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CENTER FOR HUMAN SERVICES RESEARCH
UNIVERSITY AT ALBANY State University of New York

**The Capital Region Child and Adolescent
Mobile Crisis Team (CAMT)
Operated by Parsons Child and Family Center:**

An Evaluation for the Period April 1, 2009-March 31, 2010

January 2011

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This report is a publication of the Center for Human Services Research (CHSR), a unit of the School of Social Welfare, University at Albany, SUNY. CHSR is co-directed by Rose Greene, Public Service Professor, and Lynn Warner, Associate Professor. The logic model was developed by LuAnn McCormick, CHSR Senior Research Scientist. CHSR research assistants, Qiang Chen (School of Social Welfare PhD student), Jennifer Perella (Department of Psychology PhD student) and Noele Brabon (MSW student) helped with data collection, entry and preliminary analyses. Richard Johnson, Sharon Cohen, and Casey Tedesco of the Capital Region Child and Adolescent Mobile Team were instrumental to the implementation of the study.

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An Evaluation of the Capital Region Child and Adolescent Mobile Crisis Team (CAMT) Operated by Parsons Child and Family Center

Executive Summary

The primary mission of the Capital Region Child and Adolescent Mobile Crisis Team (CAMT) operated by Parsons Child & Family Center is to serve children and their families in behavioral, psychiatric or emotional distress by going where the crisis is occurring and intervening immediately and effectively to prevent unnecessary use of more restrictive and costly levels of care. CAMT serves any child or adolescent between 4 and 20 years of age residing in Albany, Rensselaer and Schenectady Counties who is experiencing a crisis, regardless of diagnosis or system involvement. The three counties span over 1,300 square miles, with a combined population of 605,994 (U.S. Census Bureau, 2010).

Evaluation purpose

Since its inception in 2007, CAMT has endeavored to use the best available evidence to inform all aspects of program delivery. Consistent with that goal, CAMT approached the Center for Human Services Research (CHSR), University at Albany, to conduct a systematic and independent evaluation of its services for the period April 1, 2009 through March 31, 2010. The evaluation was designed to validate CAMT's methods and inform its quality improvement efforts through identification of best practices and analysis of program data. Three inter-related questions motivated the evaluation:

- To what extent are CAMT services compatible with best practices?
- How effective are CAMT services in preventing hospitalizations and fostering post-crisis linkage with community-based supports?
- Is CAMT a cost-effective service?

Evaluation methods and procedures

- *Literature Review.* Electronic databases (i.e., Psychinfo, Medline), government agency web-sites, and Google Scholar were searched using systematic terms related to child and adolescent crisis services. Peer-reviewed and non-peer reviewed reports, empirical studies and guidelines for best practices were obtained and summarized.
- *Development of a logic model.* To answer the evaluation questions about CAMT as a best practice model, areas for improvement, and cost-effectiveness the critical CAMT components (e.g., inputs and activities) and their connections to program outcomes were specified in the form of a logic model.
- *Inventory of data sources and indicators.* CHSR compared the activities and outcomes specified in the logic model with available data in CAMT's telephone call tracking database and case files to develop a data collection plan.
- *Data collection and analysis.* CHSR developed a data collection form to record information from case files, the main source of information about the extent and success of efforts to establish community linkages. Research assistants extracted data from case

files of a random sample of 100 youth who received a mobile visit between April 1, 2009 and March 31, 2010. These data were merged with CAMT's tracking database, which contained data related to crisis assessment and crisis disposition. A de-identified version of this dataset was provided to CHSR for analysis. Responses to family and provider satisfaction surveys from the year 2009 were collected and analyzed as well. All analyses were conducted with Excel and SPSS.

- *Cost-effectiveness analysis (CEA)*. The CEA in this evaluation is framed from the perspective of the community and the outcome used to assess treatment effectiveness is prevention of hospitalization for CAMT relative to two other plausible crisis responders in the Capital Region: police and the Albany Mobile Crisis Team (MCT). Estimates of the strategies' costs and effects were informed by a mixture of program data obtained for the evaluation, and in the absence of data, assumptions based on empirical evidence from reliable sources such as peer-reviewed publications or government-maintained data sources.

Evaluation findings

- *CAMT is compatible with consensus-based recommendations*. It is widely assumed that mobile crisis programs, whether targeted at adults, or children and adolescents, have beneficial effects. However, research-informed evidence about the viability and impacts of a youth-focused mobile crisis teams is currently lacking. Given the limited empirical evidence about mobile crisis in general, and about child and adolescent mobile crisis in particular, policy makers and service providers can rely on guidelines developed by children's mental health services experts along with consensus-based recommendations.

A comparison between these recommendations and CAMT procedures confirms that CAMT meets or exceeds the majority of criteria believed to be responsible for program success. These criteria include: flexible, adaptable, competent and highly skilled staff with adequate training; comprehensive screening telephone assessments; written protocols for determining safety risk; face-to-face response within one hour; two person teams for face-to-face contact; outpatient appointments within one week, and; data collection and quality assurance procedures.

There are two areas where CAMT services diverge from recommended mobile crisis standards. First, CAMT is not available 24 hours/7 days a week, although there is a plan to phase-in expanded hours of operation. Second, although CAMT case files demonstrate substantial time and effort devoted to facilitating linkage with community supports, this data is not entered into the call tracking database. If it were, CAMT would be squarely in line with the recommendation to establish and monitor performance targets related to post-crisis activities.

- *CAMT effectively prevents youths' psychiatric hospitalization and promotes post-crisis linkage with community-based support*. Of the 738 calls received between April 1, 2009 and March 31, 2010, slightly more than half (54%) resulted in a mobile visit, and 39% of calls were triaged by telephone. During the study period, CAMT was unable to respond to 7% of the calls because the team was assisting another family.

Safety plan was the disposition for the majority of calls (82.8%) at the time CAMT left the site of the crisis, and 5.1% were referred to psychiatric inpatient. The others (12.1%) were referred to psychiatric evaluation or emergency room/psych evaluation; 7 of these youth were subsequently hospitalized. Additionally, 3 of the 82 youth whose disposition was “safety plan” were hospitalized within two days of the crisis intervention. Thus, the total hospitalization rate was 15.2%, and the overall diversion rate was 84.8%. The diversion rate includes CAMT’s interventions at the Albany Medical Center Emergency Room. The hospitalization rate is considerably lower than those reported in studies for other types of crisis interventions, and lower than the 26.1% of youth who were hospitalized after presenting to CDPC during the same period as this study’s.

Most youth (77.8%) were involved with at least one service at the time of the crisis (mean number of services was 2.04). CAMT facilitated an average of 0.5 new services for these youth, and spent on average 5.6 days doing so. The new service often involved support services for family members. Additionally, CAMT facilitated linkage with a community-based provider for all but 2 of the 22 youth who were not involved with a service at the time of the mobile visit; both of these youth were moving out of the area (one to another country and one to another state).

Family and providers satisfaction survey data reinforce the quantitative data. CAMT is perceived very positively; the majority of both family and providers who gave feedback indicated that the CAMT intervention is effective and helpful and the team is sensitive and professional in delivering the service.

- *CAMT is a cost-effective service.* The cost analysis compared the effects of a CAMT intervention to those of two other plausible crisis responders in the Capital Region: police and the Albany Mobile Crisis Team (MCT). The results show that CAMT is more cost effective than both of these other options; the incremental cost effectiveness estimates per hospitalization prevented range between \$8,000 and \$9,000.

Conclusion and Recommendations

The evaluation provides evidence that CAMT activities and processes are well-aligned with program goals. Moreover, CAMT operations are consistent with those of well-regarded mobile crisis services in other areas of the country, and with consensus-based recommendations about crisis services for children and adolescents. CAMT successfully meets the program goals of reducing unnecessary psychiatric hospitalizations and facilitating linkages to community-based supports among youth who experience behavioral, psychiatric or emotional crisis. Finally, based on available data, it meets the program goal of reducing hospitalizations in a cost-effective way.

Given the positive evaluation of current CAMT services, we provide recommendations related to (a) program operations that may be particularly salient as CAMT moves to expand its hours of operations, (b) the specification of performance indicators, and (c) quality assurance

and evaluation. These recommendations are informed by the analysis and literature review. We conclude with suggestions for future research.

Program operations

- **Anticipate and prevent staff burnout.** According to experiences reported by other 24-hour mobile crisis teams, extended hours means staff will have to work during nights and weekends. Additional pay for less desirable shifts, flexibility in work schedules, and team-building activities may help prevent burnout or turnover due to both the challenges of crisis work, and disruptive work hours.
- **Conduct outreach with other community agencies.** Extended hours are likely to mean that there will be some periods with low numbers of calls. During these slow periods staff time could be devoted to conducting outreach with other community agencies.
- **Develop special protocols for intensive users of CAMT (“multiple call” youth).** The phenomenon of intensive use of services by a relatively small, but expensive, proportion of clients is typical of behavioral health service systems. However, what proportion of a crisis service caseload should be expected to be repeat users, and what is the definition of a multiple user? For example, should two calls within one week constitute separate crisis episodes, thereby potentially labeling a youth a “multiple caller”? In the absence of a clear definition, CAMT may nevertheless want to develop special protocols for intensive users to best address the needs of these especially vulnerable youth, and to ensure appropriate use of crisis services.

Performance indicators

CAMT might want to establish its own performance indicators and then track performance accordingly. If CAMT can provide evidence of how it is meeting relevant benchmarks, its efforts to secure continued support from current CAMT services funders and new resources from potential funders (e.g., insurers) are more likely to be successful. Additionally, performance targets facilitate internal quality assurance efforts. Specific performance targets for CAMT’s consideration are:

- **Mobility rate** (the proportion of calls that result in a mobile visit): A mobile response rate of 100% of calls received is not recommended, but if service aims to be responsive to crises as they occur in the community, the expectations for mobility should be high. For this indicator to be meaningful, a consistent standard for defining what constitutes a “call” for a crisis intervention must be developed. Calls that are for information and referral only, or are placed by persons who have misconceptions about the service (e.g., they are calling in search of a respite bed), should be recorded, but because they are not emergency calls they should not be considered in analyses that calculate mobility rates.
- **Service indicators** should include acuity level and diagnosis of child, with benchmarks set so as to reinforce that mobile visits are for the youth in most danger of hurting themselves or others.

- **Outcome indicators** should include diversions from emergency department and juvenile justice and rates of community based service linkage. CAMT may want to consider setting different benchmarks for rates of community based service linkage for youth who have pre-existing relationships with providers and those who do not. Other indicators related to service linkage could include type of service referral made and time from referral to family engagement.
- **Program sustainability indicators** might include staff training activities or outreach activities to community agencies.

