Community Mental Health Journal (2019) 55:394–400
https://doi.org/10.1007/s10597-018-0296-y

BRIEF REPORT

# Association between clinical observations and a mobile crisis team's level of care recommendations

**John P. Muehsam**[1,2]

Received: 12 September 2016 / Accepted: 7 June 2018 / Published online: 9 June 2018


**Abstract**
Mobile mental health crisis programs are a widely used and valuable community resource. Literature analyzing the service, however, is sparse and descriptive in nature. This study uses multinomial logistic regression to analyze clinical data from a mobile crisis program in Pennsylvania over 12 months. 793 individuals recommended to various levels of care were analyzed. Clinical and demographic presentations were used as predictor variables and level of care recommendation as outcome variable. Several clinical presentations were found to increase the likelihood of various levels of care recommendations. These findings are discussed in light of current suicide intervention and data-driven practice.

**Keywords** Mental health · Crisis · Mobile crisis teams · Multinomial logistic regression · Practitioner-conducted research

## Introduction

Mobile mental health crisis programs are a widely used and valuable community resource. The literature analyzing and evaluating the service model, however, is relatively sparse and descriptive in nature (Lord and Bjerregaard 2014; Paton et al. 2016; Sjølie et al. 2010). This study analyzes clinical data gathered by the mobile crisis service (MCS) in a Pennsylvania suburban county from July 1, 2015 to June 30, 2016. With a population of 558,726 and a density of 3040 per square mile, the MCS catchment area is PA's 5th most populous and 2nd most dense county (U.S. Census Bureau 2010). Magellan Behavioral Health of Pennsylvania manages the HealthChoices contract for several regional suburban counties and holds quarterly meetings with MCS providers from three counties to share aggregate outcomes data and collaborate around best practices. The county has made substantive effort toward increasing dialogue between the mental health and criminal justice systems.

MCS provides support to children and adults experiencing mental health crisis 24 h a day, 7 days a week including holidays. Crisis services are provided for individuals wherever the crisis is happening within this PA suburban county. When dispatched to a community location, the team provides clinical interventions to help the individual and their natural supports (i.e., family, friends, neighbors, faith communities, etc.) stabilize the crisis situation, assess the individual for the level of care needed to provide ongoing crisis support, and facilitate the referral process to ensure individuals get the help they need.

The majority of relevant literature focuses on the European crisis resolution team model (CRT). In their literature review, Sjølie et al. (2010) identify two CRT foci: crisis resolution and home treatment. The crisis resolution aspect includes 24/7 operations, urgent response within 1 h, assessment within service users' natural environments, and next level of care referrals. This aspect is most relevant to MCS. The home treatment aspect utilizes a full multidisciplinary approach, maintains an on-going caseload which retains service users for up to 6 weeks, does daily service user review, and implements intensive in-home treatment and social service coordination throughout the service period.

The CRT literature is valuable in terms of the outcomes crisis service research tends to focus on. Sjølie et al. (2010), Paton et al. (2016), and Wheeler et al. (2015) note that the literature on outcomes is limited by methodological concerns. Hubbeling and Bertram (2012) reviewed the literature from the initiation of CRT in 2000 and found that while CRT can reduce hospital bed usage and costs, the evidence does not indicate that CRTs are the only way to do so. Jespersen

✉ John P. Muehsam
jpmuehsam@gmail.com

[1] Widener University, Chester, PA, USA

[2] 111 Elwyn Road, Phoenix Hall, Elwyn, PA 19063, USA

et al. (2016) reached a similar conclusion in their study of a CRT in Australia. Hunt (2012) used fidelity to the CRT model and decreased numbers of acute admissions as indicated by empty inpatient beds as outcomes. Peritogiannis et al. (2011) found that in the first 2 years of a mobile mental health unit (similar to CRT) operation in Northwestern Greece, the number of people who had never received mental health care before increased while the number of hospitalizations and relapse decreased.

