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# Effects of a Crisis Intervention Team Assessment Center on emergency department length of stay

Carlissa Lam  
*James Madison University*

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Effects of a Crisis Intervention Team Assessment Center on Emergency Department  
Length of Stay

Carlissa Lam

A Clinical Research Project submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

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FACULTY COMMITTEE:

Committee Chair: Maria deValpine

Committee Members/ Readers:

Joy Harnage

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## **Abstract**

*Introduction:* Emergency departments are overburdened with mental health patients who lack adequate access to behavioral health resources. The influx of patients has led to an increased length of stay in the emergency department for patients who are being evaluated for mental health concerns. Overcrowding can lead to delays in treatment, undesirable medical events, and patient mortality. Crisis Intervention Team (CIT) models bring law enforcement, mental health providers, emergency departments, and individuals with mental illness together to improve care for patients in crisis. They have been instrumental in identifying patients in crisis and transporting them to a Crisis Intervention Team Assessment Center (CITAC), an integral link in CIT programs.

*Methods:* A retrospective chart review was done pre- and post-implementation of a Crisis Intervention Team Assessment Center in a 54 bed Emergency Department.

*Results:* Implementation of a Crisis Intervention Team Assessment Center in the emergency department may increase emergency department length of stay. Chi-square found no statistical significance between time to disposition and age, gender, type of insurance, or restraint usage. The presence of a police officer trained in de-escalating mental health patients may decrease the need for physical restraints for patients in crisis.

*Discussion:* The behavioral health system is lacking preventative resources needed to stabilize many mental health patients. Behavioral health patients in crisis have an increased length of stay in the emergency department. Implementing a team trained to efficiently evaluate and treat a patient in crisis is essential to ensure the patient's safety.

**Key Words:** Mental health, Crisis Intervention Team, Crisis Intervention Team Assessment Center, Emergency Department

## Introduction

Lack of access to behavioral health resources has resulted in an increase in patients presenting to emergency departments (EDs) seeking care for mental health crises, overcrowding, and the attendant negative impact on quality of care (Warren et al., 2016). This influx of patients has led to an increased length of stay (LOS) in the ED for patients who are being evaluated for mental health concerns (Chang et al., 2012; Warren et al., 2016; Weiss et al., 2012). “Overcrowding contributes to treatment delays, ambulance diversion, elopement, undesirable medical events, introduction or exacerbation of existing health care disparities, increased cost of health care delivery, and even patient mortality” (Warren et al., 2016). “Severe mental illness adds greatly to the complexity of care required to keep that patient safe until a proper disposition occurs...The increase workload may reduce the quality of care provided to both medical and psychiatric patients, aggravating the frustrations experienced by ED personnel” (Little et al., 2011). Research studies have shown the effectiveness of Crisis Intervention Team (CIT) programs and where delays occur in the ED process; however, no research has been done to evaluate the effectiveness of the Crisis Intervention Team Assessment Centers (CITAC) on ED LOS.

Inpatient psychiatric beds decreased from 524, 878 beds in 1970 to 211,199 in 2002 without the addition of adequate community-centered treatment programs (Warren et al., 2016). The lack of adequate health resources for people with mental health problems leads to the utilization of emergency departments for crisis care. The Mental Health Crisis Response Institute defines mental health crisis as a person who is in “a state of mind in which they are unable to cope with and adjust to the recurrent stresses of



everyday living in a functional, safe way.” Police officers are often the first responders for those experiencing a mental health crisis and these patients are transported to jail if the behavior is not identified as a mental health issue (Ralph, 2010). Police officers, mental health advocates, and mental health communities have established a CIT model to improve patient and officer safety and to increase police referrals to a health care facility instead of incarcerating patients who are in crisis (Compton et al., 2014). Research has found that successful CIT programs have access to a CITAC, designated facilities readily available to accept and evaluate patients in crisis (Compton et al., 2014; Lee, Brunero, Fairbrother, & Cowen, 2008; McGuire & Bond, 2011; Watson et al., 2010).

A crucial component of an effective CIT program is to have a designated intake site capable of evaluating patients with potential mental health issues (Compton et al., 2014; Lee, Brunero, Fairbrother, & Cowan, 2008); McGuire & Bond, 2011; Watson et al., 2010). Readily available resources, including mental health workers and police officers, to appropriately assess, evaluate, and protect the patient are essential to providing comprehensive care for this patient population. Patients age 12-17 or  $\geq 65$  years old, male (Warren et al., 2016) and those with positive toxicology screens (Weiss et al., 2012) have been found to lead to longer lengths of stay in the ED. Bringing the patient to a prepared CITAC location may decrease the ED time from arrival in the ED to disposition decision by providing appropriately trained officers and mental health workers to the patient in crisis.

