

Overview for Request

Request ID: cder_iqp_wp009

Request Description: In this report, we described ketamine use in emergency department (ED) care settings in the TriNetX USA Network Database.

Data Source: We ran this query on September 15, 2020. This query contains data from 42 health care organizations (HCOs) provided through the TriNetX USA Network Database from January 1, 2016 through June 30, 2020. TriNetX aggregates electronic health record (EHR) systems data from its partner HCOs to create queryable datasets. TriNetX datasets primarily comprise of clinical patient data such as demographics, diagnoses, procedures, labs, and medications. For more information on the TriNetX Live™ platform and the TriNetX data visit their website here: <https://trinetx.com/>

Study Design: We identified a base population of patients dispensed ketamine with a same-day emergency department visit by year. We used the analytic modules to evaluate the number of patients with codes for symptoms and signs involving cognition, perception, emotional state and behavior, or unspecified pain, including: 1) an R41-42, R44-46 ICD-10-CM diagnosis code and 2) an R52 ICD-10-CM diagnosis code. We built an additional query to count the number of ketamine and same-day ED patients who had **no** evidence of these codes on the same day or the day after ketamine exposure.

We summarized patients who did and did not have a subsequent inpatient encounter in the 0-2 days following ketamine exposure. For our cohorts with and without subsequent hospitalizations, we used the analytic modules to evaluate the number of patients with 1) an R41-42, R44-46 ICD-10-CM diagnosis code, and 2) an R52 ICD-10-CM diagnosis code. We built an additional query to count the number of ketamine and same-day ED patients who had **no** evidence of these codes on the same day or day after ketamine exposure.

We included a final cohort of patients with emergency department visits, by year. Among this cohort we used the analytic modules to evaluate the number of patients with 1) an R41-42, R44-46 ICD-10-CM diagnosis code, and 2) an R52 ICD-10-CM diagnosis code. We built an additional query to count the number of ketamine and same-day ED patients who had **no** evidence of these codes on the same day or day after ED visit.

Exposures of Interest: We defined the exposures of interest, ketamine use, by RxNorm terminologies and included: ketamine. We defined emergency department visit using TriNetX curated visit term to define this visit requirement. We defined symptoms and signs involving cognition, perception, emotional state and behavior, or unspecified pain, using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes. Please see Appendix A for a list of ICD-10-CM codes, RxNorm codes, and the curated visit term used in this request.

Cohort Eligibility Criteria: Patients of all ages and genders were included in this report.

Please see Appendices B and C for the overall specifications of parameters and design diagram used in this request.

Limitations: Algorithms used to define exposures, characteristics, pregnancy, and mapping of source data to the data model are imperfect and susceptible to misclassification. Additionally, EHR data in the US lacks longitudinality. The information before or after patients' healthcare encounters could be missing, especially if patient care was administered across different HCOs that might not participate in the TriNetX USA network. We are unable to determine if absence of evidence of a condition implies a true absence of a condition or if the condition was not observed in the data. Furthermore, not all HCOs provide brand name information for RxNorm terms or laboratory data. Therefore, data should be interpreted with these limitations in mind. All counts provided through the TriNetX Live™ platform are rounded up to the nearest ten to protect patient privacy. This rounding affects error, especially as sample sizes decrease. Error due to rounding can range from <0.09% when sample sizes are >10,000 to nearly 20% as sample sizes drop. Thus, all estimates should be interpreted as ranges, and small sample sizes should be interpreted with caution. Additionally, percentages are calculated based on these rounded numerators and denominators. Thus, due to rounding, the sum of each value in a category may not total to 100%.

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Notes: We ran this query on September 15, 2020. A re-run of this query for the same query period in the future may not yield the same results owing to the dynamic nature of the TriNetX Live™ network. Please contact the Sentinel Operations Center (info@sentinelsystem.org) for questions and to provide comments/suggestions for future enhancements to this document. For more information on Sentinel's querying in the TriNetX platform, please refer to the Sentinel Website (<https://www.sentinelinitiative.org/methods-data-tools/methods/trinetx-rapid-querying>).

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Glossary of Terms for Analyses Using TriNetX Live™ Platform*

Characteristic - A medical fact (e.g., diagnosis, procedure, lab result) that occurred on or before the cohort-defining index event.