Currier et al. (2010) is an American study on individuals who presented with suicidal ideation at the University of Rochester Medical Center. It was a rater-blinded, randomized controlled study of 120 people discharged from the emergency room. Participants were assigned follow-up contact with either a MCS or outpatient mental health. The study outcomes were a first contact with the assigned service after discharge, number of outpatient clinical contacts in the 6 months following discharge, and changes in depression and suicidality at 2 week and 3 month intervals. The MCS group was significantly more likely to have a first contact following discharge but there was no significant difference in the other two outcomes.

The following studies are particularly relevant to the current study because they use tests of association and prediction to describe the work they are analyzing. Lord and Bjerregaard (2014) used Chi square and logistic regression to analyze the partnership between law enforcement and a county-wide MCS in North Carolina, USA. They found that calls coming from law enforcement were significantly more likely than non-police calls to involve individuals with mood disorder, psychotic disorder, violence, intoxication, and needing to be placed in a setting other than their current setting. They found that calls coming from police were more likely ($OR = 1.59$, $p < 0.01$) to result in individuals being placed in settings other than their current setting and more likely to be placed in residential treatment compared to remaining in their current setting.

McGarvey et al. (2013) conducted a study of intake workers at crisis centers throughout the state of Virginia, USA. The study analyzed the relationship between the decision to take actions toward involuntary commitment and demographic and clinical presentations. They found that intake workers were more likely to initiate involuntary commitment if individuals were under the influence of drugs or alcohol ($OR = 2.14$, $p < 0.01$), it was unknown whether or not they were under the influence ($OR = 1.69$–$1.82$, $p < 0.01$), had psychotic symptoms ($OR = 5.34$–$5.62$, $p < 0.01$), were a danger to self ($OR = 6.75$–$6.65$, $p < 0.01$), a danger to others ($OR = 3.44$, $p < 0.01$), or had an inability to care for self ($OR = 6.89$–$7.01$, $p < 0.01$).

Hasselberg et al. (2013) studied 8 CRTs in Norway. The researchers used the Health of the Nation Outcome Scale (HoNOS) to operationalize the severity of clinical presentations. Among other things, the study analyzed the clinical features that predicted for inpatient admission. Individuals were less likely to be admitted if the CRT program operated extended hours (70/week $OR = 0.20$, $p = 0.001$; 75/week $OR = 0.36$, $p = 0.001$; 86/week $OR = 0.22$, $p < 0.001$) and were more likely to be admitted if the individual presented with passive death wish ($OR = 2.29$, $p = 0.005$), suicidal plan or self-injury without death intention ($OR = 6.88$, $p < 0.001$), or psychotic symptoms of increasing severity ($ORs = 2.33$–$30.83$, $ps = < 0.001$–$0.04$).

Cotton et al. (2007) studied three CRTs in the UK. Similar to Hasselberg et al. (2013), the researchers utilized the HoNOS to operationalize the severity of clinical presentations. They found that individuals were more likely to be admitted within 8 weeks of an initial CRT engagement if they had previous involuntary admissions ($OR = 2.64$, $p = 0.04$), presented with moderate to severe risk of unintentional self-harm (i.e., self-neglect) ($OR = 2.93$, $p = 0.004$), presented as uncooperative with the assessment ($OR = 10.25$, $p < 0.001$), were referred to the CRT from an emergency department ($OR = 3.12$, $p = 0.001$), or were referred outside usual office hours ($OR = 2.34$, $p = 0.03$). Individuals were less likely to be admitted within 8 weeks if they were older ($OR = 0.97$, $p = 0.04$).