Quality assurance and evaluation

- **Develop a quality improvement action plan.** CAMT may want to prioritize two or three key performance indicators to target for continuous quality improvement. The action plan should specify the targeted indicator, the plan for action on how to improve performance on that indicator, the time frame for the plan of action, and the expected outcome at the end of specified time frame.
 - The timing of the planned expansion of CAMT hours should be factored into the choice of performance targets. For example, mobility rates may be of immediate interest when the hours expand, and any performance indicators related to multiple call youth may be a priority after expansion has occurred.
- **Expand call tracking database.** The implementation of a quality improvement plan depends on having access to the right data for any given performance indicator. The current CAMT data system is well-suited to inform performance related to youth characteristics and call disposition. Information about all of the post-crisis activities that CAMT engages in to support vulnerable youth in the community can currently be obtained only by the time-consuming method of reading case files. Although more data entry is potentially burdensome, the inclusion of a handful of well-defined additional items may substantially enhance CAMT's continuous quality improvement efforts.
- **Consider investing in additional program evaluation.** The present evaluation focused on investigating the effect of CAMT on hospitalization and facilitation of clients' connections to community-based supports. Other outcomes that CAMT expects to see, such as less use of police and ambulance, less stressful escort experience for youth and family, reduced stress on youth and family, and reduced school missed due to behavioral crisis were not directly assessed. To do so requires investment in data collection as follows:
 - Follow-up phone calls in the cases where CAMT was unable to respond because it was serving another family would shed light on what callers did to help the youth (i.e., call police, ambulance) and what happened (i.e., resolution with or without hospitalization, arrest). CAMT may want to include this activity as one of the tasks for staff to complete during periods with low numbers of calls.
 - Stress on youth and family could be obtained in answers to new questions on satisfaction surveys, or in qualitative interviews with prior service recipients. Attempts to interview families who did not provide completed satisfaction

surveys may yield important insights. These conversations could be scheduled by CAMT staff, but conducted by a researcher to minimize respondents' social desirability bias.

Additional research on CAMT effectiveness compared to other responders could be used to validate and expand the cost-effectiveness results reported here. Data would need to be collected on police involvement (e.g., how many calls do they receive related to children and adolescents experiencing behavioral, psychiatric or emotional distress; how often do the police call CAMT or MCT when they receive these calls; how often do they transport to ER or CDPC); MCT involvement (e.g., how many calls do they receive related to children and adolescents experiencing behavioral, psychiatric or emotional distress; how often does MCT call the police or CAMT; how often does MCT transport the youth to CDPC), and rates of hospitalization when various responders are involved. This data collection could be done by CAMT staff, or perhaps student interns.

Dissemination of evaluation findings

Given the paucity of empirical studies of mobile crisis interventions for youth and adolescents, the findings from this evaluation are likely to be of great interest to policy makers, program directors, and researchers alike. Attendees at professional conferences are likely to be most interested in the cost-effectiveness results, and specific descriptive information about program delivery, including activities that lead to successful outcomes (i.e., lower rates of hospitalization). Peer-reviewed journals are likely to be most interested in a comparison of needs and outcomes between youths who receive telephone triage versus a mobile visit, or between youths who are intensive users of the crisis service compared to youths who receive a mobile visit only. Continued collaboration between CAMT and CHSR to disseminate the findings in multiple venues will help advance the field considerably.

I. Introduction and Overview

This report presents findings from an evaluation of the Capital Region Child and Adolescent Mobile Crisis Team (CAMT) operated by Parsons Child & Family Center, conducted by the Center for Human Services Research (CHSR) from January 2010 through December 2010. The evaluation focuses on determining (a) the extent to which CAMT services are compatible with best practices, (b) the outcomes CAMT achieves regarding its goals of hospitalization prevention and facilitation of post-crisis linkage with community-based supports, and (c) the cost-effectiveness of CAMT. The report is divided into five major sections:

1. Introduction and Overview – A brief history of CAMT precedes the purpose of the evaluation.
2. Evaluation Methods and Procedures – This section describes the methodologies used, including the literature review process, the development of a logic model, data collection and analysis techniques, and IRB review.
3. Literature and Best Practices Review – Given limited empirical evidence about mobile crisis in general, and about child and adolescent mobile crisis in particular, this section emphasizes the guidelines developed by children’s mental health services experts along with consensus-based recommendations to contrast and compare to the CAMT model.
4. Results – Results are presented separately for key aspects of CAMT services: calls received and clients served; youth who have more than one CAMT intervention; family and provider satisfaction, and; cost-effectiveness of CAMT.
5. Conclusion and Recommendations - Recommendation related to best or recommended practices, quality assessment and evaluation, and suggestions for future research are provided.

The report is accompanied by an Executive Summary, which highlights major findings and conclusions, as well as Appendices.

A. The Capital Region Child and Adolescent Mobile Crisis Team (CAMT)¹

History and Current Operations. The Capital Region Child and Adolescent Mobile Crisis Team (CAMT) is available to any child or adolescent between 4 and 20 years of age residing in Albany, Rensselaer and Schenectady Counties who is experiencing an emotional, behavioral or psychiatric crisis, regardless of diagnosis or system involvement. Operated by Parsons Child and Family Center, CAMT began providing services on February 26, 2007 as the result of a partnership among ten agencies. The original partners, who now constitute the CAMT Steering Committee, were motivated by the concern that children and adolescents in the Capital Region with serious mental health and/or developmental disability challenges had little or no access to effective community-based, skilled crisis intervention services. Without this service, youth experiencing crises might be diverted to the juvenile justice system, brought to emergency rooms where the focus is on providing acute medical care, or taken to the Capital District Psychiatric Center which is not specialized in assessing children and their families. As a consequence, in the absence of service such as CAMT, a youth in crisis may be more likely to be inaccurately assessed, the crisis might escalate, and the youth may ultimately be restrained, incarcerated, or hospitalized (Walter, Park, & Petr, 2004; Walter, Petr & Davis, 2006).

The primary mission of CAMT is to serve children and their families in behavioral, psychiatric or emotional distress by going where the crisis is occurring and intervening immediately and effectively to prevent unnecessary use of more restrictive and costly levels of care. The underlying philosophy is that children and families be assisted in the least traumatizing manner and that hospitalization should be avoided whenever possible. Additionally, CAMT was developed on the assumption that crisis services for youth are a necessary part of the continuum of care, and consistent with System of Care principles, that interventions should be family-focused, strengths-based, flexible and tailored to the specific child, family and situation. In accordance with the mission and philosophy, CAMT's multidisciplinary team members must have experience with children and family services as well as crisis intervention.

Currently the team operates from 11:00 a.m. to 9:30 p.m., Monday through Friday. CAMT is accessed through "gatekeepers" in each of the three counties as follows: Albany County Children's Mental Health Clinic and the Mobile Crisis Team in Albany County; Unified Services and Samaritan Hospital in Rensselaer County; Ellis Hospital and Child Guidance Center at Northeast Parent and Child Society in Schenectady County. Additionally, CAMT directly responds to calls from the Albany Medical Center Emergency Room. CAMT utilizes a crisis intervention framework based on Robert's Seven Stage Crisis Intervention (2005) as a model to systematize service provision while allowing for different styles to approach the diversity of the youth served. When a call is received, CAMT staff use the Crisis Triage Rating Scale (CTRS) (Bengelsdorf, Levy, Emerson & Barile, 1984) to evaluate levels of danger and the youth's ability to cooperate.

It merits underscoring that the triage stage is critically important to ensure that youth who are in crisis receive a mobile visit, and that youth who are not in crisis do not receive a mobile

¹ The description of CAMT is adapted from a manuscript by Cohen, Johnson, & Lorenzo (2009).

visit. Sending the team to a site where they are not needed may mean that another child in crisis may not be served.

When the mobile team goes into the community, they conduct a detailed assessment at the site of the crisis that includes obtaining information about the youth's mental health status, biopsychosocial history, current stressors and supports, and other services the youth or family may be receiving. A key aspect of the intervention is the development of a safety plan which serves as a contract, or action plan, to negotiate the youth's ability to maintain his or her safety along with parent's or caretaker's support. The plan is signed by the youth, parent or caregiver, and CAMT member. In addition, safety precautions such as removing or minimizing access to weapons and medications, and increasing the level of parental supervision are listed on the safety plan, along with crisis numbers should the situation re-escalate. A client satisfaction form is provided to the parent or caregiver, along with a self-addressed stamped envelope for ease of return. Additionally, CAMT obtains signed disclosure of information forms so that members may share information needed to ensure appropriate service linkage occurs as rapidly as possible.

A critical aspect of a crisis service is linking the child and family to follow-up services. The CAMT case manager works from 8:00 a.m. through 4:30 p.m., Monday through Friday in order to complement the interventions of the other team members, support families the day after a crisis event, and facilitate the transition from crisis stabilization to ongoing community-based treatment and support. Activities during this phase include CAMT's obtaining additional signed disclosure of information forms from relevant agencies, and at times contacting other service providers to broker appointments. It is CAMT policy to place a follow-up phone call within one business day to ensure the safety plan is being followed.

B. Purpose of Evaluation

Since its inception, CAMT has endeavored to use the best available evidence to inform all aspects of program delivery. This evidence has included published empirical and non-empirical reports, and providers' and families' satisfaction surveys. CAMT also maintains a management information system (MIS) that allows tracking of dates and times of calls received, duration of mobile visits, acuity, dispositions, and basic demographic information of children and adolescents served.

CAMT approached CHSR to conduct a more systematic and independent evaluation of its services in order to answer three inter-related questions:

- To what extent are CAMT services compatible with best practices?
- How effective are CAMT services in preventing hospitalizations and fostering post-crisis linkage with community-based supports?
- Is CAMT a cost-effective service?

Answers to these questions will validate CAMT's methods, inform its quality improvement efforts and provide justification for funding requests. CHSR followed the methods and procedures described in the next section to answer these questions.

I. Evaluation Methods and Procedures

A. Literature Review. Several steps were taken to identify reports, empirical studies and guidelines for best practices regarding child and adolescent mobile crisis services. Peer-reviewed and non-peer reviewed sources were considered. Documents focused on adult services were also reviewed if they were relevant for children's emergency services.

First, we conducted a search of the electronic databases PsychInfo and MedLine. Preliminary investigation revealed that "mobile crisis" is too narrow a search term, so "crisis intervention + adolescents," "crisis intervention + youth," and "crisis intervention + children," were used. We used similar search terms at Google Scholar and at the web sites of the following organizations: NAMI (www.nami.org), the Substance Abuse and Mental Health Services Administration (www.samhsa.gov/index.aspx) and the National Institute of Justice (nij.ncjrs.gov/App/publications/search_form.aspx). We also used Google and Google Scholar to conduct a focused search to find states or local areas (counties or cities) that operate child and adolescent mobile crisis teams, and any materials that describe their operations. The list of teams across the nations (Baltimore, MD; Bronx, NY; King County, WA; Milwaukee, WI; Connecticut; Massachusetts; Tennessee) with contact information is included as an Appendix.