### **Problem Statement**

The decrease of inpatient behavioral health units and lack of outpatient counseling facilities has led to an increase of patients presenting to the ED. Implementation of a

CITAC may result in a reduction in time to disposition decision for patients presenting to the ED in crisis. The fast-paced, chaotic ED does not promote a calm, safe atmosphere for behavioral health patients in crisis. Decreasing the time to disposition assists in moving the patient to a more appropriate level of care. The purpose of this project was to analyze whether implementation of a CITAC reduced behavioral health patients' ED length of stay and, ultimately, increased patient safety.

### **Literature Review**

A literature review was conducted searching CINAHL and PubMed. Articles were limited to 2007 through October 2017. No articles were found correlating ED LOS to CIT programs so separate searches were conducted. Key terms included in searching PubMed and CINAHL were "Emergency Department" or "Emergency Room" AND mental health or mental illness or mental disorder or psychiatric illness AND "length of stay" NOT pediatric NOT dementia NOT delirium.

Inclusion criteria for full text reviews included factors affecting mental health patients, length of stay in the ED for mental health patients, ED staff perception of delays, and characteristics of mental health patients with an increased length of stay. Exclusion criteria included studies done outside a hospital, on specific age specific populations (pediatric, adolescent, and older patients only), those evaluating a process change not related, qualitative only studies conducted of police officers' perceptions of CIT training, and those that did not address the length of stay in the ED.

### **CIT Training**

CIT training and the need for police officers to be able to identify patients suffering from a mental health crisis is well documented. Police interactions during

community response calls often require them to determine whether people's behavior is due to a mental health crisis versus misconduct for other reasons (McGuire & Bond, 2011). Insufficient training for front line officers may result in the incarceration of patients who are suffering from severe mental illnesses (Compton et al., 2014). One of the primary goals of CIT is to decrease the number of mental health patients who are incarcerated. CIT training includes knowledge on de-escalating situations in patient's experiencing a mental health crisis (McGuire & Bond, 2011). CIT trained officers are more likely to identify patients in mental health crisis and transport them to a facility capable of assessing their needs instead of arresting them (Compton et al., 2014; Lee, Brunero, Fairbrother, & Cowan, 2008; Ritter, Teller, Marcussen, Munetz, & Teasdale, 2011; Tyuse, 2012; Watson et al., 2010). CIT training stresses assessing patients for potential alcohol consumption and suspected drug use. (Ritter, Teller, Marcussen, Munetz, & Teasdale, 2011). Acknowledging patients who have substances in their system allows the officers to correlate their assessment findings with potential mental health illness and need for medical evaluation.

### **CIT Training Assessment Center**

A crucial element of successful CIT programs is having a designated referral center capable of accepting patients 24 hours a day (Compton et al., 2014; McGuire & Bond, 2011; Watson et al., 2010). These sites are often referred to as Crisis Intervention Team Assessment Centers (CITACs). These facilities should have resources available to assess and provide recommendations on disposition to patients in mental health crisis. Designated intake sites should have no-refusal policies in place to ensure an expedient and smooth transition to the health care system (McGuire & Bond, 2011). "Police-

friendly” policies allow officers to transfer care of the individual and return to their duties in the community (McGuire & Bond, 2011). This requires an on-duty police officer or capable protection services personnel to be stationed at the facility and available to take custody of the patient.

### **Factors Affecting ED LOS**

Numerous factors affect a mental health patient’s length of stay (LOS) in an Emergency Department. The patient’s clinical stability is a predictor of length of time from psychiatry consultation to disposition decision. (Chang et al., 2012). The most significant cause of increased LOS from ED arrival to disposition for mental health patients is positive toxicology results (Weiss et al., 2012). Chakravarthy et al. (2013) found mental health substance abuse related ED visits to average 5.6 hours compared to 4.4 hours for non-substance abuse mental health visits and 3.2 hours for non-mental health related ED visits. Between 2002 and 2008, the average increase in LOS for mental health visits was found to be significant ( $P=.01$ ); however, no additional increase was noted for extended LOS for mental health related substance abuse cases (Chakravarthy et al., 2013). Patients must be medically cleared prior to evaluation and subsequent admission or transfer. Combative patients requiring one-to-one observation (Weiss et al., 2012) medical restraints, or medication to control agitation, paranoia, and mania (Warren et al., 2016) delay medical and psychiatric evaluation and lengthen the patient’s stay. Patients holding public insurance (Medicare/Medicaid) were found to have an increased LOS (Chang et al., 2012b). The cause for extended LOS in patients with public insurance is not known but could reflect the difficulty in finding alternatives to