Brooker et al. (2007) studied an afterhours emergency mental health assessment (EMAT) team in the UK whose purpose was not crisis resolution but rapid assessment and referral. Similar to the MCS in the current study, the EMAT engagements included assessment, single session intervention, and referral to other services as needed. The study used the HoNOS and the Crisis Triage Rating Scale (CTRS) to measure symptom severity. They found that those with greater symptom severity as measured by the CTRS (with lower scores indicating greater symptom severity) were more likely to be admitted ($OR = 0.71$, $p < 0.0001$) while those with greater symptom severity as measured by the HoNOS did not have a statistically significant odds ratio. The authors note, however, that there was significant co-linearity between the scales and the removal of the CTRS from the regression yielded a significant likelihood that higher scores on the HoNOS result in more admissions.

## Methods

This study is a secondary analysis of clinical data gathered by the mobile crisis service (MCS) from July 1, 2015 to June 30, 2016. A logistic regression model was used to answer the question "what, if any, clinical observations are associated with the team's level of care recommendations?"

The mobile team uses the CoCentrix Coordinated Care Platform (CCP) to document their clinical engagements. CCP is a flexible platform allowing for a relatively simple

transfer of raw clinical data into statistical software packages. The MCS assessment tools use drop-boxes and checkboxes amenable to aggregate quantitative analysis. The MCS has sought to ensure interrater reliability by creating a Clinical Application Document (CAD) which provides clinicians detailed instructions on how to use CCP in documenting their engagements. Using the CAD, the variables analyzed in this study were defined for clinicians who received training in how to use the electronic health record and on-going clinical supervision. Every record used in this study was also reviewed by a Masters level clinical supervisor for fidelity to the documentation protocols outlined in the CAD.

CCP prompts clinicians to indicate a level of care recommendation (LOC) for each individual served from a list of 18 possible dispositions after each engagement. A total of 1559 contacts were made with the MCS from 7/1/15–6/30/16. 1230 of these contacts resulted in an in-person clinical engagement. This study focuses only on LOC decisions involving leaving a person at home with additional supports or recommending one of several residential settings. As such, several disposition options were excluded from the analysis because they were difficult to align with the LOCs of interest to this study. After excluding these, the total number was 967 cases. This figure, however, represents the number of clinical engagements, not the number of individuals served. This is important because some individuals had more than one encounter with the MCS. A total of 795 individuals are included in this analysis, including 127 (representing 299 engagements) who were seen more than once and 668 who were seen only once. Of the 127 individuals seen more than once, 1 had 7 encounters, 1 had 6 encounters, 2 had 5 encounters, 6 had 4 encounters, 18 had 3 encounters, and 99 had 2 encounters whose LOC met the inclusion criteria. Only the first contact with individuals seen more than once was included in this analysis for a total $n = 795$.

Age, race (black, white, other), and gender (male, female) were used as control variables. Fifteen clinical observations were the predictor variables for this study: (1) homicidal ideation, (2) aggressive behaviors, (3) agitation/extreme anxiety, (4) recent drug and alcohol abuse, (5) history of drug and alcohol abuse but no recent abuse, (6) dementia, (7) depression, (8) domestic disputes, (9) self-injurious behavior, (10) inability to care for self, (11) medical issues, (12) psychotic symptoms, (13) intellectual disability, (14) repeater, and (15) suicidal ideation. The first 13 variables are self-explanatory. The repeater variable was used for anyone seen by the MCS more than once during the study period, whether or not the encounter itself met the LOC inclusionary criteria (see below). Suicidal ideation was measured using the Columbia-Suicide Severity Rating Scale (C-SSRS) (Posner et al. 2009). The C-SSRS is a widely used screening tool used to identify suicidality and self-injurious behaviors. Posner et al. (2011) found that the C-SSRS is suitable for assessment of suicidal ideation and behavior in clinical and research settings. It has good convergent and divergent validity with other scales and is highly sensitive to specific suicidal classifications and change over time. This study utilized the intensity of ideation subscale, which screens for lifetime and recent suicidal ideation, method, intent, and plan. Affirmative answers to later questions in the scale presuppose affirmative answers to earlier questions in the scale (for example, if an individual indicates that they have suicidal thoughts with a vague method, they will also have indicated earlier that they have suicidal thoughts). The scale's range is 0–6 with higher numbers indicating more intense suicidal ideation (0 = not suicidal, 1 = death wish, 2 = suicidal thoughts, 3 = suicidal thoughts with vague method, 4 = suicidal thoughts with vague method and intent, 5 = suicidal thoughts with specific plan, and 6 = suicidal thoughts with specific plan and intent). Internal reliability testing found that the scale has good reliability (Cronbach's $\alpha = 0.85$).