Documents or publications were included that met the following criteria:

- Focused primarily on crisis intervention of people with mental illness, especially children aged 18 or under;
- Focused on short-term, mobile crisis team intervention;
- Focused on evaluation of crisis intervention team or program, especially outcome or cost effectiveness evaluation.

The reference lists of all publications selected for inclusion were also reviewed to identify other sources that may not have been identified through the search strategy.

The search yielded close to 3,000 items, but very few were relevant for this evaluation. Most of the material we reviewed was used to inform the Best Practices Review, but there are references throughout the remainder of the report as appropriate for the section. Specifically, there are a few instances where other states' mobile crisis team data are compared to the CAMT results. Finally, any studies related to economic evaluations of crisis services are included in the Cost-Effectiveness Analysis results.

B. Development of Logic Model. To answer the evaluation questions about CAMT as a best practice model, areas for improvement, and cost-effectiveness it first was necessary to specify the critical CAMT components (e.g., inputs and activities) and their connections to program outcomes in the form of a logic model. An enumeration of inputs and activities was needed to compare with empirically supported practice standards, and was also needed to identify cost categories and items. By specifying the connection between program inputs, activities and outcomes, the logic model is a graphic representation of the processes that are believed to bring about change, and thus was also an important step in guiding the choice of

variables for analyses of case dispositions. Overall, the logic model helps point to data needs for all aspects of the evaluation.

The logic model was prepared by CHSR after informational meetings with the CAMT program director and supervisor, review of program informational materials, and other program descriptions available in CAMT reports and presentations. CAMT provided comments on a draft version, and these were incorporated into the final document available in Appendix A.

C. Inventory of Data Sources and Indicators. CHSR compared the activities and outcomes specified in the logic model with available data in CAMT’s telephone call tracking database and case files to develop the data collection plan. First we determined which data elements in the tracking database corresponded to activities and outcomes. Then, for activities and outcomes not included in the database, we determined if they were captured in the paper files. Table 1 lists the logic model activities and outcomes, and shows the data sources available at the time of the evaluation. The scope of this evaluation was limited by available data. By seeing the outcomes that cannot be assessed with existing data, CAMT will be able to make decisions about any additional data it may want to track, and if there are other data sources that could be used.

Logic Model Items	CAMT MIS	CAMT Case Files	No CAMT Data
Activities			
Crisis Assessment, intervention, stabilization	✓		
Consultation and information		✓	
Peer support (if post crisis)		✓	
Community supports and care		✓	
Short Term Outcomes			
Immediate restoration of safety	✓		
Connection to local support services		✓	
Plans ensuring least restrictive environment and safety		✓	
Appropriate referrals		✓	
Accurate assessments	✓		
Reduced use of ambulance and police for transport			✓
Less stressful escort			✓
Provider and family satisfaction		✓	
Youth and local government agency satisfaction			✓
Long Term Outcomes			
Reduced stress on youth and family			✓
Reduced school days missed			✓
Reduced number of youth served in ERs or CDPC crisis unit*			✓
Reduced hospitalizations*			✓

* CAMT obtains data from CDPC-CIU.

Indicators related to activities. The inventory showed that the database primarily captures information on one category of activities as specified in the logic model –Crisis Assessment, Intervention and Stabilization. Therefore, data collection from paper files was needed to quantify three other groups of activities: Consultation and Information (for those calls that do not result in a CAMT mobile visit); Peer Support (if post-crisis) and; Facilitation of Community Supports and Care (for both mobile visit follow up and those calls that do not result in a CAMT mobile visit).

Indicators related to outcomes. The database includes limited information on short-term outcomes. The disposition of calls to CAMT that do not result in mobile visit, and the disposition of the mobile visits (e.g., safety plan, hospitalization) speak to the manner in which the “immediate restoration of safety” is accomplished. Information on other short-term outcomes (“youth and family connected to locally based support services,” and “comprehensive plans that ensure least restrictive services to support the child and family safely in the community”) is in follow up notes in the case files.

Data on two short term and two longer term outcomes are not available. First, “reduced use of ambulance and police for transport” could possibly be estimated from information kept in a log entitled “Calls unable to accept” because one of the items in that log is what the caller said s/he would do to deal with the situation. However, this information is not consistently noted. Second, data do not exist to address “less stressful escort experience for youth and family.” The longer term outcomes, “reduced stress on youth and family” and “reduced school days missed due to behavioral crisis” require data collection beyond the time frame of a crisis intervention and resolution. Stress on youth and family, however, could possibly be obtained in answers to new questions on satisfaction surveys, or in qualitative interviews with prior service recipients.

The outcomes “reduced number of youth served in ERs and CDPC crisis unit (due to behavioral crises)” and “reduced hospitalizations” are challenging to measure accurately because to do so requires data sharing across crisis providers and hospitals. Currently CDPC provides CAMT with quarterly counts of the total number of youth brought to CDPC and the number brought during CAMT’s hours of operation. No such data sharing agreement is in place with the other emergency departments or hospitals in the region.

Stakeholder satisfaction. Currently there is no process in place to obtain satisfaction data from youth or local government agencies. CAMT created brief satisfaction surveys for providers and families, but data on returned forms are not entered into a database.

D. Development of Data Collection Form. The inventory of data sources and indicators revealed that the tracking database maintained by CAMT primarily captured information about youth characteristics, the crisis assessment and the crisis disposition. Case files appeared to be a source of information about the extent and success of efforts to establish community linkages, and if a seemingly de-escalated situation reverted to one in which hospitalization was appropriate. Consequently, CHSR reviewed a number of case files selected by CAMT staff to represent a range of cases (county, reason for call) to assess the utility of extracting data from them. Based on this review, and the goal of establishing indicators of the short-term outcomes (prevention of hospitalization and timely linkage with community-based resources), a data

collection form was drafted, reviewed by CAMT staff and modified based on their input. (See Appendix B for the data collection form.)

E. Case File Sample Selection and Data Collection and Analysis Procedures. CAMT generated a list of calls received between April 1, 2009 – March 31, 2010 to serve as the sampling frame. These dates were chosen to correspond to the State fiscal year. The list included youths' last and first names, which are needed to locate case files. To ensure proportional representation by response type (mobile visit or telephone response only) and county (Albany, Rensselaer, Schenectady), two characteristics that are likely to capture substantive differences in service need, the list was stratified by response type and within response type, by county. CHSR used a systematic random sample selection procedure with a random start to select 100 youth who received a mobile visit and 50 youth who did not receive a mobile visit. A unique identification number was written next to each sampled youth, and the case file was retrieved by CAMT staff. The list of client names and unique ID numbers was maintained at Parsons CAMT offices, where file retrieval and data collection occurred.

Two CHSR research assistants, both of whom successfully completed the University at Albany's Institutional Review Board's training, were responsible for data collection under supervision of the Principal Investigator. Once all data were extracted from the case files, the unique identification number was added to the CAMT database, and then names were deleted. This de-identified file, with unique ID's to link with record review data, was provided to CHSR staff. Research assistants entered the case file data, including unique ID, into an Excel spreadsheet. These data were then sorted by ID and merged with the Parsons dataset for analysis. Univariate and bivariate statistical procedures were conducted with SPSS 17, and cost calculations were done with Excel.

Family and provider satisfaction surveys, maintained by CAMT in files separate from client case files, are categorized by year. For this study, CHSR entered responses to all closed-ended questions into an excel data base for quantitative analysis, and all responses to open-ended questions were typed verbatim into a word document for content analysis.

F. Cost-effectiveness analysis. Cost-Effectiveness Analysis (CEA) is a way to measure the efficiency of an intervention in which costs are related to a single common effect (Gold, Siegel, Russell & Weinstein, 1996; Meunnig, 2008). Implicit in CEA is a comparison between alternatives. As described in a review of economic evaluations of child and adolescent mental health interventions, cost-effectiveness analyses are preferable to the types of cost-offset studies that have typically been conducted: "Cost-offset studies compare costs incurred with costs saved. These studies ignore child-focused outcomes such as changes in clinical status or quality of life, and as a result cannot provide insight into the efficiency with which the resources are deployed, that is they do not assess cost-effectiveness" (Romeo, Byford, & Knapp, 2005, p.4).

CEA requires specifying the point of view or perspective being taken when doing the analysis, as the perceptions of outcomes to be evaluated and the costs that should be included may be different for recipients of the intervention, one or several of the funders, or society as a whole. The CEA in this report is framed from the perspective of the community and the outcome used to express treatment effectiveness is prevention of hospitalization.

The calculation that is used to make conclusions about the comparative effects of the alternatives is the incremental cost-effectiveness ratio (ICER), or the difference in costs divided by the difference in effects. For two interventions, x and y, the calculation is as follows:

$$\frac{C_x - C_y}{E_x - E_y} = \frac{IC_{xy}}{IE_{xy}} = ICER_{xy}$$

Interventions that have relatively low ICERs are considered good investments. In situations when the calculations yield a negative ICER, the values are generally not reported, but the focal intervention (x) is reported as being “dominant”.

For this report, ICER_{xy} indicates the marginal cost of achieving one less inpatient hospitalization with a CAMT intervention relative to two other plausible crisis responders in the Capital Region: police and the Albany Mobile Crisis Team (MCT). As is true for all CEA studies, estimates of the costs and effects of various strategies are informed by a mixture of data from existing programs and assumptions, which whenever possible are defensible based on empirical evidence from reliable sources such as peer-reviewed publications or government-maintained data sources. Details about the estimated costs and effects that used in the CEA are included in the results section.

G. IRB Approval. The Institutional Review Boards of the University at Albany and Parsons Child and Family Center approved this research.

III. Literature and Best Practices Review

Impacts of Mobile Crisis Teams

Research-informed evidence about the viability and impacts of a youth-focused mobile crisis teams is currently lacking. The few empirical studies on children and adolescent crisis services were either conducted during a period when systems of care were in their early stages (Ruffin, Spencer, Abel, Gage, & Miles, 1993) or focused on intensive crisis services rather than mobile interventions (e.g., Evans, Boothroyd, Armstrong, Greenbaum, Brown, & Kuppinger, 2003).

It is widely assumed that mobile crisis programs, whether targeted at adults, or children and adolescents, have beneficial effects. According to a national survey of mobile crisis programs conducted in 1993, a time when 39 states had such services, the reported advantages were improved access to treatment for mentally ill persons, capability to decrease crisis severity, and diversion of mentally ill persons from jail (Geller, Fisher, & McDermeit, 1995).

With one exception (Fisher, Geller, & Wirth-Cauchon 1990), published studies that specifically examine the impact of mobile crisis interventions on hospitalization confirm the anecdotal evidence (Bengelsdorf, Church, Kaye, Orłowski, & Alden, 1993; Blumberg, 2002; Guo, Biegel, Johnsen, & Dyches, 2001; Hugo, Smout, & Bannister, 2002; Lamb, Shaner, Elliott, et al., 1995; Reding & Raphelson, 1995; Ruffin et al., 1993; Shulman & Athey, 1993; Stewart et al., 2006).