hospitalizations or identification of hospitals for patients without financial resources (Weiss, et al., 2012).

### **Patient Characteristics**

Analysis of the demographics and characteristics of patients presenting to the ED in mental health crisis allows alternative treatments to be studied and potential development of new programs (Warren et al., 2016). Having a comprehensive understanding of the needs of this patient population allows facilities to tailor resources which may improve outcomes (Lee, Brunero, Fairbrother, & Cowan, 2008). Patients referred to the ED for evaluation by police have been found to be younger than patients brought by non-police, more likely to be male, currently unemployed, had a previous history of alcohol and drug use, or were experiencing a psychotic episode (Lee, Brunero, Fairbrother, & Cowan, 2008).

Warren et al. (2016) identified patient demographics that correlated to an increased ED LOS. Patients who had a significantly longer ED LOS were more likely to be ages 12-17 or  $\geq 65$  years old, male, and/or have a cognitive disorder or dementia (Warren et al., 2016). Potential explanations for increased LOS related to age are excluding acute medical illness for the older population and the possibility of reduced bed capacity for pediatric and geriatric psychiatry (Warren et al., 2016). Increased LOS due to alcohol was contributed to requiring a certain level of sobriety prior to formal evaluation whereas toxicology screening was found to increase LOS due to waiting for results and limited bed placement for neurologic or medical comorbidities (Weis et al., 2012).

### **Theoretical Framework**

The Triple Aims (Figure 1) was the guiding framework for this project as it strives to optimize health system performance. The goal was to improve the patient experience and improve the quality of care. The Institute of Medicine's (IOM) Six Domains of Health Care Quality (Figure 2) establishes a foundation to measure the quality indicators of safe, effective, patient-centered, timely, efficient, and equitable care. The measures seek to avoid harm, provide appropriate services, provide care that is individualized to patient preferences, reduce waits and harmful delays, avoid waste, and provide quality to all (IOM). Implementing the CITAC with trained personnel to support patients in crises instead of transporting them to jail ensures safe, patient-centered care. Staffing the appropriate people in the ED will allow effective, efficient, and timely care for the patient by decreasing the time spent waiting for someone to be called in to the hospital. Decreasing the time spent in the ED will increase safety for patients and provide them with the resources they need to improve their health.

## **Methods**

### **Context**

The CITAC was implemented in December 2015 in a 54-bed community hospital ED in a mid-Atlantic state. The ED evaluates adults and children, averaging 193 total patients per day and 226 mental health evaluations per month. Six rooms can be converted into psychiatric safe rooms, but there is no separate locked unit for mental health patients. The implementation included placing a community service board (CSB) worker, CIT trained police officer, Sentara RMH Medical Center member of the psychiatric emergency team (PET), and peer support specialist in the ED Monday thru Friday 4pm to midnight. PET and CSB workers are available during all other hours by

page if they are not onsite. Prior to the CITAC, CSB was called to the ED when they needed to assess a patient and no peer support was available.

### **Study Population**

All English speaking, adult patients  $\geq 18$  years old presenting to the ED who received a CSB evaluation during the study periods and times were included in this analysis. Patients presenting to the ED requiring a CSB evaluation included those under an Emergency Custody Order (ECO), Temporary Detaining Order (TDO), or who needed to be screened for mental capacity to care for themselves. An ECO is issued by the magistrate upon receiving a sworn petition from a responsible person, treating physician, or upon his own motion. The petition states the person is to be taken into custody and evaluated by a certified member of CSB within eight hours. A TDO is issued by the magistrate after a member of CSB has screened the patient and found them to be a harm to themselves or others, lacking capacity to care for their basic needs, needs hospitalization, and is unwilling to volunteer for hospitalization or treatment. A TDO states that the patient will be held involuntarily for 72 hours to be evaluated and stabilized prior having a hearing. The hearing will determine if the patient is able to be discharged or if they will remain hospitalized for 30 days. Pediatric patients  $< 18$  years old and non-English speaking patients were excluded from the data. Approval for this project was obtained by the hospital's research practice council, hospital IRB, and authors' academic institution IRB. Patient informed consent was not obtained because this is a retrospective, secondary analysis and no care was changed because of the study.