Explore Cohort - A description module on the TriNetX platform that presents a clinical profile of patients in a given cohort. Patient counts are rounded up to the nearest 10 before percentages are calculated, so the sum each of the values in one category may not total to 100%.

Date Shifting - A data obfuscation technique that some HCOs use to preserve patient privacy. Date shifting entails assigning each patient a random number of days (eg, -365 to +365 days) and consistently adjusting each of their dates by that number of days, thus maintaining temporal relationships between records within a single patient.

Fact - (Medical Fact) A unit of utilization that represents a medical observation on a patient (e.g., diagnosis, procedure, clinical observation).

Filter - A method of limiting terms included in queries to a specific subset of data. Filters include age at time of event, data source (electronic health record or natural language processing); brand name, route, and strength for medication terms; occurrence (first or most recent) for lab terms; and priority for diagnosis and procedure terms.

Group - A series of codes and terms defined with Boolean logic that are used to create a query cohort. For each group, users have the ability to specified time periods of interest, and the number of instances that the group must occur for cohort entry.

Subgroup - Within a group, additional subgroups can be specified to define temporal relationships between the terms in the subgroup (e.g., terms in subgroup B must occur within 5 days after terms in subgroup A). Users can require that these temporal constraints be applied to the 1) first, 2) last, or 3) any instance of each subgroup.

Health Care Organization (HCO) - Organizations that contribute electronic healthcare record data to the TriNetX data networks. HCOs include academic institutions and community health provider systems and a single HCO may contain one or more individual sites or facilities.

Index - The first date when a patient meets all of the cohort-defining criteria. In Analytics modules, the index can be defined as the date when a patient meets all of the cohort criteria, or only one specific group's criteria.

Module - A subsection of the TriNetX platform that performs a distinct functionality. Cohorts are created using the Query Builder module. Descriptive modules include Healthcare Organizations, Explore Cohorts, Rate of Arrival, Summary Statistics, and Analyze Criteria. Advanced analytic modules include Analyze Outcomes, Compare Outcomes, Compare Cohorts, Treatment Pathways, and Incidence and Prevalence.

Network - An aggregation of HCOs contributing data to the platform. Multiple networks are available for querying on the platform; the different networks represent subsets of HCOs organized by date-shifting practices or availability of downloadable datasets.

Outcome - A medical fact (e.g., diagnosis, procedure, lab result) that occurred on or after the cohort-defining index event.

Query - In the TriNetX platform, a query is a distinct cohort with a unique set of terms and logic. Query cohorts are created using the Query Builder platform module.

Risk - In Advanced Analytics modules, risk refers to the percentage of patients in each cohort with the specified outcome of interest.

Priority - An indication whether the code was the condition that the provider spent the most time evaluating or treating during a visit. Possible values include primary, secondary, or unknown.

Term - The codes used to specify patient cohort criteria in a query. Code options include diagnoses, procedures, medications, labs, demographics, genomics, and visits. Terms can be linked together using and/or Boolean logic. TriNetX also creates terms that group together multiple medical codes into single clinical concepts.

Cannot Have Term - A category of terms within a query group that patients must not have evidence of to be included in the cohort.

Must Have Term - A category of terms within a query group that patients must have evidence of to be included in the cohort.

Time Constraint - used to define time periods of interest for each group within a query. Time constraints can be defined relative to the date the query was run (e.g., any time before today), or defined based on specific dates (e.g., January 1, 2015 to September 30, 2020).

Treatment Pathway - In Advanced Analytics modules, the Treatment Pathways module returns the order in which patients received treatment and the prevalence of treatments, including combination of medications, following an index event.

TriNetX Codes - For commonly used laboratory terms, TriNetX aggregates Logical Observation Identifiers Names and Codes (LOINC) laboratory codes at a clinically significant level to new queryable TNX:LAB terms.

Visit - A type of term used to specify the type of medical encounter or facility where the encounter was recorded. Visit terms are derived by TriNetX from the source data. Visits are recorded separately from the codes or labs that occurred during the encounter; care settings are not attached to individual codes. Values for visit terms include: ambulatory, emergency, field, home health, inpatient encounter, inpatient acute, inpatient non-acute, laboratory, observation, pharmacy, pre-admission, short stay, virtual, and unknown.