For example, a study of mobile services for youth in NYC reported those services were more effective in preventing emergency department (ED) visits compared to short-term residential and in-home services (Shulman & Athey, 1993). Ruffin and colleagues (1993) described the success of a crisis stabilization program (CSP) for children and adolescents in a community mental health center; during the first year of the CSP there was a 51% reduction in admissions to the State psychiatric facility for children and adolescents. When children present to the ED, the likelihood of hospitalization is high, as suggested by an Australian study; of 213 adolescents who presented at a children's hospital ED, 46.8% were admitted either to the medical inpatient service or a psychiatric inpatient facility (Stewart et al., 2006).

Even when the hospital-based programs are psychiatric crisis programs, people served there have higher rates of inpatient admissions than people served by community-based mobile crisis programs (Guo, Biegel, Johnsen, & Dyches, 2001; Hugo, Smout, & Bannister, 2002). The study by Guo and colleagues (2001) compared a large cohort of adults who received hospital-based crisis services (n=4,372) to adults who received community-based crisis services (n=1,757). Each consumer was tracked for 30 days after the initial crisis to determine if hospitalization occurred and if so when. Data were from county mental health authority databases, including state hospital records and Medicaid data. According to multivariate regressions, the adults served in the hospital-based program were 51% more likely to be hospitalized than adults served by the mobile crisis group. Close to one-fifth (18%) of adults

served by the community-based mobile crisis service were hospitalized subsequently, and this most often occurred within the first two days after the intervention.

Another study of 50 adults with a crisis intervention visit who were followed for 6 months estimated that had it not been for the crisis intervention, 19% (6 of 31) of adults who had not been hospitalized at the time of the crisis intervention would have been hospitalized (Bengelsdorf et al., 1993). The authors based their estimates on regression analysis of data that included the Crisis Triage Rating Scale and prior hospitalizations.

Studies that examine other outcomes besides hospitalization have found that mobile crisis consumers have a high likelihood of being referred to or enrolled in other community based services (Boothroyd et al., 1998; Singer, 2005), which may mean diversion from higher levels of care as well.

Consensus-based recommendations

Given limited empirical evidence about mobile crisis in general, and about child and adolescent mobile crisis in particular, policy makers and service providers can use guidelines developed by children's mental health services experts along with consensus-based recommendations. Several of these resources were used to develop the next section.

Recommended guidelines for emergency mobile psychiatric services for children and adolescents (Gaynor & Hargroves, 1980; Goldman, 1988; Kutash & Rivera, 1995; Walter, Park, & Petr, 2004; Walter, Petr, & Davis, 2006) include: 24 hour/7 days a week availability; flexible, adaptable, competent and highly skilled staff with adequate training; comprehensive screening telephone assessments; written protocols for determining safety risk; face-to-face response within one hour; two person teams for face-to-face contact; psychiatrist availability by phone within 30 minutes; written models to aid in aftercare referrals; outpatient appointments within one week, and; data collection and quality assurance procedures.

Connecticut is one state that has committed substantial resources to developing and implementing a state-wide Emergency Mobile Psychiatric Services (EMPS) for youth. Vanderploeg, Schroeder, & Franks (2008), members of the Practice Improvement Committee for that initiative, developed recommendations for mobile crisis service model enhancement that reiterated many of the recommendations described in the preceding paragraph. Additionally, they gathered detailed information about the practices of two exemplary programs in other regions (Mobile Urgent Treatment Team (MUTT) in Milwaukee, Wisconsin and Children's Crisis Outreach Response System (CCORS) in King County, Washington) and conducted site visits at four out of sixteen EMPS programs around the state. The next section outlines the practices that are believed to be key ingredients in successful programs and includes the authors' recommendations and suggestions for improving operations that emerged from those programs. The program descriptions and recommendations are organized into the following categories: staffing and hours of operation, follow-up and discharge protocols, relationships with stakeholders, and quality assurance and performance indicators.

Staffing and hours of operation. Both MUTT and CCORS have regular hours of operation and an on-call system with capacity for 24-hour mobility. MUTT pays staff to carry pagers and respond to calls during hours the full team is not in operation, while CCORS gives their on-call staff cell phones and laptop computers to conduct assessments during overnight hours. Staff members paged during overnight hours have the ability to conduct mobile assessments at the crisis site; if a mobile visit is assessed as not necessary, the caller is given a next day appointment with a mobile response team member who visits family in community. Some of the Connecticut programs paid their staff more for overnight crisis assessments. High turnover is an issue and seems to be related to low pay and irregular hours. Team building and supplemental compensation were recommended to help with these issues.

Both MUTT and CCORS programs conduct mobile visits with 2 staff members (one is a mental health professional and one a paraprofessional who is paid on a per diem basis). During periods with low numbers of calls, staff conduct outreach with other community agencies. According to the study by Scott (2006), when the law enforcement based crisis team is not responding to emergency calls, it provides follow up services by phone or home visits to persons who received crisis interventions services; in that study, about 24% of staff time was allocated to mobile visits and the rest to crisis hotline responses and follow-up services.

Follow-up and discharge protocols. MUTT policy is to link a client with a community based provider within 30 days of initial contact with their mobile team. CCORS offers two phases of treatment: initial crisis stabilization (up to 4 days) and crisis stabilization (up to 8 weeks). CCORS can petition for extension of the 8 weeks if community linkages cannot be made (usually due to wait lists).

A strong recommendation for model enhancement is distinguishing the two functions of mobile crisis teams: crisis response and follow up. Follow up guidelines must account for the availability of community based services and needs of the youth and family, and should emphasize the short-term nature of follow-up services (6 weeks maximum). The Connecticut Practice Standards state: Follow-up stabilization services for up to six weeks after the initial contact including but not limited to case management, mental health support, and referral to longer-term community services (Connecticut Department of Children and Families, 2003).

The expectation in Connecticut that the duration of the crisis service could be up to 6 weeks has led that state to specify criteria for “Discharge or Step-Down” from emergency mobile services. For those youth who are not “discharged” to an inpatient or residential facility, the recommended documentation for “discharge” to outpatient care is as follows:

“An appointment must be in place and releases signed to the outpatient service for discharge to take place. This must be reflected in the case notes. All discharges must reflect either successful stabilization of a crisis or discharge to a specific set of services in a different level of care. A crisis plan and discharge plan must be in the chart and signed by the clinician and the family, except in phone contact only situations. If a family chooses to discontinue the EMS service prior to the close of treatment and against the advise [*sic*] of the EMS clinician,

this should be noted in the case notes as well as what level of care was recommended. If possible the family will sign a release indicating that they are terminating against the advice of the EMS clinician. The clinician then must state in the case notes what the risk is to the child. If the risk is imminent the EMS clinician must act immediately to seek appropriate services such as DCF, existing providers, and/or the police” (CT DCF, 2003, p.17).

The Connecticut Practice Standards document goes on to suggest that appropriate step-down and discharge outcomes would be facilitated if the emergency team provide families with standardized documentation at the time of intervention including: a welcome packet of information for families that introduces them to services, contact information, client’s rights and grievance procedures, and consent and release forms.

Relationships with stakeholders. Both MUTT and CCORS point to their immediate access to crisis/respite beds as a critical element of their success. Additionally, they have or seek to develop contracts or MOUs with emergency departments, community providers, local law enforcement and area schools. Both engage in community outreach and training to those entities to educate about the nature of behavioral health crises among youth and about mobile team services.

One example of a unique relationship with a stakeholder agency comes from CCORS, which handles all discharge planning for their local emergency departments in order to increase the likelihood youth are linked to community treatment services. The relationships between emergency departments across Connecticut and the EMPS providers were reported as variable. Some stated that MOUs with emergency departments were helpful, but only if paired with effective and ongoing communication. One reported having a planning meeting with an emergency department in which the EMPS asked how they could best serve emergency department needs; as a result the EMPS helped to evaluate the youngest patients and assisted with discharge planning. Other EMPS providers reported ongoing challenges with some emergency departments because of difficulty collaborating with specific individuals in emergency department leadership positions; emergency department liability concerns that EMPS staff are not employed at the hospital and thus not able to view patient information; the need for some emergency departments to keep inpatient beds filled using emergency departments as referral sources for inpatient care.

CCORS, MUTT, and EMPS providers in Connecticut experienced difficulties in maintaining consistent connections with police departments and schools because of high turnover in those agencies. Some EMPS providers had MOUs with school district superintendent offices, and others reported that it was particularly helpful to have one official at each school who is the liaison to EMPS program to assist with the referral process and maintain regular communication. A specific example of the type of problem that could be avoided by having a liaison was offered: it appears that schools choose not to refer to EMPS late in the school day, especially on Friday, because assessments take a significant amount of time and run past regular school hours. In those cases, the school may prefer to call an ambulance and have the child transported to the emergency department.

Guidelines for developing relationships with law enforcement agencies are available in a NAMI (2009) publication that presents models and practices that effectively respond to youth in psychiatric crises in schools and communities. Most of the manual is devoted to action steps and strategies to encourage stakeholder promotion and implementation of youth-focused law enforcement Crisis Intervention Teams (CITs). As with other reviews on the topic of crisis services for youth, the manual notes that there is limited quantitative data on the effectiveness of these programs.

NAMI (2009) acknowledges that youth-focused CIT programs face financial barriers since law enforcement training programs are typically cut during times of fiscal crisis. Consequently, any education, outreach or training offers made by a mobile crisis team might not be well-received. To enhance the response to outreach efforts, crisis intervention teams might seek to utilize individuals that were originally resistant as spokespersons for the program, or rely on police commanders who recognize that the program is effective for law enforcement. For example, qualitative assessments of benefits to law enforcement personnel have noted the reduction of the need for the use of force in a crisis, therefore reducing the trauma experienced by police officers who injure youth, and improving the safety of law enforcement personnel.

The cost concerns are echoed by Oliva et al. (2008) who note the potential costs of overtime shifts for officers who must cover the shifts of those being trained. In some localities, police chiefs may resist “free training” because it is not free for their department. However, in some jurisdictions law enforcement officers must receive a minimum number of training hours to maintain certification. The NAMI manual suggests that if training offered by a local mobile crisis team could be counted toward that minimum, the officers may be more receptive to it.

Quality assurance and performance indicators. The EMPS Practice Improvement Committee offered several specific recommendations for quality assurance and performance indicators (Vanderploeg, Schroeder, & Franks, 2008), including:

- One tenth of the EMPS budget for the state should go to quality assurance. While they did not indicate how much each individual EMPS provider should devote to quality assurance, 10% may be a reasonable estimate.
- A consistent standard for defining what constitutes a “call” to EMPS must be developed. Many calls are for information and referral only, and some are placed by persons who have misconceptions about the EMPS service (e.g., they are calling in search of a respite bed). These should be recorded, but because they are not emergency calls they should not be considered in analyses that calculate mobility rates (the proportion of calls that result in a mobile visit).
- A reasonable performance indicator for mobility rates should be set. That is, what is a realistic mobility rate? A mobile response rate of 100% of calls received is not recommended, but if the purpose of the service is to be responsive to crises as they occur in the community, the expectations for mobility should be high (80-90%).
- Service indicators should include diagnosis of child, services provided (immediate crisis response), follow up services up to 4 weeks, extended follow up services up to 6 additional weeks. Documentation of length of service since intake should be integrated into the quality assurance plan.