### **Data Collection Methods/Sources**

Enterprise Reporting was used to obtain lists of patients who received a PET consult from January 1<sup>st</sup> to March 31<sup>st</sup>, 2015 and 2016 (Figure 3). Dates were compared to the calendar year and all weekends and holidays were excluded since the CITAC was not operational during these hours. Patients remaining on the list were assigned a number in an Excel spreadsheet. Retrospective chart reviews were manually completed using Meditech, the electronic health documentation system. Patients who had a CSB consult documented by the PET or arrived on an ECO or TDO during the CITAC hours of 4p and midnight had the following data abstracted: age, gender, insurance, time of arrival, medical clearance required, substance abuse, arrival mode, use of restraints, time of disposition decision, time of departure from ED, and disposition. Age was abstracted as a continuous variable and median age was reported for pre- and post-implementation of CITAC. Categorical data included gender, insurance, medical clearance, substance abuse, and restraint use. Gender was categorized as male or female. Insurance was abstracted as commercial, public, or none. Medical clearance was categorized as labs, radiology, labs and radiology, or none. Substance abuse described if the patient had alcohol, drugs, alcohol and drugs, or none in their system during the ED visit. Restraints were categorized as physical (wrist, ankle, or handcuffs), medications (for agitation, paranoia, or mania), physical and medications, or none. The number of patients was reported pre- and post-implementation for gender, insurance, medical clearance, substance abuse, and restraints. Arrival mode captured if the patient arrived voluntarily or involuntarily with police. Time of arrival was abstracted as the time the patient was registered into the electronic medical record (Meditech). Time of decision was documented as the time that the disposition was determined. Time of departure was



abstracted as the time the staff documented the patient left the ED. All times are continuous and range from 0000-2359.

No patient names or medical record numbers were transferred from the Enterprise Reporting list to the Excel spreadsheet. All data was entered in to an Excel spreadsheet, transferred into SPSS, and saved on a password protected computer.

### **Results**

The data abstraction yielded 45 patients pre-implementation and 34 patients post-implementation. General demographics of patients were derived from the data (Table 1). The median time to disposition increased from 230 minutes pre-CITAC implementation to 356 minutes post-CITAC implementation (Figure 4). Chi-square found no statistical significance between time to disposition and age, gender, type of insurance, or restraint usage. Pre-CITAC implementation had a higher use of physical and combination physical restraints/medication usage then post-CITAC implementation. Administration of medications (i.e. Geodon, Ativan, Valium, or Haldol) appropriate for specific clinical situations in the ED such as agitation, paranoia, and mania were used more often in the post-CITAC implementation period. A factorial ANOVA with Bonferroni post-hoc testing (Table 2) was conducted that examined the effect of the CITAC implementation and patient disposition on the time to disposition. Patients admitted involuntarily had a significantly longer time to disposition than those who were discharged home (105.86 minutes,  $p=0.004$ ). Patients who were involuntarily transferred to another facility had a significantly longer time to disposition than those admitted voluntarily (139.75 minutes,  $p=0.033$ ) and then those who were discharged home (150.59 minutes,  $p=0.005$ ).

### **Discussion**

This retrospective chart review suggests that the implementation of a Crisis Intervention Team Assessment Center in an emergency department may increase the overall length of stay for behavioral health patients but improve patient safety. Despite the increase in length of stay, implementing the CITAC with trained personnel to support patients in crises instead of transporting them to jail ensures they receive the mental health assessment and care they need. Staffing the CSB worker in the ED allows for effective, efficient, and timely care for the patient. The peer support specialist enhances the patient-centered experience by being an empathetic advocate for the patient.

The decrease in physical restraints may indicate a degree of increased safety for the patient, staff, and officers since less physical force was used. Verbal de-escalation is preferred over physical restraints and medication usage. The decrease in physical restraints may be a result of police officer presence with training to de-escalate patients in crisis. Research done by Compton, et al. (2014) did not find any statistical significance in comparing physical force by CIT or non-CIT trained officer, but 39% of officers with and without training stated that their physical presence was enough to de-escalate the situation. Compton, et al. (2014) found that CIT trained officers were more likely to verbally engage with patients than those who were not CIT trained (OR=2.00,  $p<0.02$ ).