*all terms may not be used in this report

Table 1. Ketamine Utilization, Patient Admission Status and Diagnosis on Day of Emergency Department Visit from January 1, 2016 through June 30, 2020

	2016			2017		
	N	HCO	%	N	HCO	%
Patients with ketamine administration in ED	16,390	39	100.00	19,500	42	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	1,030	--	6.28	1,360	--	6.97
Same-day ICD-10 code for R52 (parent or child codes)	270	--	1.65	350	--	1.80
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	14,420	39	--	16,910	42	--
Not admitted into hospital	8,480	39	100.00	9,930	40	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	150	--	1.77	250	--	2.52
Same-day ICD-10 code for R52 (parent or child codes)	60	--	0.71	70	--	0.71
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	8,140	39	--	9,380	40	--
Admitted into hospital	7,310	39	100.00	8,840	41	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	850	--	11.63	1,060	--	11.99
Same-day ICD-10 code for R52 (parent or child codes)	210	--	2.87	260	--	2.94
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	5,640	38	--	6,760	40	--

*Patients are not necessarily a subset of larger cohort due to the availability of Health Care Organization (HCO) data and permissions. Please note that "Parent" ICD-10 codes refer to broader, higher-level diagnostic categories, while "child" ICD-10 codes represent more detailed subcategories within those parent codes. Data represented by a dash indicates that the number of HCOs for those characteristics cannot be reported.

Table 1. Ketamine Utilization, Patient Admission Status and Diagnosis on Day of Emergency Department Visit from January 1, 2016 through June 30, 2020

	2018			2019			2020 (through 6/30/2020)		
	N	HCO	%	N	HCO	%	N	HCO	%
Patients with ketamine administration in ED	21,000	42	100.00	23,350	41	100.00	10,050	40	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	1,570	--	7.48	1,920	--	8.22	910	--	9.05
Same-day ICD-10 code for R52 (parent or child codes)	360	--	1.71	400	--	1.71	170	--	1.69
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	18,000	42	--	19,900	41	--	8,640	40	--
Not admitted into hospital	10,740	40	100.00	12,070	40	100.00	5,230	40	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	350	--	3.26	400	--	3.31	240	--	4.59
Same-day ICD-10 code for R52 (parent or child codes)	110	--	1.02	110	--	0.91	40	--	0.77
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	10,060	40	--	11,310	40	--	4,840	38	--
Admitted into hospital	9,450	42	100.00	10,470	42	100.00	4,600	40	100.00
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	1,160	--	12.28	1,450	--	13.85	660	--	14.35
Same-day ICD-10 code for R52 (parent or child codes)	240	--	2.54	280	--	2.67	130	--	2.83
Not R41-R42, R44-R46, R52 same day (parent or child codes) *	7,070	41	--	7,700	41	--	3,490	39	--

*Patients are not necessarily a subset of larger cohort due to the availability of Health Care Organization (HCO) data and permissions. Please note that "Parent" ICD-10 codes refer to broader, higher-level diagnostic categories, while "child" ICD-10 codes represent more detailed subcategories within those parent codes. Data represented by a dash indicates that the number of HCOs for those characteristics cannot be reported.

Table 2. Emergency Department Visits and Same Day Diagnosis Codes from January 1, 2016 through June 30, 2020

	2016			2017		
	N	HCO	%	N	HCO	%
All patients with codes for ED	5,117,740	55	--	5,796,980	57	--
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	225,260	--	4.40	272,510	--	4.70
Same-day ICD-10 code for R52 (parent or child codes)	24,660	--	0.48	30,540	--	0.53
Not R41-R42, R44-R46, R52 same day (parent or child codes)*	4,770,890	55	--	5,376,050	57	--

*Patients are not necessarily a subset of larger cohort due to the availability of Health Care Organization (HCO) data and permissions. Please note that "Parent" ICD-10 codes refer to broader, higher-level diagnostic categories, while "child" ICD-10 codes represent more detailed subcategories within those parent codes.