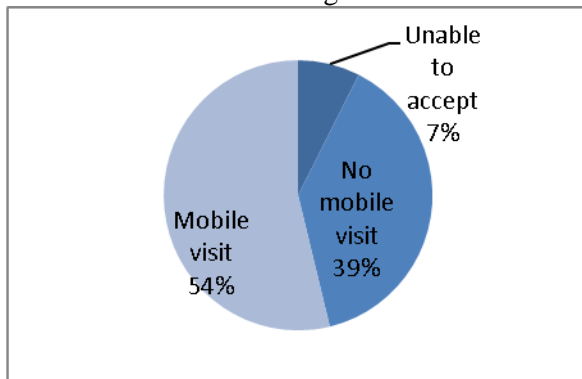
- Connecticut has set “length of stay” benchmarks: one day or less for contacts that are handled by phone; less than 6 days for face-to-face interventions; less than or equal to 45 days (or 6 to 8 visits) for stabilization follow-up.
- Outcome indicators should include the amount of time to mobility, mobility rates, diversions from emergency department and juvenile justice, duration of follow up services, rates of community based service linkage (type of service referral made, time to referral, time to family engagement, barriers to service linkage).
 - Connecticut established 45 minutes as the expectation for mobile response.
 - Currently, Connecticut’s outcome measurements for EMPS program are derived from client satisfaction surveys and the OHIO Scales *Problem Severity Index* - parent version (short form). The expectation is that when three or more face-to-face interventions are necessary, 75% of parents will have completed an initial administration of the OHIO scales.
- Other indicators could include staff training activities, outreach activities to community agencies, number of MOUs developed with other community providers, and satisfaction surveys from constituencies other than the child and family (e.g., schools, emergency rooms).

IV. Data Analysis Results

A. Calls Received and Clients Served between April 1, 2009 and March 31, 2010

Of the 738 calls received between April 1, 2009 and March 31, 2010, slightly more than half (54%) resulted in a mobile visit, and 39% of calls were triaged by telephone. During the study period, CAMT was unable to respond to 7% of the calls because the team was assisting another family (See Figure 1). Three-fourths (72.7%) of the calls to which CAMT could not respond were from Albany callers, and the majority of these calls were placed by MCT; 21.8% of the calls were from Rensselaer County, with the majority placed by Samaritan. The remaining 5.5% of calls “Unable to accept” were from Schenectady, and all three of these calls were placed by Northeast Child Guidance.

Figure 1. Distribution of CAMT Responses to Calls Received 4/1/09 through 3/31/10



Understandably, minimal data are maintained about the “unable to accept” calls: date, time of call, caller, county, reason unable to accept (which is always noted as “assisting another family”), and outcome. The staff person is instructed to note what the caller said s/he would do to deal with the situation, but this information is not consistently entered. Because no identifying information about the child is obtained at this point, it is not possible to determine if any of the youth whose calls could not be accepted either previously or subsequently received a CAMT intervention.

This detail is important to consider given the number of calls CAMT receives for the same children. Excluding the “unable to accept” calls, CAMT triaged 683 calls corresponding to 523 youth. Approximately one third of the calls (33.7%, n=230) were placed on behalf of 70 youth; this is consistent with the estimated 30% of repeat calls reported by of the King County youth mobile crisis team (CCORS). Most (90.0%) of the CAMT “multiple call” youths received at least one mobile visit from CAMT, which is significantly greater ($p<.05$) than the 58.9% of the 453 youth who called CAMT only one time during the year and received a mobile visit rather than a phone intervention only. The remainder of this section reports on the sampled data.

Sample of mobile visits

The sample was selected so that the proportion of calls from each county was equal to the proportion in the total population: 55% of the sampled calls were from Albany, 26% Rensselaer, and 19% Schenectady. In the sample, the youths who received a mobile visit did not differ from the population of youth who received a mobile visit during the study period on age, gender, race or acuity.²

Of the 99 calls in the sample that had a mobile visit, approximately three quarters were from four referral sources: Albany Mobile Crisis Team (MCT) (28.3%), Samaritan Hospital Crisis Unit (21.2%), Northeast Child Guidance (12.1%) and CDPC Crisis Unit (11.1%). Police were on-site in 11.1% of the crises, and most often this was because of police presence in Albany crises. Given the “gatekeeper” model for access to CAMT services, it is not surprising that the distribution of referral sources is quite different from the only other information we could find about referral sources in our review; in Connecticut, the top referral source is family (38.2%), followed by school (32.8%) and then emergency department (12.9%) (EMPS, 2010).

Characteristics of youth who received a mobile visit

Slightly more than half of the youth were male (53%) and white (54.4%), and the mean age was 13.16 years. Significantly more youth in Schenectady were African American than in Rensselaer.³ Almost two-thirds had Medicaid or other public insurance (61.6%). Two thirds (66.6%) of the youth were assessed as Acuity Category A (extreme urgency) or B (high urgency). One quarter (24.2%) had previous inpatient admissions and 7.1% had previous recent ER visits. Almost half the youth (48.5%) received a diagnosis of mood disorder, followed by 12.1% with an adjustment disorder, and 10.1% attention-deficit disorder. Three-quarters (73.7%) had an additional Axis I diagnosis. About half of the youth had an Axis III diagnosis, and 30% of these had asthma. 88.9% had at least two problems with primary support, social environment, or education. The mean Global Assessment of Functioning (GAF) score was 45.18.

Mobile visit dispositions

Safety plan was the disposition for the majority of calls (82.8%) at the time CAMT left the site of the crisis, and 5.1% were referred to psychiatric inpatient. The others (12.1%) were referred to psychiatric evaluation or emergency room/psych evaluation. According to notes in the case files, 7 of these youth were subsequently hospitalized. Additionally, 3 of the 82 youth whose disposition was “safety plan” were hospitalized within two days of the crisis intervention.⁴ Thus, the total hospitalization rate was 15.2%, and the overall diversion rate was

² At the data entry phase, CHSR learned that one of the 100 sampled case files had been coded twice, once by each of the data collectors. Thus, the final sample is 99 cases.

³ Other than this difference, there were no statistically significant differences by county.

⁴ Notes in the case files suggest that in one case CAMT had been called by a deputy at family court to assist with a crisis there involving a youth and his parents. After the safety plan disposition, CAMT made several attempts to reach the mother (over 3 days), CAMT learned that the client, while at the airport with his family to fly to Florida, had used his cell phone to call the police to tell them he planned to kill himself. He was admitted to the hospital. In another situation, the client was in residence at St. Catherine’s. CAMT was called because the youth had been

84.8%. The diversion rate includes CAMT’s interventions at the Albany Medical Center emergency room.

As described above in the methods section for the cost-effectiveness analysis, one point of comparison with this hospitalization rate is available in data provided to CAMT from CDPC. Of the 371 youth who presented from Albany, Rensselaer and Schenectady counties, 26.1% were hospitalized.

Youth involvement with community-based supports at time of crisis

About three-quarters of youth (77.8%) were involved with a range of services at the time of the crisis (mean number of services was 2.04). The table below lists the percentage of youth involved with each service or provider type. The most prevalent service provider type was counselor or therapist (46.5%). This distribution of providers was remarkably consistent across counties, except in Schenectady, 47.4% of youth had PINS involvement, and 10.5% saw a psychiatrist.

Table 2. Percent distribution of existing services among youth who had a CAMT mobile visit, 4/1/09-3/31/10	
	Youth with a mobile visit (n=99)
	(%)
Counseling	46.5
Psychiatrist	26.2
Social worker/school psychologist	22.2
Person in need of supervision	21.2
Intensive Case Management	17.2
Parsons Child & Family Center	14.1
Child protective service	13.1
Family Services	13.1
Pediatrician	6.1

CAMT telephone contacts with providers

It is CAMT protocol to fax the service plan to providers, and the documentation in the case files was remarkably complete in this regard. CHSR preliminary review of case files had shown that files included all disclosure of information forms necessary to send the plans and otherwise share data for case consultation, and case notes or fax receipts indicated that providers were uniformly contacted by fax or email. To help inform how much time is devoted to facilitating

threatening to hurt himself by swallowing screws and dangling himself from a window. There were two telephone calls between CAMT and St. Catherine’s the day after the safety plan disposition, and it appeared the safety plan was not working. The second day after the mobile visit CAMT learned the youth had been hospitalized. For the third crisis, CAMT went to Samaritan and developed a safety plan with the youth and her mother. By the third day after the crisis, CAMT spoke with the mother and learned the youth was doing well. Two days after that, however, CAMT learned difficulties between the mother and daughter escalated, and the youth had been admitted.

linkages with community services, CHSR focused its data collection on how many telephone calls were placed to providers, and over what period of time. Direct contact of providers typically only occurs if CAMT is unable to verify post-crisis appointments with the family member or person who placed the original crisis call. On average, in addition to any email and fax interactions, CAMT telephoned 1.86 of the providers with whom families or youth had pre-existing relationships, and on average telephone contacts occurred over 4.81 days. Table 3 shows that in addition to any fax or email communications with providers, most of the telephone contact occurred with counselors (69.6%), followed by intensive case management (52.9%), and school social workers or psychologists (45.5%).

	CAMT spoke with service after mobile visit (%)	Number days between mobile visit crisis and CAMT's last telephone contact with service (mean)
Counseling (n=46)	69.6	4.5
Psychiatrist (n=26)	26.9	1.5
Social worker/school psychologist (n=22)	45.5	3.8
Person in need of supervision (n=21)	33.3	3.7
Intensive Case Management (n=17)	52.9	1.1
Parsons Child & Family Center (n=14)	28.6	1.3
Child protective service (n=13)	30.8	1.5
Family services (n=13)	23.1	8.7
Pediatrician (n=6)	16.7	Missing

CAMT facilitation of new services

CAMT facilitated an average of 0.5 new services per youth, and spent on average 5.6 days doing so. The new service often involved support services for family members. Given that most youth were already involved with at least two providers, it may not be reasonable to expect many additional services for them.

All but 2 of the 22 youth who were not involved with a service at the time of the mobile visit were linked with a community-based provider during CAMT's follow up; both of these youth were moving out of the area (one to another country and one to another state).

B. "Multiple call" youth

Details about the characteristics of the "multiple call" youth, and their patterns of interaction with CAMT have implications for appropriate standards of care, and decisions about benchmarks for how long the follow-up period after a crisis should be.