The outcome variable is level of care recommendation (LOC). The 795 cases analyzed in this study include the following dispositions: (1) no referral needed, (2) crisis specialist assigned, (3) extended assessment, (4) children and youth services, (5) drug and alcohol outpatient, (6) mental health outpatient, (7) crisis residential program, (8) drug and alcohol residential rehabilitation, (9) voluntary psychiatric hospitalization, and (10) involuntary psychiatric hospitalization. These dispositions were incorporated into a LOC variable with the following values: 0 = home with supports (including numbers 1–6 above), 1 = voluntary subacute facility (including numbers 7–8 above), 2 = voluntary psychiatric hospital (number 9 above) and 3 = involuntary psychiatric hospital (number 10 above).

It is valuable to know whether or not individuals are actually admitted to the LOCs recommended by the team. However, no statistically significant regression models could be generated to analyze the relationships between clinical and demographic presentations and whether or not an individual was admitted. Though not included in the logistical regression, descriptive statistics on whether or not individuals were actually admitted are nonetheless included below. MCS has a follow-up protocol in place wherein clinicians inquire whether or not the agency to which individuals were referred actually admit them. The clinician indicates "yes" or "no" to the item "disposition satisfied" based upon the outcome of that follow-up contact.

IRB approval was obtained by Elwyn's Human Rights Committee on 8/4/16. As a secondary review of existing clinical data, no consent was obtained for the study. All products disseminated from this research maintain confidentiality of the participants by de-identifying all personal information in accordance with the U.S. Department of Health & Human Services Office for Civil Rights (2012). The author

is employed by the MCS studied. There are no other known conflicts of interest. The author certifies responsibility for all contents of this manuscript.

## Results

793 unduplicated cases were analyzed (2 were excluded because they were missing age data). The youngest person was 3 years old and the oldest 95. The mean age was 32.0 ($SD = 20.3$), median age was 27, and mode was 16 (42 individuals). 268 (33.7%) were black, 431 (54.2%) white, and 96 (12.1%) another racial category. 389 (48.9%) were female and 406 (51.1%) male. 161 (20.3%) received more than one MCS service during the study period and 634 (79.7%) received only one. 34 (4.3%) had homicidal ideation, 221 (27.8%) had aggressive behaviors, 365 (45.9%) had agitation/extreme anxiety, 97 (12.2%) had recent drug and alcohol abuse, 41 (5.2%) had a history of drug and alcohol abuse but no recent abuse, 12 (1.5%) had dementia, 395 (49.7%) had depression, 161 (20.3%) had domestic disputes, 73 (9.2%) had self-injurious behavior, 73 (9.2%) had inability to care, 42 (5.3%) had medical issues, 157 (19.7%) had psychotic symptoms, and 45 (5.7%) had intellectual disabilities. The means C-SSRS score was 0.96 ($SD = 1.57$). This included 490 (61.6%) with no suicidality, 127 (16.0%) with a death wish, 47 (5.9%) with suicidal thoughts (ST), 50 (6.3%) with ST and vague suicidal method, 35 (4.4%) with ST, vague method and intent, 27 (3.4%) with ST and specific suicidal plan, and 19 (2.4%) with ST, specific plan and intent.