The increased length of stay for those admitted or transferred involuntarily accounts for the additional time needed to obtain a TDO from the magistrate. This must be done prior to admitted or transferring the patient. The increased time noted for transfers may also be increased due to difficulty in locating an appropriate facility with an open bed.

### **Limitations**

The study was conducted in one hospital with a limited sample size reducing the generalizability of the data. The sample size was limited due to a change in the hospital's electronic medical record shortly after the CITAC implementation. Documentation obtained by CSB during CITAC hours could not be obtained due to HIPPA compliance. CSB documentation would have given data on patients seen during CITAC hours since the CSB worker was one of the staff members added for the implementation.

### **Implications for Emergency Nurses**

This research increases the emergency nurses' awareness of the complex behavioral health system and factors increasing length of stay for patients in crisis. Creating a team-based approach to safely and effectively manage these patients may increase the length of stay while decreasing the need for physical restraints. Facilities must work collaboratively with their CIT programs and legal system on practice improvement strategies to decrease ED LOS for patients being admitted or transferred involuntarily. Facilities should ensure that staff receive appropriate training in de-escalation techniques which may decrease the need for physical restraints. The facility where this implementation occurred required Crisis Prevention Institute training for their nurses and security staff members. This includes techniques on verbal de-escalation and safely restraining a patient physically when needed. Compton, et al. (2014) found that CIT training, which includes verbal de-escalation, enhanced officer use of the techniques when interacting with patients in crisis. Federal and local policies need to address the lack of preventative behavioral health services available leading to the increase of patients in crisis presenting to the ED. Additional research is needed on the effects of the

implementation of a CITAC on ED LOS. Increasing the sample size and researching it at multiple sites will confirm these findings and increase the generalizability.

### **Conclusions**

Lack of behavioral health resources has led to an increase in patients experiencing a mental health crisis presenting to the emergency department. The chaotic environment is not conducive to de-escalating the crisis or promoting health and wellbeing for the behavioral health patient. The findings of this study indicate that the implementation of a CITAC may increase ED LOS. Despite the increased ED LOS, staffing the appropriate personnel in the ED to assess and care for the patient provides a safer, more efficient environment when they are in crisis. Additional studies with a larger sample need to be conducted to obtain statistically significant data. Future studies on restraint use after implementation of CITAC and factors affecting increased LOS for transferred patients should be studied are warranted.

## Appendix A

Table 1: Demographics of Patients Pre- and Post CITAC Implementation

|                             | <b>Pre-Implementation</b><br>n = 45 | <b>Post-Implementation</b><br>n = 34 |
|-----------------------------|-------------------------------------|--------------------------------------|
| <b>Age in years, median</b> | 33                                  | 42                                   |
| <b>Gender</b>               |                                     |                                      |
| Male                        | 34                                  | 21                                   |
| Female                      | 11                                  | 13                                   |
| <b>Insurance</b>            |                                     |                                      |
| Commercial                  | 13                                  | 11                                   |
| Public                      | 24                                  | 16                                   |
| None                        | 8                                   | 7                                    |
| <b>Disposition</b>          |                                     |                                      |
| Admit Voluntary             | 7                                   | 5                                    |
| Admit Involuntary           | 18                                  | 14                                   |
| Transfer Involuntary        | 4                                   | 5                                    |
| Home                        | 16                                  | 9                                    |
| <b>Restraint usage, %</b>   | 25%                                 | 26%                                  |
| Total                       | 9                                   | 7                                    |
| Medication*                 | 2                                   | 5                                    |
| Physical                    | 4                                   | 1                                    |
| Medication* & Physical      | 3                                   | 1                                    |
| None                        | 36                                  | 27                                   |

\*Medication refers to administration of medications appropriate for specific clinical situations in the ED such as agitation, paranoia, and mania (i.e. Geodon, Ativan, Haldol, and Valium)