Approximately three-quarters (78%) of the sample was comprised of youth whose only contact with CAMT was a single mobile visit. The others (22%) had at least one additional CAMT contact (i.e., a phone triage or mobile visit). The average number of contacts for these multiple users was 3.91, ranging from 2 to 12. The distribution of contacts by county and overall is shown in Table 4.

	Albany	Rensselaer	Schenectady	Total
Number of youth	15 (68.2%)	6 (27.3%)	1 (4.5%)	22 (100%)
Number of contacts	55 (64.0%)	29 (33.7%)	2 (2.3%)	86 (100%)
Number of contacts per youth	3.6	4.8	2.0	3.9

On average, each youth had 3.9 contacts with CAMT during the year of the study. Contacts per youth ranged from a high of 4.8 for youth in Rensselaer to a low of 2 in Schenectady (however, only one Schenectady youth was a “multiple caller”). The number of mobile visits ranged from 1 to 7. Because we had only one year of data, it is possible that there were additional contacts outside the period of observation.

Table 5 shows the number of days that elapsed between the first and last contact for the 22 “multiple call” youth. Five of the youth (22.7%) had all their contacts within one month. For slightly more than half of the youth (54.5%), all their contacts occurred within three months.

Days Elapsed	Number of Youth	Cumulative Percentage
1-30	5	22.7%
31-60	2	31.8%
61-90	5	54.5%
91-120	2	63.6%
121-150	3	77.3%
151-180	1	81.8%
181-210	1	86.4%
211-240	0	0.0%
241-270	1	90.9%
271-300	1	95.5%
301-330	1	100.0%

Two possible explanations for the pattern of intense CAMT use can be investigated, at least preliminarily, with the data collected for this study. First, are multiple intervention youth more seriously impaired compared to single intervention youth? Second, do multiple intervention youth have fewer connections to community-based resources than youth who had a single mobile visit?

Impairment of “multiple call” youth versus youth with a single mobile visit

Similar percentages of single call (44.0%) and multiple call (45.8%) youth were rated as being in “Acuity Category A: Extreme Urgency” at the time of the sampled call. However, more of the multiple call youth had prior inpatient admissions (33.3% versus 21.3%) and previous emergency room visits (8.3% versus 6.7%). There were also some differences in Axis I diagnoses as shown in the table below, especially regarding post-traumatic stress disorder, psychotic disorder, and attention deficit disorder, with multiple call youth having higher rates of each of those disorders. None of the other diagnosis-related measures differed across the two groups (e.g., GAF score, additional diagnoses).

	Single Call (n=77)	Multiple Call (n=22)
Mood disorder	49.3	45.8
Post traumatic stress disorder	2.7	12.5
Attention deficit disorder	8.0	16.7
Adjustment disorder	13.3	8.3
Other	26.7	16.7

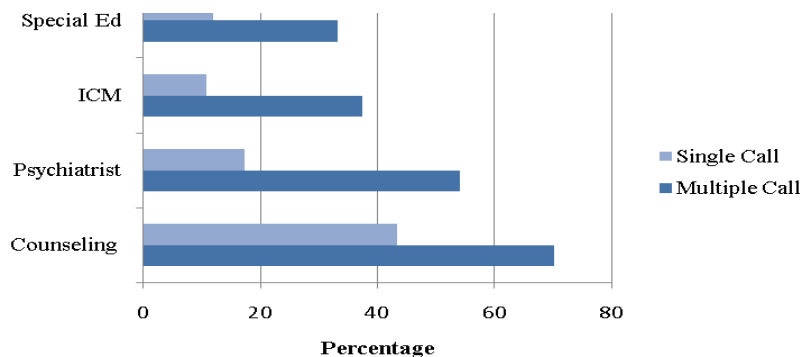
Note. Other includes conduct, oppositional defiant, anxiety, and pervasive developmental disorder, and missing

The disposition for approximately one quarter (22.7%) of the multiple call youth was referral to psychiatric evaluation (3 of the 5 youth were hospitalized). The disposition for approximately 15% of the single call youth was referral to psychiatric evaluation (9 of the 12 were hospitalized).

Community linkages of “multiple call” youth versus youth with a single mobile visit

On average, multiple call youths had 3.27 other services at the time of the sampled call, while youths with single calls had 1.01. An analysis of the existing services that youth had at the time of the sampled call shows several significant differences between the two categories (see Figure 2).

Figure 2. Comparison of existing services for youth with single mobile visit and multiple CAMT calls, 4/1/09-3/31/10



In summary, with the exception of psychiatric hospitalization history and primary diagnosis, multiple and single call youth do not differ on most of the characteristics that can be analyzed with available data. Multiple call youth do appear to have substantially more linkages with community-based providers than single call youth.

C. CAMT Family and Provider Satisfaction

A total of 91 out of 267 Family Satisfaction Surveys distributed were returned during 2009, for an overall response rate of 34.1%. Of the returned surveys, 86 provided feedback on a CAMT mobile visit and 5 provided feedback on telephone assistance. With 348 mobile visits in 2009 across the 3 counties, the satisfaction survey response rate for mobile visits is 24.7%. A total of 207 Provider Satisfaction Surveys were distributed in 2009, and 71 were returned for a response rate of 34.3%. Summaries of responses to the closed-ended questions are presented first for both the families and providers, followed by a summary of the open-ended questions.

Quantitative Satisfaction Survey Responses - Families

The response options for the closed-ended items on the family satisfaction surveys are “yes,” “no,” and “not applicable.” As the table below shows, close to 90% of all family members across the counties were satisfied with the CAMT services (with the exception of the item “provide culturally relevant services”). The lowest rates of satisfaction were reported by families in Rensselaer, with 7 of 10 items falling between 80% and 90%.

Obtaining responses to surveys regarding receipt of potentially stigmatizing services, such as mobile crisis, is notoriously difficult, and the people who are likely to respond are probably at the “very satisfied” end of the spectrum. For example, according to data from Connecticut (Emergency Mobile Psychiatric Services (EMPS) Performance Improvement Center (PIC) Team, 2010), overall satisfaction on 87 surveys was 4.5 (based on a 5 point Likert scale, with 5 meaning “strongly agree”) across two quarters. In a study of a law-enforcement based mobile crisis program in DeKalb County (GA), a convenience sample of 31 families was asked to complete the 8-item Client Satisfaction Questionnaire (Larsen et al., 1979) that uses a 1-4 Likert scale response. Most families reported being extremely satisfied (Scott 2000).

	Help you feel safe	Treat you with respect	Explain your options	Encourage your participation	Assist in developing safety plan	Assist with issues that precipitated the crisis	Contact for follow-up	Provide culturally relevant services	Team helpful & positive	Use team again if needed*
All Counties (n=86)	94.2%	95.3%	89.5%	88.4%	90.7%	84.9%	95.3%	76.7%	93.0%	89.9%
Albany (n=50)	98.0%	98.0%	92.0%	88.0%	96.0%	86.0%	96.0%	76.0%	96.0%	91.5%
Rensselaer (n=26)	88.5%	92.3%	84.6%	88.5%	80.8%	80.8%	96.2%	73.1%	88.5%	86.4%
Schenectady (n=10)	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%

* Several surveys did not include this question. Percentages in this column are based on n=79 for All Counties, n=47 for Albany, n=22 for Rensselaer, and n=10 for Schenectady.

Because responses to the cultural responsiveness item appeared to be outliers, we examined those responses in more detail. In all counties, 20.9% of respondents left this item blank or checked Not Applicable (NA); the percentages blank or NA was 22% in Albany, 23.1% in Rensselaer, and 10% in Schenectady.

Quantitative Satisfaction Survey Responses - Providers

According to their self-reported job titles, a range of providers responded: social workers (n=26), school social workers (n=7), clinicians or therapists (n=9), caseworkers (n=4), parent partners (n=2), principals (n=2), and various others (e.g., probation officer, deputy, behavioral health RN).

Response options for the closed-ended items on the provider satisfaction surveys are “yes” and “no.” As the table below shows, providers were overwhelmingly positive about their interaction with CAMT.

	Yes (%)	No or Missing (%)
Team was well coordinated in response to my concerns	98.6	1.4
Team provided information for managing crisis situations	92.8	7.2
Team collaborated with my organization effectively	97.1	2.9
Would call the crisis team again	98.6	1.4
* Two of the returned forms were different from the form used in the vast majority of cases (there were 3 rather than 4 closed-ended questions) and the 3 questions were not similar enough to any of the questions on the commonly used form to retain them. Thus, the N for the provider satisfaction survey analysis is 69.		

Qualitative Satisfaction Survey Responses – Families

48 family respondents offered comments about the mobile visit services. Of these, most (77%) were positive, indicating they felt the intervention was effective and helpful and were pleased with the team’s service, availability, and courtesy. Details are provided below:

- Effective intervention (14 comments: *“went to Ellis... getting counseling” “I feel my son was given good treatment and professionalism” “Xx is doing better with his attitude” “Back in school” “happier at this time” “empowered me to continue what I was doing even though I was frustrated”*)
- Helpful (12 comments: *“extremely helpful” “helped us out a lot”*)
- Pleased with the service (9 comments: *“Pleased with all services” “Very pleased with CAMT” “There was a family/parent advocate involved and my daughter absolutely loved her”*)
- Team’s availability (5 comments: *“It’s a comfort to know someone will answer my call when needed,” “Nice to know that people can help,” “Thankful for the people made me feel there*

was help,” “Appreciated having the crisis team available”; “I was genuinely impressed with the rapid response of the mobile crisis team”)

- Supportive follow-up (3 comments: “The follow up call was very helpful by keeping me on track with doctor’s appt and counseling”)
- Respect and courtesy (3 comments: “with a lot of concern and respect”)
- Clear communication (2 comments: “they explained everything and made sense to my child”)

Common themes revealed in the negative comments were as follows:

- Not interested in this type of service (2 comments: “shouldn’t be calling the crisis team!”)
- Communication about hospitalization process was unclear (2 comments: “we had to ‘re-do’ the whole process...I was lead to believe the CAMT was all that was needed,” “did not know that commitment to hospital would be involuntary...upsetting”)
- Dissatisfaction related to CAMT interaction with family (2 comments: “[mother] felt blamed by the team”; “I was not totally happy. My son convinced the team his story was true. He is quite the charming liar. I felt that an emergency admission was necessary at once”)
- Dissatisfaction related to follow-up (1 comment: “I was told that the team would email my child’s therapist that night (Tue). On his appt. on (Fri) the therapist had not heard from the team”)

Other comments related to other emergency responders involved in the crisis. One noteworthy comment addressed police involvement: “Police arrived before crisis team by 15 minutes during which time child thought police were there to kill him. Very scary for son, police and myself. Son hospitalized after incident.”

Qualitative Satisfaction Survey Responses – Providers

Almost all of the providers included brief comments, and with little exception the comments indicated that CAMT services are highly valued. Illustrative comments include the following:

“The crisis team was a tremendous support to myself and the family referred. They were knowledgeable, supportive and effective. We greatly appreciated the service provided.”