The MCS LOC recommendations for the sample were as follows: 449 (56.5%) remain home with supports, 38 (4.8%) voluntary subacute facility, 235 (29.6%) voluntary psychiatric hospital, and 73 (9.2%) involuntary psychiatric hospital. Of those recommended for voluntary subacute, 28 (73.7%) were actually admitted. Of those recommended for voluntary psychiatric hospital, 131 (55.7%) were actually admitted. Of those recommended for involuntary psychiatric hospital, 57 (78.1%) were actually admitted. Associations between the predictor variables and whether or not individuals were admitted to the recommended LOCs were individually tested using Chi square or Fisher's exact test (for categorical variable) and independent t-tests or Mann–Whitney U tests (for continuous variables). With the exceptions of domestic disputes for subacute and psychotic symptoms for involuntary hospital, no statistically significant associations or differences of means were found for those admitted or not admitted.

SPSS version 22 was used to run a multinomial logistic regression (MLR) on the data. MLR enables the researcher to specify which predictor variables increase or decrease the likelihood of being in one category of the outcome variable compared to an excluded category (Petrucci 2009). There was no multicollinearity between the predictor variables (all VIFs < 3). The continuous variables age ($p = 0.004$, 0.125, 0.186, 0.053 respectively) and C-SSRS ($p = 0.013$, 0.996, 0.370, 0.092 respectively) were linearly related to the logit of each category of the LOC variable (assuming statistical significant at $p < 0.00238$ by applying a Bonferroni correction to all terms in the model (Tabachnick and Fidell 2012)). There were 66 studentized residuals with a value > 2.5 (ranging from 2.50 to 10.16 standard deviations). These could not be excluded without creating more outliers, so they were kept in the analysis.

Using home with supports as the reference category, the MLR model was statistically significant, $\chi^2 = 348.17$, $df = 57$, $p < 0.001$. This model explained 40.5% (Nagelkerke $R^2$) of the variance in MCS LOC recommendations and correctly classified 67.0% of cases. Of the 19 predictor variables, 13 were statistically significant for at least one category of the outcome variable. Individuals were more likely to be recommended for a subacute facility rather than home with supports if they were older ($OR = 1.04$, $p < 0.001$), had recent drug and alcohol ($OR = 3.95$, $p = 0.002$), intellectual disability ($OR = 5.17$, $p = 0.02$), or increased scores on the C-SSRS ($OR = 1.32$, $p = 0.02$). Individuals were more likely to be recommended for voluntary hospitalization rather than home with supports if they were seen more than once ($OR = 2.40$, $p < 0.001$), had homicidal ideation ($OR = 7.37$, $p < 0.001$), self-injurious behaviors ($OR = 3.57$, $p < 0.001$), inability to care ($OR = 3.65$, $p < 0.001$), psychotic symptoms ($OR = 3.67$, $p < 0.001$), or increased scores on the C-SSRS ($OR = 1.66$, $p < 0.001$) and were less likely if they were female ($OR = 0.59$, $p = 0.01$) or had domestic disputes ($OR = 0.55$, $p = 0.02$). Individuals were more likely to be recommended for involuntary hospitalization rather than home with supports if they were older ($OR = 1.03$, $p = 0.001$), were seen more than once ($OR = 2.68$, $p = 0.01$), had homicidal ideation ($OR = 7.56$, $p = 0.002$), aggressive behaviors ($OR = 5.34$, $p < 0.001$), self-injurious behaviors ($OR = 5.33$, $p = 0.001$), inability to care ($OR = 12.92$, $p < 0.001$), medical issues ($OR = 4.74$, $p = 0.003$), psychotic symptoms ($OR = 7.00$, $p < 0.001$), or increased scores on the C-SSRS ($OR = 1.42$, $p = 0.004$).