## Appendix B

**Table 2: Factorial ANOVA - CITAC Implementation and Patient Disposition on the Time to Disposition**

Dependent Variable: Time to Disposition

Bonferroni

| (I) Disposition   | (J) Disposition         | Mean<br>Difference (I-<br>J) | Std.<br>Error | Sig.  | 95% Confidence Interval |             |
|-------------------|-------------------------|------------------------------|---------------|-------|-------------------------|-------------|
|                   |                         |                              |               |       | Lower<br>Bound          | Upper Bound |
| Admit Voluntary   | Admit Involuntary       | -95.02                       | 37.387        | .080  | -196.54                 | 6.50        |
|                   | Home                    | 10.84                        | 38.789        | 1.000 | -94.49                  | 116.16      |
|                   | Transfer<br>Involuntary | -139.75*                     | 48.704        | .033  | -272.00                 | -7.50       |
| Admit Involuntary | Admit Voluntary         | 95.02                        | 37.387        | .080  | -6.50                   | 196.54      |
|                   | Home                    | 105.86*                      | 29.482        | .004  | 25.80                   | 185.91      |
|                   | Transfer<br>Involuntary | -44.73                       | 41.673        | 1.000 | -157.89                 | 68.43       |
| Home              | Admit Voluntary         | -10.84                       | 38.789        | 1.000 | -116.16                 | 94.49       |
|                   | Admit Involuntary       | -105.86*                     | 29.482        | .004  | -185.91                 | -25.80      |
|                   | Transfer<br>Involuntary | -150.59*                     | 42.935        | .005  | -267.17                 | -34.00      |
| Transfer          | Admit Voluntary         | 139.75*                      | 48.704        | .033  | 7.50                    | 272.00      |
| Involuntary       | Admit Involuntary       | 44.73                        | 41.673        | 1.000 | -68.43                  | 157.89      |
|                   | Home                    | 150.59*                      | 42.935        | .005  | 34.00                   | 267.17      |

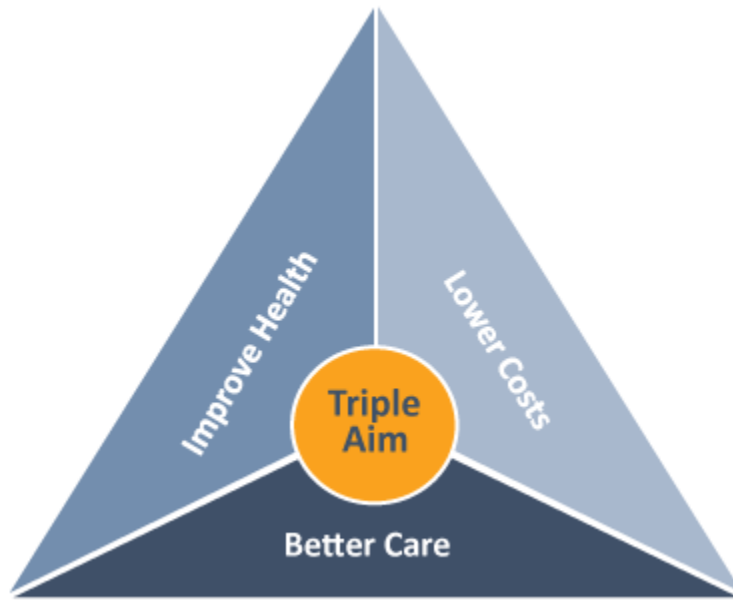
Based on observed means.

The error term is Mean Square (Error) = 12199.110.

## Appendix C

**Figure 1: Institute for Healthcare Improvement Triple Aim Initiative**

\*. The mean difference is significant at the 0.05 level.