Data represented by a dash indicates that the number of HCOs for those characteristics cannot be reported.

Table 2. Emergency Department Visits and Same Day Diagnosis Codes from January 1, 2016 through June 30, 2020

	2018			2019			2020 (through 6/30/2020)		
	N	HCO	%	N	HCO	%	N	HCO	%
All patients with codes for ED	6,214,460	55	--	6,203,800	54	--	2,677,110	52	--
Same-day ICD-10 code for R41-R42 or R44-R46 (parent or child codes)	310,460	--	5.00	334,830	--	5.40	149,390	--	5.58
Same-day ICD-10 code for R52 (parent or child codes)	31,050	--	0.50	32,970	--	0.53	14,420	--	0.54
Not R41-R42, R44-R46, R52 same day (parent or child codes)*	5,737,590	55	--	5,696,840	54	--	2,473,160	52	--

*Patients are not necessarily a subset of larger cohort due to the availability of Health Care Organization (HCO) data and permissions. Please note that "Parent" ICD-10 codes refer to broader, higher-level diagnostic categories, while "child" ICD-10 codes represent more detailed subcategories within those parent codes.

Data represented by a dash indicates that the number of HCOs for those characteristics cannot be reported.

Appendix A. List of International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes, RxNorm Codes and TriNetX Curated Codes Used to Define Exposures in this Request

Code	Description	Code Category	Code Type
Ketamine Use			
6130	Ketamine	Medication	Rxnorm
Emergency Department Visit			
N/A	Emergency Department	Custom TriNetX Code	TNX Curated
Comorbid Conditions			
R41	Other symptoms and signs involving cognitive functions and awareness	Diagnosis	ICD-10-CM
R41.0	Disorientation, unspecified	Diagnosis	ICD-10-CM
R41.1	Anterograde amnesia	Diagnosis	ICD-10-CM
R41.2	Retrograde amnesia	Diagnosis	ICD-10-CM
R41.3	Other amnesia	Diagnosis	ICD-10-CM
R41.4	Neurologic neglect syndrome	Diagnosis	ICD-10-CM
R41.8	Other symptoms and signs involving cognitive functions and awareness	Diagnosis	ICD-10-CM
R41.81	Age-related cognitive decline	Diagnosis	ICD-10-CM
R41.82	Altered mental status, unspecified	Diagnosis	ICD-10-CM
R41.83	Borderline intellectual functioning	Diagnosis	ICD-10-CM
R41.84	Other specified cognitive deficit	Diagnosis	ICD-10-CM
R41.840	Attention and concentration deficit	Diagnosis	ICD-10-CM
R41.841	Cognitive communication deficit	Diagnosis	ICD-10-CM
R41.842	Visuospatial deficit	Diagnosis	ICD-10-CM
R41.843	Psychomotor deficit	Diagnosis	ICD-10-CM
R41.844	Frontal lobe and executive function deficit	Diagnosis	ICD-10-CM
R41.85	Anosognosia	Diagnosis	ICD-10-CM
R41.89	Other symptoms and signs involving cognitive functions and awareness	Diagnosis	ICD-10-CM
R41.9	Unspecified symptoms and signs involving cognitive functions and awareness	Diagnosis	ICD-10-CM
R42	Dizziness and giddiness	Diagnosis	ICD-10-CM
R44	Other symptoms and signs involving general sensations and perceptions	Diagnosis	ICD-10-CM
R44.0	Auditory hallucinations	Diagnosis	ICD-10-CM
R44.1	Visual hallucinations	Diagnosis	ICD-10-CM
R44.2	Other hallucinations	Diagnosis	ICD-10-CM
R44.3	Hallucinations, unspecified	Diagnosis	ICD-10-CM

Appendix A. List of International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes, RxNorm Codes and TriNetX Curated Codes Used to Define Exposures in this Request