“Was really happy with how detailed and fast the report came from the CAMT team.”

“The team responded very quickly in response to a situation and I was very impressed with the team’s skill and patience when dealing with the patients.”

“The CAMT members are great at collaborating with other agencies/providers to get a full picture.”

D. CAMT cost- effectiveness

A recurring theme in the present evaluation study is that evidence to support beliefs about the merits of a child and adolescent mobile crisis team is not readily available. This interpretation of the state of knowledge in this area is echoed by the authors of a systematic review of economic studies of these services:

“There is, without doubt, heightened awareness among policy makers of the need for evidence-based information to guide policy and practice for children and adolescents with mental health problems. But there is also a widely recognised paucity of solid evidence. In this paper, we have reported the results of our search for economic evaluative data - the kinds of findings that could and should inform resource allocation decisions. What we have found has been disappointing but perhaps not surprising” (Romeo, Byford, & Knapp, 2005, p. 9).

As described in the “Evaluation Methods and Procedures” section above, we used a combination of information from CAMT case files and assumptions regarding the probabilities of hospitalization under different circumstances to calculate the incremental cost effectiveness ratios (ICERs) of CAMT service provision compared to police crisis response, whose mission is public safety, and compared to the Albany MCT, whose mission is to serve anyone with the county experiencing behavioral health crises and does not specialize in assessing children. Details regarding the estimated effects and costs are provided below. The spreadsheets used to calculate the ICERs are in Appendix D.

Estimation of effects. With regard to the desired effect of a CAMT intervention (i.e., prevention of hospitalization), we estimated the probability of hospitalization when CAMT conducts a mobile visit by combining data on mobile crisis dispositions from CAMT’s data tracking system with information in the case files which showed if hospitalization occurred between the time CAMT concluded its intervention and the time the case manager conducted the follow up phone call. Out of 99 cases sampled, 5 youth were hospitalized during CAMT’s intervention, and 10 were hospitalized subsequently. This yields a “hospitalized” probability of 0.15 and a “not hospitalized” probability of 0.85.

The probability of hospitalization when police or MCT are the crisis responders is not known. However, both prior research conducted primarily on adult samples (Bengelsdorf, Church, Kaye, Orlowski, & Alden, 1993; Guo, Biegel, Johnsen, & Dyches, 2001; Hugo, Smout, & Bannister, 2002; Lamb, Shaner, Elliott, et al., 1995; Reding & Raphaelson, 1995; Ruffin et al., 1993; Shulman & Athey, 1993; Stewart et al., 2006), and data provided to CAMT from CDPC suggest the probability of hospitalization is higher in the absence of CAMT. To develop an estimate, we used quarterly reports for our study period provided by CDPC-CIU to CAMT that contained data on referral sources and dispositions for youth who presented to CDPC-CIU. Of the 371 youth who presented, 97 (26.1%) were hospitalized. Thus, we used .26 as the estimated probability of hospitalization when other crisis responders are involved. We believe this is a conservative estimate (i.e., if we had data from local emergency departments the probability of hospitalization might be substantially higher); data from an Australian study showed that of 213 adolescents who presented at a children’s hospital ED, 46.8% were admitted either to the medical inpatient service or a psychiatric inpatient facility (Stewart et al., 2006).

However, so as not to “stack the deck” in favor of CAMT in the cost-effectiveness analyses, we used this possibly under-estimated rate of hospitalization for non-CAMT responders.

Estimation of costs. Cost estimates focus on the direct costs associated with treatment provision (i.e., excluded fixed program costs), and need to be calculated for the two possible outcomes (hospitalized or not). The cost of hospitalization, an ambulance transport, and a crisis evaluation are assumed to be the same for all intervention alternatives, and each of these costs was provided to CHSR by CAMT. Hospitalization is \$8600 based on a 10 day inpatient hospital stay (2008 estimate). Ambulance transport is \$300, and crisis evaluation is \$325.

CAMT direct cost per mobile crisis visit was estimated to be \$200 and was based on a combination of the following:

- Staff time spent from receipt of the phone call to the time the team leaves the crisis location: based on CAMT’s call tracking data set, we calculated duration of crisis intervention by subtracting Time Arrived from Time Left. Time en route was based on data collected from case files on miles round trip to each crisis, assuming an average speed of 30 miles per hour. Staff time is \$24 per hour per staff, with 2 staff responding to each crisis.
- Transportation costs: miles round trip to crisis divided by 25 MPG (the MPG for a Sedan in local and highway traffic) * \$2.5 per gallon (Energy Information Administration, 2005).
- Time spent by CAMT individual team member in post-crisis follow up (linking child to community supports): three hours per client were assumed.

Using the costs as defined above, we calculated the minimum, maximum and average cost per case for youth in our sample who had a single mobile visit. These costs were \$52.45, \$321.70 and \$135.04, respectively. We calculated the same costs for youth who had multiple CAMT contacts (a mobile visit and at least one other contact). These costs were \$28.52, \$787.81, and \$257.32, respectively. Overall the average CAMT cost was \$200 per mobile visit response.

Estimated police costs per crisis were \$141 based on the following: 3 hours per intervention (this was based on examining CAMT data to see how often police were on site when CAMT arrived and how long CAMT was on site for those incidents) * 2 police officers (standard procedure) * \$23.50 per hour. Police hourly salary was calculated from an annual salary of \$47,000 as of October 2010 (<http://www.indeed.com/salary/q-Police-Officer-l-Albany,-NY.html>). This assumed 2000 total work hours in a year (50 weeks*40 hours per week); \$47,000/2000 hours is \$23.50 per hour. When the outcome is hospitalization, an additional cost was added for crisis evaluation (\$325).

MCT costs are unknown. For this analysis, MCT staff hourly pay is assumed to be the same as CAMT (\$24), with 2 staff per crisis, and 2 hours spent per crisis. In contrast to CAMT, there was no assumption that MCT engages in follow-up activities to link youth to community supports. Thus, the estimated cost per crisis intervention is \$96. When the outcome is hospitalization, an additional cost was added for crisis evaluation (\$325).

As described in the methods section, interventions that have relatively low ICERs are considered good investments. In situations when calculations yield a negative ICER, the values are generally not reported, but the focal intervention is characterized as being “dominant” or preferred. The table below summarizes the ICERs and shows that CAMT is the preferred strategy to prevent hospitalization. Only in the unlikely circumstance of police or MCT strategies having a lower probability of hospitalization would the ICERs lead to concluding that CAMT is not cost effective.

Table 9. Incremental cost-effectiveness ratios (ICERs) of CAMT vs. police and MCT responses under different assumptions regarding likelihood of hospitalization		
	ICER CAMT vs. Police	ICER CAMT vs. MCT
Probability of hospitalization is the same for all responders (0.15)	No difference	No difference
Probability of hospitalization is 0.15 for CAMT and 0.26 for other responders	-8831.82	-8422.73

A cost-effectiveness analysis of services aimed at preventing hospitalization is highly sensitive to assumptions regarding the probability of hospitalization under different conditions. The main reason for this is that costs per crisis do not vary substantially whether the responder is CAMT, the police, or the Albany mobile crisis team (MCT). Because hospitalization is such a costly outcome, substantial differences in crisis intervention costs would be needed for CAMT to be deemed anything other than the “dominant” intervention strategy.

In summary, CAMT is a more cost effective crisis intervention strategy than either a police or MCT response. The incremental cost effectiveness estimates per hospitalization prevented range between \$8,000 and \$9,000.

V. Conclusion and Recommendations

The evaluation provides evidence that CAMT activities and processes are well-aligned with program goals. Moreover, CAMT operations are consistent with those of well-regarded mobile crisis services in other areas of the country, and with consensus-based recommendations about crisis services for children and adolescents. CAMT successfully meets the program goals of reducing unnecessary psychiatric hospitalizations and facilitating linkages to community-based supports among youth who experience behavioral, psychiatric or emotional crisis. Moreover, these goals are met equally across the three counties served. Finally, based on available data, CAMT meets the program goal of reducing hospitalizations in a cost-effective way.

Given the positive evaluation of current CAMT services, in the remainder of this report we provide recommendations related to (a) program operations that may be particularly salient as CAMT moves to expand its hours of operations, (b) the specification of performance indicators, and (c) quality assurance and evaluation. These recommendations are informed by the analysis and literature review. We conclude with suggestions for disseminating the findings of the present evaluation.

Program operations

- **Anticipate and prevent staff burnout.** According to experiences reported by other 24-hour mobile crisis teams, extended hours means staff will have to work during nights and weekends. Additional pay for less desirable shifts, flexibility in work schedules, and team-building activities may help prevent burnout or turnover due to both the challenges of crisis work, and disruptive work hours.
- **Conduct outreach with other community agencies.** Extended hours are likely to mean that there will be some periods with low numbers of calls. During these slow periods staff time could be devoted to conducting outreach with other community agencies. Staff could develop materials that are targeted to the situations faced by different responders, such as police, emergency room staff, or school personnel. If possible, the materials could be provided during face-to-face training sessions on handling youth crises. Finally, CAMT staff could offer assistance with discharge planning for youth currently in inpatient settings (as is done in King County, Washington).
- **Develop special protocols for intensive users of CAMT (“multiple call” youth).** The phenomenon of intensive use of services by a relatively small, but expensive, proportion of clients is typical of behavioral health service systems. However, what proportion of a crisis service caseload should be expected to be repeat users, and what is the definition of a multiple user? For example, should two calls within one week constitute separate crisis episodes, thereby potentially labeling a youth a “multiple caller”? In the absence of a clear definition, CAMT may nevertheless want to develop special protocols for intensive users to best address the needs of these especially vulnerable youth, and to ensure appropriate use of crisis services. For example, as recommended in Connecticut, once three face-to-face crisis

interventions have occurred, parents are asked to complete special assessments that are then used to guide the facilitation of additional service provision.

Performance indicators

Performance indicators are often established by funders of services to ensure acceptable levels and quality of services are provided. For example, client satisfaction may be a performance indicator, and funders could set the expectation that 60% of clients complete a satisfaction survey (note the benchmark in this case does not state what the level of satisfaction should be, but it could). Other states are moving in the direction of developing performance standards for child and adolescent mobile crisis services, particularly around length of service and connection to community supports.

CAMT might want to establish its own performance indicators and then track performance accordingly for two reasons. First, efforts to secure continued support from current CAMT services funders and new resources from potential funders (e.g., insurers) are more likely to be successful if CAMT can provide evidence of how it is meeting relevant benchmarks. Second, performance targets facilitate internal quality assurance efforts. The list below outlines relevant performance indicators, many of which were recommended by the Connecticut practice improvement committee (Vanderploeg, Schroeder, & Franks, 2008).