## Discussion

Hasselberg et al. (2013) note that studies on the type of service described here are sparse and most are from the UK. The authors call for similar studies from other countries. This study is an American contribution to that knowledge base with results similar to those found by other researchers (Brooker et al. 2007; Cotton et al. 2007; Hasselberg et al. 2013; McGarvey et al. 2013). The current literature is such that studies tend to be descriptive in nature and efforts to

quantify meaningful outcomes are fraught with methodological issues. This may be related to the complex nature of mental health crisis from both individual and systems perspectives. There is still work to do in defining and quantifying meaningful outcomes. The present study does not advance that goal but is itself descriptive in nature.

The analysis described in this paper indicates a number of clinical observations associated with the LOC recommendations made by the MCS. The analysis identified little about what clinical observations are associated with whether or not individuals recommended to the LOCs are actually admitted or not. Other researchers have used tests of association and prediction to describe work similar to MCS. Of the literature reviewed, most studies analyzing the relationship between demographic/clinical presentations and some outcome (usually admitted or not) use binary logistic regression with an dichotomous outcome variable. To my knowledge, there are no studies using MLR to distinguish between various residential treatment options. A Google Scholar search using the terms "multinomial logistic regression" and "mental health crisis" yielded no comparable studies. The MLR model is valuable, however, in that it accounts for multiple categories within the outcome variable while binary models can only differentiate between two categories. Given the fact that there are many LOCs available to individuals experiencing mental health crisis, a model which is able to account for multiple options is preferable.

It may be questionable whether drug and alcohol rehabilitation facilities and crisis residential programs should be included in the same category (voluntary subacute facilities). This decision was due to the relatively low number of cases referred to those LOCs compared with the other three categories in the LOC variable. The LOCs are relevantly similar in that they are both non-medical, voluntary, unlocked units. They are dissimilar, however, in that drug and alcohol facilities focus primarily on addiction and crisis residential programs focus primarily on mental health. Their combination into a single disposition category is nonetheless warranted given the higher proportion of both mental illness and suicidality among individuals with substance use disorders (SUD) versus those without SUD (Substance Abuse and Mental Health Services Administration 2017). There is overlap between addiction and mental health, though the specialization of these facilities may exaggerate the number of clinical observations associated with the category as this study defines it. This is the reason, for example, that the analysis found a statistically significant odds ratio for the recent drug and alcohol independent variable associated with the voluntary subacute category of the outcome variable.

The findings on the suicidality variable are worth particular consideration. As would be expected, the C-SSRS was a significant predictor for all "higher" levels of care considered here. Even though the LOC variable is categorical rather than ordinal (the variable could not support an ordinal analysis), it is still conceptually ordinal in that each level does actually represent a more restrictive LOC. We might expect that with increasing intensity of suicidal ideation we would find a corresponding increase in the level of restrictiveness needed to support the individual. It is interesting that increased suicidality does indeed predict a greater likelihood to use a subacute facility rather than staying at home (32% more likely for every unit increase in suicidal intensity) and an even greater likelihood to use a voluntary hospital rather than staying at home (66% for every unit increase). But the trend does not continue into involuntary hospital (42% for every unit increase) but rather goes down slightly from that of voluntary hospital. Compared to staying home with supports, a person is 66% more likely to be recommended for voluntary hospitalization for every C-SSRS unit increase but only 42% more likely to be recommended for involuntary hospitalization for every unit increase.

This observation should be interpreted cautiously. These findings do not specifically indicate that suicidal individuals are more likely to use voluntary rather than involuntary hospitalization. MLR only assesses the likelihood that a predictor increases or decreases each category of the outcome variable in comparison to an excluded category (in our case, home with supports was the comparison). As a matter of fact, the model was run (though not reported) using both voluntary and involuntary hospitalization as the comparison groups and did not yield a statistically significant odds ratio for the C-SSRS when comparing the voluntary and involuntary categories.