Code	Description	Code Category	Code Type
R44.8	Other symptoms and signs involving general sensations and perceptions	Diagnosis	ICD-10-CM
R44.9	Unspecified symptoms and signs involving general sensations and perceptions	Diagnosis	ICD-10-CM
R45	Symptoms and signs involving emotional state	Diagnosis	ICD-10-CM
R45.0	Nervousness	Diagnosis	ICD-10-CM
R45.1	Restlessness and agitation	Diagnosis	ICD-10-CM
R45.2	Unhappiness	Diagnosis	ICD-10-CM
R45.3	Demoralization and apathy	Diagnosis	ICD-10-CM
R45.4	Irritability and anger	Diagnosis	ICD-10-CM
R45.5	Hostility	Diagnosis	ICD-10-CM
R45.6	Violent behavior	Diagnosis	ICD-10-CM
R45.7	State of emotional shock and stress, unspecified	Diagnosis	ICD-10-CM
R45.8	Other symptoms and signs involving emotional state	Diagnosis	ICD-10-CM
R45.81	Low self-esteem	Diagnosis	ICD-10-CM
R45.82	Worries	Diagnosis	ICD-10-CM
R45.83	Excessive crying of child, adolescent or adult	Diagnosis	ICD-10-CM
R45.84	Anhedonia	Diagnosis	ICD-10-CM
R45.85	Homicidal and suicidal ideations	Diagnosis	ICD-10-CM
R45.850	Homicidal ideations	Diagnosis	ICD-10-CM
R45.851	Suicidal ideations	Diagnosis	ICD-10-CM
R45.86	Emotional lability	Diagnosis	ICD-10-CM
R45.87	Impulsiveness	Diagnosis	ICD-10-CM
R45.88	Nonsuicidal self-harm	Diagnosis	ICD-10-CM
R45.89	Other symptoms and signs involving emotional state	Diagnosis	ICD-10-CM
R46	Symptoms and signs involving appearance and behavior	Diagnosis	ICD-10-CM
R46.0	Very low level of personal hygiene	Diagnosis	ICD-10-CM
R46.1	Bizarre personal appearance	Diagnosis	ICD-10-CM
R46.2	Strange and inexplicable behavior	Diagnosis	ICD-10-CM
R46.3	Overactivity	Diagnosis	ICD-10-CM
R46.4	Slowness and poor responsiveness	Diagnosis	ICD-10-CM
R46.5	Suspiciousness and marked evasiveness	Diagnosis	ICD-10-CM

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Code	Description	Code Category	Code Type
R46.6	Undue concern and preoccupation with stressful events	Diagnosis	ICD-10-CM
R46.7	Verbosity and circumstantial detail obscuring reason for contact	Diagnosis	ICD-10-CM
R46.8	Other symptoms and signs involving appearance and behavior	Diagnosis	ICD-10-CM
R46.81	Obsessive-compulsive behavior	Diagnosis	ICD-10-CM
R46.89	Other symptoms and signs involving appearance and behavior	Diagnosis	ICD-10-CM
R52	Pain, unspecified	Diagnosis	ICD-10-CM

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
Cohort 1: Ketamine ED 2016		Cohort 9		Cohort 17	
<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2017 - 12/31/2017	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes)	
Cohort 2: Ketamine ED NOT Dx 2016		Cohort 10		Cohort 18	
<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2017 - 12/31/2017	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 2 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 2 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 2 - Ketamine, No ICD</u>	Time Restrictions:

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Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2016 - 12/31/2016	2A. Ketamine	01/01/2017 - 12/31/2017	2A. Ketamine	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. R41-42, R44-46, R52	Same day to 1 day after 2A	2B. R41-42, R44-46, R52	Same day to 1 day after 2A	2B. R41-42, R44-46, R52	Same day to 1 day after 2A
<u>Event 3 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 3 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 3 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2016 - 12/31/2016	3A. Emergency visit	01/01/2017 - 12/31/2017	3A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
3B. R41-42, R44-46, R52	Same day to 1 day after 3A	3B. R41-42, R44-46, R52	Same day to 1 day after 3A	3B. R41-42, R44-46, R52	Same day to 1 day after 3A
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 3: Ketamine ED Hospitalizations 3 Events		Cohort 11		Cohort 19	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2017 - 12/31/2017	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2016 - 12/31/2016	2A. Ketamine	01/01/2017 - 12/31/2017	2A. Ketamine	01/01/2018 - 12/31/2018
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2016 - 12/31/2016	3A. Emergency visit	01/01/2017 - 12/31/2017	3A. Emergency visit	01/01/2018 - 12/31/2018
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes)	
Cohort 4: Ketamine ED Hospitalizations NOT Dx		Cohort 12		Cohort 20	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2017 - 12/31/2017	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2016 - 12/31/2016	2A. Ketamine	01/01/2017 - 12/31/2017	2A. Ketamine	01/01/2018 - 12/31/2018
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2016 - 12/31/2016	3A. Emergency visit	01/01/2017 - 12/31/2017	3A. Emergency visit	01/01/2018 - 12/31/2018
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
4A. Ketamine	01/01/2016 - 12/31/2016	4A. Ketamine	01/01/2017 - 12/31/2017	4A. Ketamine	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A
<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
5A. Emergency visit	01/01/2016 - 12/31/2016	5A. Emergency visit	01/01/2017 - 12/31/2017	5A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A
<u>Event 6 - No ICD, Admitted</u>	Time Restrictions:	<u>Event 6 - No ICD, Admitted</u>	Time Restrictions:	<u>Event 6 - No ICD, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
6A. Inpatient hospital stay	01/01/2016 - 12/31/2016	6A. Inpatient hospital stay	01/01/2017 - 12/31/2017	6A. Inpatient hospital stay	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
6B. R41-42, R44-45, R52	2 days prior to same day as 6A	6B. R41-42, R44-45, R52	2 days prior to same day as 6A	6B. R41-42, R44-45, R52	2 days prior to same day as 6A

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 5: Ketamine ED No Hospitalizations 3		Cohort 13		Cohort 21	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		01/01/2017 - 12/31/2017		01/01/2017 - 12/31/2017	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2016 - 12/31/2016	2A. Ketamine	01/01/2017 - 12/31/2017	2A. Ketamine	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2016 - 12/31/2016	3A. Emergency visit	01/01/2017 - 12/31/2017	3A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes)	
Cohort 6: Ketamine ED No Hospitalizations NOT		Cohort 14		Cohort 22	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2016 - 12/31/2016	1A. Ketamine	01/01/2017 - 12/31/2017	1A. Ketamine	01/01/2018 - 12/31/2018
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2016 - 12/31/2016	2A. Ketamine	01/01/2017 - 12/31/2017	2A. Ketamine	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
3A. Emergency visit	01/01/2016 - 12/31/2016	3A. Emergency visit	01/01/2017 - 12/31/2017	3A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
4A. Ketamine	01/01/2016 - 12/31/2016	4A. Ketamine	01/01/2017 - 12/31/2017	4A. Ketamine	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A
<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
5A. Emergency visit	01/01/2016 - 12/31/2016	5A. Emergency visit	01/01/2017 - 12/31/2017	5A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 7: All ED 2016		Cohort 15		Cohort 23	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts		Study Cohorts	
2016		2017		2018	
<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Emergency visit	01/01/2016 - 12/31/2016	1A. Emergency visit	01/01/2017 - 12/31/2017	1A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes)	
Cohort 8: All ED NOT Dx 2016		Cohort 16		Cohort 24	
<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>		<i>Must Have:</i>	
1A. Emergency visit	01/01/2016 - 12/31/2016	1A. Emergency visit	01/01/2017 - 12/31/2017	1A. Emergency visit	01/01/2018 - 12/31/2018
<i>Cannot Have:</i>		<i>Cannot Have:</i>		<i>Cannot Have:</i>	
1B. R41-42, R44-46, R52	Same day to 1 day after 1A	1B. R41-42, R44-46, R52	Same day to 1 day after 1A	1B. R41-42, R44-46, R52	Same day to 1 day after 1A
Demographic Restrictions: N/A		Demographic Restrictions: N/A		Demographic Restrictions: N/A	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
Cohort 25		Cohort 33	
<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:	
Cohort 26		Cohort 34	
<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:	<u>Event 1 - Ketamine ED Use</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 2 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 2 - Ketamine, No ICD</u>	Time Restrictions:

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2019 - 12/31/2019	2A. Ketamine	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. R41-42, R44-46, R52	Same day to 1 day after 2A	2B. R41-42, R44-46, R52	Same day to 1 day after 2A
<u>Event 3 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 3 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2019 - 12/31/2019	3A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
3B. R41-42, R44-46, R52	Same day to 1 day after 3A	3B. R41-42, R44-46, R52	Same day to 1 day after 3A
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 27		Cohort 35	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2019 - 12/31/2019	2A. Ketamine	01/01/2020 - 06/30/2020
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2019 - 12/31/2019	3A. Emergency visit	01/01/2020 - 06/30/2020
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:	
Cohort 28		Cohort 36	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2019 - 12/31/2019	2A. Ketamine	01/01/2020 - 06/30/2020
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2019 - 12/31/2019	3A. Emergency visit	01/01/2020 - 06/30/2020
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
4A. Ketamine	01/01/2019 - 12/31/2019	4A. Ketamine	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A
<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
5A. Emergency visit	01/01/2019 - 12/31/2019	5A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A
<u>Event 6 - No ICD, Admitted</u>	Time Restrictions:	<u>Event 6 - No ICD, Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
6A. Inpatient hospital stay	01/01/2019 - 12/31/2019	6A. Inpatient hospital stay	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
6B. R41-42, R44-45, R52	2 days prior to same day as 6A	6B. R41-42, R44-45, R52	2 days prior to same day as 6A

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 29		Cohort 37	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
01/01/2017 - 12/31/2017		01/01/2017 - 12/31/2017	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2019 - 12/31/2019	2A. Ketamine	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
3A. Emergency visit	01/01/2019 - 12/31/2019	3A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:	
Cohort 30		Cohort 38	
<u>Event 1 - Ketamine ED</u>	Time Restrictions:	<u>Event 1 - Ketamine ED</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Ketamine	01/01/2019 - 12/31/2019	1A. Ketamine	01/01/2020 - 06/30/2020
1B. Emergency visit	Same day as 1A	1B. Emergency visit	Same day as 1A
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:	<u>Event 2 - Ketamine, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
2A. Ketamine	01/01/2019 - 12/31/2019	2A. Ketamine	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
2B. Inpatient hospital stay	Same day to 2 days after 2A	2B. Inpatient hospital stay	Same day to 2 days after 2A
<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:	<u>Event 3 - ED Visit, Not Admitted</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
3A. Emergency visit	01/01/2019 - 12/31/2019	3A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
3B. Inpatient hospital stay	Same day to 2 days after 3A	3B. Inpatient hospital stay	Same day to 2 days after 3A
<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:	<u>Event 4 - Ketamine, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
4A. Ketamine	01/01/2019 - 12/31/2019	4A. Ketamine	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
4B. R41-42, R44-45, R52	Same day to 1 day after 4A	4B. R41-42, R44-45, R52	Same day to 1 day after 4A
<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:	<u>Event 5 - ED Visit, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
5A. Emergency visit	01/01/2019 - 12/31/2019	5A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
5B. R41-42, R44-45, R52	Same day to 1 day after 5A	5B. R41-42, R44-45, R52	Same day to 1 day after 5A
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Cohort 31		Cohort 39	

Appendix B. Specifications in this Request

Study Cohorts		Study Cohorts	
2019		2020	
<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Emergency visit	01/01/2019 - 12/31/2019	1A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
None		None	
Demographic Restrictions: N/A		Demographic Restrictions: N/A	
Analytic Module (Analyze Outcomes) Outcomes:		Analytic Module (Analyze Outcomes) Outcomes:	
Cohort 32		Cohort 40	
<u>Event 1 - Patients with ED Visits, No ICD</u>	Time Restrictions:	<u>Event 1 - Patients with ED Visits, No ICD</u>	Time Restrictions:
<i>Must Have:</i>		<i>Must Have:</i>	
1A. Emergency visit	01/01/2019 - 12/31/2019	1A. Emergency visit	01/01/2020 - 06/30/2020
<i>Cannot Have:</i>		<i>Cannot Have:</i>	
1B. R41-42, R44-46, R52	Same day to 1 day after 1A	1B. R41-42, R44-46, R52	Same day to 1 day after 1A
Demographic Restrictions: N/A		Demographic Restrictions: N/A	

Appendix C. Study Design Diagram for Cohort Entry Requirements



