ICD 10's included)

- Demographic characteristics of the cohort were described.
- Total U.S. dollar (USD) charges for ED services per visit including mean, median, maximum, minimum and standard deviation were calculated.
- Total outpatient and inpatient procedures by Current Procedural Terminology (CPT) code were reported.

RESULTS

- The CHS cohort represented 4082 ED visits of which 10.4% (424) required admission. (Table 2)
- Patients were predominantly under the age of 35 (73.5%), majority male (54.8%), and disproportionately minority (white 45.3%, black 31.6%; Hispanic 16.7%).
- The mean total USD charge per ED visit for the cohort was \$6306 with a minimum of \$155 and a maximum of \$75490 (median \$4317, std dev \$6431). (Figure 1)
- A total of 40123 outpatient procedures and 144 inpatient procedures were recorded (Table 3,4)

Table 2 - CHS cohort characteristics	
Characterisitic	n=4082
Discharge status	
Treated and released	3657 (90)
Admitted to hospital	424 (10)
Unknown	1 (0)
Age (years)	
0-17	304 (7)
18-24	1354 (33)
25-34	1342 (33)
35-44	610 (15)
45-54	258 (6)
55-64	159 (4)
65+	55 (1)
Male	
	2238 (55)
Race	
White	1851 (45)
Black	1288 (32)
Hispanic	683 (17)
Other	174 (4)
Missing	86 (2)
Payer	
Medicaid	1612 (39)
Private Ins	1206 (30)
Self-pay	901 (22)
Medicare	213 (5)
Other	146 (4)
Missing	4 (0)

Figure 1 - ED charge per visit in \$USD for CHS cohort

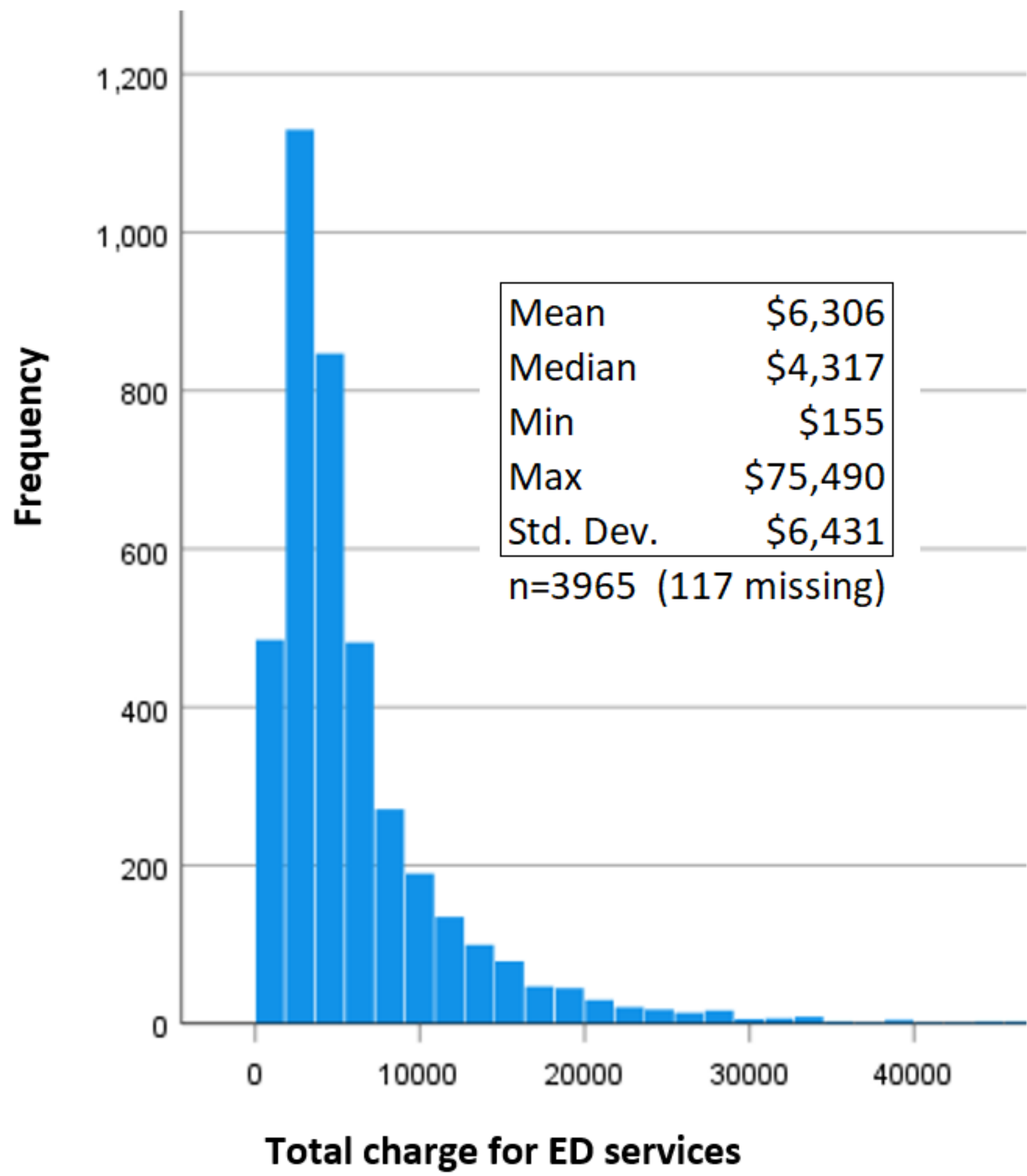


Table 3 - ED Outpatient procedures by CPT Procedure Category

Procedure	
Count	CPT Procedure Category
5,749	Therapeutic, Prophylactic, and Diag Injec/Infus
4,090	Chemistry Procedures
3,365	Organ or Disease Oriented Panels
3,313	New or Established Patient ED Services
3,104	Hematology & Coagulation Procedures
2,105	Hydration Infusion
2,068	Urinalysis Procedures
1,424	Presumptive Drug Class Screening Proce
1,388	Venipuncture and Transfusion Proce
1,360	Injection, ondansetron hydrochloride, per 1mg
1,116	Infusion, normal saline solution
892	Injection, haloperidol, up to 5mg
852	Cardiography Procedures
832	Diagnostic Radiology
509	Injection, diphenhydramine HCl, up to 50mg
435	Injection, metoclopramide HCl, up to 10mg
353	Injection, ketorlac tromethamine, per 15 mg
348	Injection, lorazepam, 2mg
338	Injection, promethazine HCl, up to 50 mg
33,641	Total procedures with frequency ≥ 300
6,482	Other procedures with frequency < 300
40,123	Total Outpatient procedures

Table 4 - Total inpatient procedures performed for CHS cohort

Frequency	ICD-10 Code	ICD-10 Procedure Description
25	0DB68ZX	Excision of Stomach, Endo, Diagnostic
17	0DB98ZX	Excision of Duodenum, Endo, Diagnostic
11	0DJ08ZZ	Inspection of Upper Intestinal Tract, Endo
11	3E0337Z	Intro of Electrolyte into Peripheral Vein
64	Total procedures with frequency ≥ 10	
80	Total procedures with frequency < 10	
144	Total inpatient procedures	

CONCLUSIONS

- This study documented the costs and procedures utilized in the diagnosis by exclusion approach to CHS including lab work, X-rays, CT scans, and invasive scoping.
- Diagnosis by exclusion is wasteful from both a fiduciary and hospital resource perspective.
- This research provides a baseline for cost-effective analysis to inform the value that could be realized with the development of a CHS diagnostic.

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