Nonetheless, the observation is interesting from the standpoint of suicide intervention literature. Suicide intervention often emphasizes the importance of developing a therapeutic, collaborative alliance with individuals at risk for suicide which balances the individual's autonomy and responsibility (Fowler 2013). Commitment laws generally use the criteria of clear and present danger to self or others to guide the involuntary commitment process. While involuntary commitment may be needed at times, most would agree that voluntary options have a greater tendency to foster a therapeutic, collaborative relationship with individuals at risk. This analysis found that of the three non-home LOCs, voluntary hospital had the greatest odds ratio compared to home with supports.

Although the analyses in this paper are preliminary and subject to methodological limitations, the findings are encouraging as potential steps toward more sophisticated use of clinical data in planning better outcomes. A substantive limitation of this study has been the large number of predictor variables included in the analyses. The number may have contributed to the presence of many outliers, lack of significance, and cautious interpretation.

The challenge is that mental health crisis is a complex construct and understanding if identifiable clinical presentations predict LOC needs is therefore complicated. What is more, the MCS records include more clinical data than what has been included in these analyses. As a matter of fact, we could argue that apart from the C-SSRS, the independent variables included in this study are not clinical observations in themselves. They are the clinicians' assessment of what other clinical observations, not included in these analyses, seem to indicate. It may be that future research will be able to operationalize a more manageable number of clinical presentations by using data reduction methods to decipher underlying constructs within the vast amount of clinical data included in each record.

A strength of the Brooker et al. (2007), Cotton et al. (2007), and Hasselberg et al. (2013) studies is that they used scales to operationalize the severity of symptom presentations. The present study would have been stronger if comparable scales had been available to define symptom severity. The electronic health record MCS currently uses only allows clinicians to indicate whether or not the clinical presentations are present. From both an operational and research standpoint, it may be beneficial to modify the current health record platform to include something like the HoNOS severity indexes for each of the clinical presentations studied here. Such a modification could add specificity to the severity of the predictor variables such that future analyses may be more informative.

As human service organizations move toward an increasing emphasis on data-driven practice, it is important to recognize that the main task before us is not to accumulate data, but to understand what data is important and what it means for practice. Mental health crisis is a complex issue and the state of the literature is such that it is not clear what service providers need to do in order to best support individuals and communities in dealing with it. As an example of practitioner-conducted research (DeFraia 2015), this study has two essential goals: advance the knowledge base around crisis services and promote reflective practice. The goal of advancing the knowledge base is accomplished by publishing these findings for the on-going work of the research community. The goal of promoting reflective practice is achieved by providing a meaningful feedback loop for our mobile crisis team. MCS clinicians make critical decisions that impact the community and individuals served on a daily basis. The nature of the work is such that clinicians need to function with a high degree of independence and with good problem solving skills. Analyses such as this, however, can support that work by providing clinicians with a feedback loop to understand what they themselves are doing as an aggregate.

## References


Brooker, C., Ricketts, T., Bennett, S., & Lemme, F. (2007). Admission decisions following contact with an emergency mental health assessment and intervention service. *Journal of Clinical Nursing, 16*(7), 1313–1322.

Cotton, M., Johnson, S., Bindman, J., Sandor, A., White, I. R., Thornicroft, G., Nolan, F., Pilling, S., Hoult, J., McKenzier, N., & Bebbington, P. (2007). An investigation of factors associated with psychiatric hospital admission despite the presence of crisis resolution teams. *BCM Psychiatry, 7*(52), 1–11.

Currier, G. W., Fisher, S. G., & Caine, E. D. (2010). Mobile crisis intervention to enhance linkage of discharged suicidal emergency department patients to outpatient psychiatric services: A randomized controlled trial. *Academic Emergency Medicine, 17*(1), 36–43.

DeFraia, G. (2015). Knowledge Consumption to Knowledge Generation: Traveling the Road of Practitioner-Conducted Research. Social Work in Mental Health, 13(6), 515–531.

Fowler, J. C. (2013). Core principles in treating suicidal patients. *Psychotherapy, 50*(3), 268–272.