<https://www.healthtechs3.com/solutions/clinical-quality/care-coordination/>

## Appendix D

**Figure 2: The Institute of Medicine's (IOM) Six Domains of Health Care Quality**

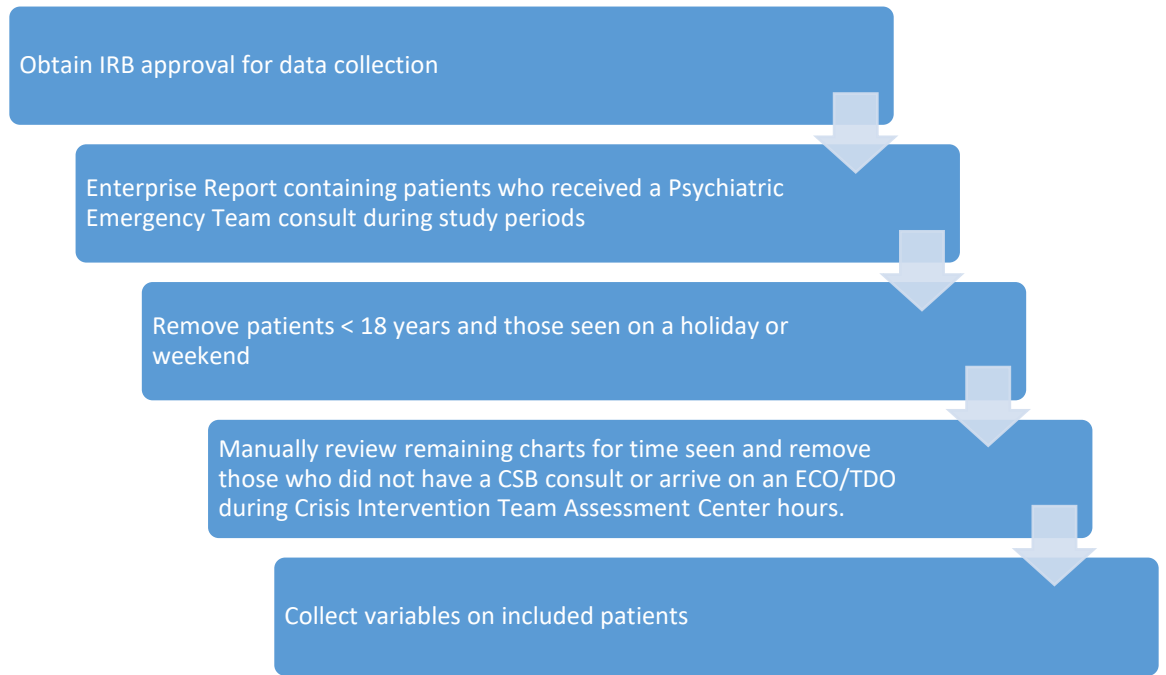
|                  |  |
|------------------|--|
| Safe             | Avoiding harm to patients  |
| Effective        | Avoiding underuse and misuse of services   |
| Patient-centered | Respectful care that is individualized to patient preferences, needs, and values |
| Timely           | Reducing waits and harmful delays  |
| Efficient        | Avoiding waste   |
| Equitable        | Quality care for all genders, ethnicities, regions, and socioeconomic statuses   |

Adapted from <https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/sixdomains.html>



### Appendix E

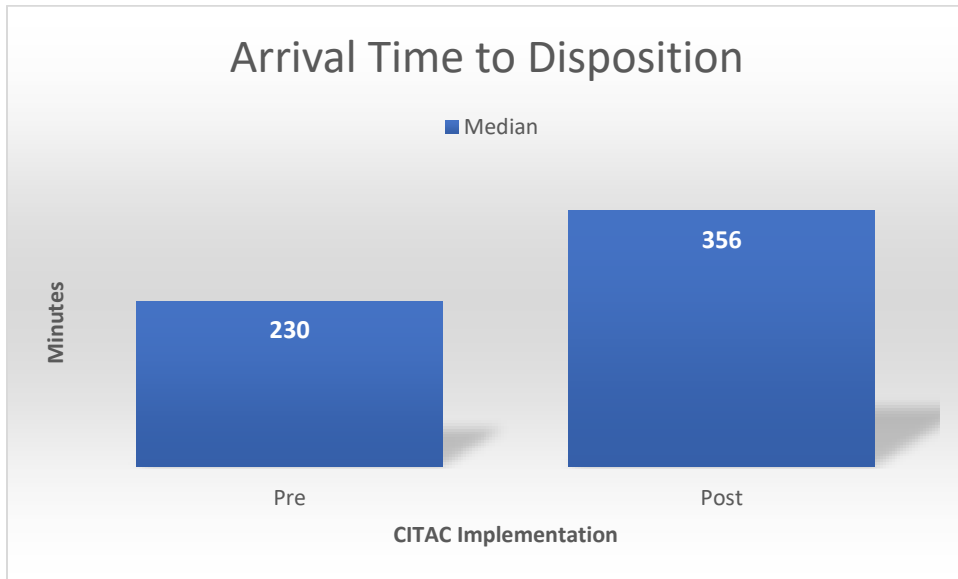
**Figure 3: Conceptual Timeline for Study Design**



### Appendix F

**Figure 4: Median Time from Arrival to Disposition Pre- and Post CITAC**

#### Implementation





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