Hasselberg, N., Gråwe, R., Johnson, S., Šaltytė-Benth, J., & Ruud, T. (2013). Psychiatric admissions from crisis resolution teams in Norway: A prospective multicentre study. *BMC Psychiatry, 13*(1), 1–11.

Hubbeling, D., & Bertram, R. (2012). Crisis resolution teams in the UK and elsewhere. *Journal of Mental Health, 21*(3), 285–295.

Hunt, S. (2012). The effectiveness of crisis resolution home treatment. *Mental Health Practice, 15*(10), 26–28.

Jespersen, S., Lawman, B., Reed, F., Hawke, K., Plummer, V., & Gaskin, C. J. (2016). The impact of integrating crisis teams into community mental health services on emergency department and inpatient demand. Psychiatric Quarterly, Feb 13.

Lord, V., & Bjerregaard, B. (2014). Helping Persons with Mental Illness: Partnerships between Police and Mobile Crisis Units. *Victims & Offenders, 9*(4), 455–474.

McGarvey, E. L., Leon-Verdin, M., Wanchek, T. N., & Bonnie, R. J. (2013). Decisions to initiate involuntary commitment: The role of intensive community services and other factors. *Psychiatric Services, 64*(2), 120–126.

Paton, F., Wright, K., Ayre, N., Dare, C., Johnson, S., Lloyd-Evans, B., Simpson, A., Webber, M., & Meader, N. (2016). Improving outcomes for people in mental health crisis: A rapid synthesis of the evidence for available models of care. *Health Technology Assessment, 20*(3), 1–162.

Peritogiannis, V., Mantas, C., Alexiou, D., Fotopoulou, V., Mouka, V., Hyphantis, & T (2011). The contribution of a mobile mental health unit to the promotion of primary mental health in rural areas in Greece: A 2-year follow-up. *European Psychiatry, 26*(7), 425–427.

Petrucci, C. J. (2009). A primer for social work researchers on how to conduct a multinomial logistic regression. *Journal of Social Service Research, 35*, 193–205.

Posner, K., Brent, D., Lucas, C., Gould, M., Stanley, B., Brown, G., Fisher, P., Zelazny, J., Burke, A., Oquendo, M., & Mann, J. (2009). *Columbia-Suicide Severity Rating Scale (C-SSRS): Lifetime recent—Clinical*. New York, NY: The Research Foundation for Mental Hygiene, Inc.

Posner, K., Brown, G. K., Stanley, B., Brent, D. A., Yershova, K. V., Oquendo, M. A., Currier, G. W., Melvin, G. A., Greenhill, L., Shen, S., & Mann, J. J. (2011). The Columbia–Suicide Severity Rating Scale: Initial validity and internal consistency findings from three multisite studies with adolescents and adults. *American Journal of Psychiatry, 168*(12), 1266–1277.

Sjølie, H., Karlsson, B., & Kim, H. S. (2010). Crisis resolution and home treatment: Structure, process, and outcome—A literature review. *Journal of Psychiatric & Mental Health Nursing, 17*(10), 881–892.

Substance Abuse and Mental Health Services Administration (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/.

Tabachnick, B. G., & Fidell, L. S. (2012). *Using multivariate statistics* (6th edn.). Old Tappan, NJ: Allyn & Bacon.

U.S. Census Bureau. (2010). Profile of general population and housing characteristics. Retrieved from http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Department of Health & Human Services Office for Civil Rights. (2012). Guidance regarding methods for de-identification of protected health information in accordance with the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule." Retrieved from http://www.hhs.gov/hipaa/for-professionals/privacy/special-topics/de-identification/index.html.

Wheeler, C., Lloyd-Evans, B., Churchard, A., Fitzgerald, C., Fullarton, K., Mosse, L., Paterson, B., Zugaro, C. G., & Johnson, S. (2015). Implementation of the Crisis Resolution Team model in adult mental health settings: A systematic review. *BMC Psychiatry, 15*, 74.