- **Mobility rate** (the proportion of calls that result in a mobile visit): A mobile response rate of 100% of calls received is not recommended, but if the purpose of the service is to be responsive to crises as they occur in the community, the expectations for mobility should be high. For this indicator to be meaningful, a consistent standard for defining what constitutes a “call” for a crisis intervention must be developed. Calls that are for information and referral only, or are placed by persons who have misconceptions about the service (e.g., they are calling in search of a respite bed), should be recorded, but because they are not emergency calls they should not be considered in analyses that calculate mobility rates.
- **Service provision indicators** should include acuity level and diagnosis of child, with benchmarks set so as to reinforce that mobile visits are for the youth in most danger of hurting themselves or others.
- **Outcome indicators** should include diversions from emergency departments and rates of community based service linkage. CAMT may want to consider setting different benchmarks for rates of community based service linkage for youth who have pre-existing relationships with providers and those who do not. Other indicators related to service linkage could include type of service referral made and time from referral to family engagement.
- **Program sustainability indicators** might include staff training activities or outreach activities to community agencies.

Quality assurance and evaluation

- **Develop a quality improvement action plan.** CAMT may want to prioritize two or three key performance indicators to target for continuous quality improvement. The action plan should specify the targeted indicator, the plan for action on how to improve performance on that indicator, the time frame for the plan of action, and the expected outcome at the end of specified time frame. If successful (i.e., the stated goal for improvement has been attained), another indicator could be selected for improvement, and the process starts over. If not successful, the plan should be revisited to determine if it was actually implemented, or if it may need to be revised.
 - The timing of the planned expansion of CAMT hours should be factored into the choice of performance targets. For example, mobility rates may be of immediate interest when the hours expand, and any performance indicators related to multiple call youth may be a priority after expansion has occurred.

- **Expand call tracking database.** The implementation of a quality improvement plan depends on having access to the right data for any given performance indicator. The current CAMT data system is well-suited to inform performance related to youth characteristics and call disposition. Other indicators, however, such as community based service linkage and time from referral to family engagement are not part of the tracking database. Information about all of the post-crisis activities that CAMT engages in to support vulnerable youth in the community can currently be obtained only by the time-consuming method of reading case files. Although more data entry is potentially burdensome, the inclusion of a handful of well-defined additional items may substantially enhance CAMT's continuous quality improvement efforts.

- **Consider investing in additional program evaluation.** The present evaluation focused on investigating the effect of CAMT on hospitalization and facilitation of clients' connections to community-based supports. Other outcomes that CAMT expects to see, such as less use of police and ambulance, less stressful escort experience for youth and family, reduced stress on youth and family, and reduced school missed due to behavioral crisis were not directly assessed. To do so requires investment in data collection as follows:
 - Follow-up phone calls in the cases where CAMT was unable to respond because it was serving another family would shed light on what callers did to help the youth (i.e., call police, ambulance) and what happened (i.e., resolution with or without hospitalization, arrest). CAMT may want to include this activity as one of the tasks for staff to complete during periods with low numbers of calls.
 - Stress on youth and family could be obtained in answers to new questions on satisfaction surveys, or in qualitative interviews with prior service recipients. Attempts to interview families who did not provide completed satisfaction surveys may yield important insights. These conversations could be scheduled by CAMT staff, but conducted by a researcher to minimize respondents' social desirability bias.

Additional research on CAMT effectiveness compared to other responders could be used to validate and expand the cost-effectiveness results reported here. Data would need to be

collected on police involvement (e.g., how many calls do they receive related to children and adolescents experiencing behavioral, psychiatric or emotional distress; how often do the police call CAMT or MCT when they receive these calls; how often do they transport to ER or CDPC); MCT involvement (e.g., how many calls do they receive related to children and adolescents experiencing behavioral, psychiatric or emotional distress; how often does MCT call the police or CAMT; how often does MCT transport the youth to CDPC), and rates of hospitalization when various responders are involved. This data collection could be done by CAMT staff, or perhaps student interns.

Dissemination of evaluation findings

Given the paucity of empirical studies of mobile crisis interventions for youth and adolescents, the findings from this evaluation are likely to be of great interest to policy makers, program directors, and researchers alike. Attendees at professional conferences are likely to be most interested in the cost-effectiveness results, and specific descriptive information about program delivery, including activities that lead to successful outcomes (i.e., lower rates of hospitalization). Peer-reviewed journals are likely to be most interested in a comparison of needs and outcomes between youths who receive telephone triage versus a mobile visit, or between youths who are intensive users of the crisis service compared to youths who receive a mobile visit only. Continued collaboration between CAMT and CHSR to disseminate the findings in multiple venues will help advance the field considerably.

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APPENDIX A

Capital Region Child and Adolescent Mobile Team Logic Model

Program Goal: Establish an organized and effective community-based response to child/adolescent behavioral crises that is built upon each child's existing family/caretaking system and that is integrated with available community services. This response is intended to create a "best practice" model for the care of children and adolescents who have mental health problems or developmental disabilities.

Context	Activities	Outcomes
<p>Population of Focus Albany, Rensselaer or Schenectady County children and adolescents (up to age 17 or older if still in day school) who are experiencing an emotional and/or behavioral crisis.</p> <p>Primary Challenge Four of the principal points of emergency access available now – the CDPC Crisis Unit and the emergency departments of Albany Medical Center, Samaritan Hospital, and Ellis Hospital – serve adults and as such are inappropriate for children and adolescents.</p> <p>Inputs</p> <ul style="list-style-type: none"> • Staffing: Master's level social work, nursing, and behavioral clinicians specially trained in child and adolescent mental health and developmental disabilities. • Hours of operation: M-F 11:00 am to 9:30 pm, identified high-needs times. • Transport: Designated CAMT vehicles. • Partnerships: A collaborative of 13 agencies in three counties and selected MOU's with emergency rooms, county mental health agencies, and respite providers. 	<p>Consultation and Information</p> <ul style="list-style-type: none"> • Telephone consultation available to families and providers. • Telephone screening for intervention. <p>Crisis Assessment, Intervention and Stabilization</p> <ul style="list-style-type: none"> • Urgent face-to-face assessment and intervention in the community. • Utilize assessment tools designed for children and adolescents. • Escort, transport to service. • Immediate access to brief crisis respite in the three counties served. <p>Peer Support</p> <ul style="list-style-type: none"> • Family advocate support engages the family during crisis assessment. • Family Advocate provides post-crisis phone support to follow up with the parents as needed. • Peer support works with the family on long-term, comprehensive planning. <p>Facilitation of Community Supports and Care</p> <ul style="list-style-type: none"> • Establish or enrich connections between providers and family, with linkages to community-based resources. • Establish an effective continuing plan for support of the entire caregiving system – family, school, pre-crisis service providers. 	<p>Short-Term</p> <ul style="list-style-type: none"> • Immediate restoration of safety. • Youth and family connected to locally based support services. • More appropriate community referrals. • More accurate assessments. • Reduced use of ambulance and police for transport. • Less stressful escort experience for youth and family. • Longer term, comprehensive plans that ensure least restrictive services to support the child and family safely in the community. • Customer satisfaction (families, youth, providers, local government agencies). <p>Intermediate</p> <ul style="list-style-type: none"> • Reduced number of youth served in ERs and CDPC Crisis Unit due to emotional and behavioral crises. • Reduced hospitalizations and need for high-level care, i.e., increase diversions. <p>Long-Term</p> <ul style="list-style-type: none"> • Cost savings based on reductions in the use of higher levels of care and ancillary services, e.g., police, ambulance. • Reduced stress on youth and family. • Reduced school days missed due to behavioral crisis.

APPENDIX B

CAMT Data Collection Form

Unique Client ID _____ NOTE: For clients who have more than one visit or telephone consultation, complete as many forms as necessary and mark the first one A, second B, etc.

Date of call: _____ **Time of call:** Start _____ Stop _____

miles round trip: _____

Insurance: Medicaid Managed Medicaid Other (specify) _____ Unknown

Prior Hospitalizations

Previous inpatient psych admits in past 3 months: Yes No

Previous ER visits (without psych admits) in past 3 months: Yes No

Current DSM-IV diagnosis

Axis I _____

Axis V – GAF Score _____

Axis II _____

Axis III _____

Axis IV _____

Did CAMT involvement result in youth's reconnection to community resources?

Other Services at Time of Call (check all that apply)	Did CAMT follow up with other service after mobile visit? Yes, No, Not applicable (NA)	If Yes, provide all dates of CAMT follow up calls with service provider	If Yes, provide date other service provider contacted or met with client (ND=no indication in file that other provider made contact)
<input type="checkbox"/> ICM (Intensive Case Management)	__ Yes __ No __ NA		
<input type="checkbox"/> CPS (Child Protective Services)	__ Yes __ No __ NA		
<input type="checkbox"/> PINS (Person in Need of Supervision)	__ Yes __ No __ NA		
<input type="checkbox"/> PCFC (prevention services)	__ Yes __ No __ NA		
<input type="checkbox"/> Special education	__ Yes __ No __ NA		
<input type="checkbox"/> Other (specify) _____	__ Yes __ No __ NA		
<input type="checkbox"/> Other (specify) _____	__ Yes __ No __ NA		

Disclosure of information forms: _____

Mobile Visit Disposition

- ___ Safety Plan
- ___ Medical ER
- ___ Inpatient Bed
- ___ Respite

CAMT follow up with client’s family or original caller

Date of call	Who was called (family, police, school)	Information obtained (e.g., safety plan working; discharged from respite; transferred to hospital. Include dates if relevant.)

Did CAMT involvement result in youth’s new connection to community resources?

New Services as a result of CAMT (check all that apply)	Did CAMT follow up with other service after mobile visit? Yes, No, Not applicable (NA)	If Yes, provide all dates of CAMT follow up calls with service provider	If Yes, provide date other service provider contacted or met with client (ND=no indication in file that other provider made contact)
<input type="checkbox"/> Counseling	___ Yes ___ No ___ NA		
<input type="checkbox"/> Psychiatrist	___ Yes ___ No ___ NA		
<input type="checkbox"/> Other (specify) _____	___ Yes ___ No ___ NA		
<input type="checkbox"/> Other (specify) _____	___ Yes ___ No ___ NA		

(For mobile visits only) Family Advocate Involvement ___ Yes ___ No

Provide any other relevant information that is not captured in the database or in the items above pertaining to CAMT activities or case disposition:

APPENDIX C

Other State and Local Youth Mobile Crisis Services

Baltimore, Maryland – Baltimore Child and Adolescent Response Systems (B-CARS)

Contact information

1118 Light Street, Suite 200

Baltimore MD 21230

Tel: 410-727-4800 Fax: 410-727-5853

<http://www.dhmf.state.md.us/mha/crisiscare.html>

Area Served: Baltimore City

Eligibility Requirement: Children and adolescents considered in psychiatric crisis

Services Provided: 24 hour hotline, short-term in-home crisis intervention consisting of individual and family therapy, psychiatric rehab services, and therapeutic behavioral support, psychiatric evaluation and routine assessment, hospital diversion, linkage to community based providers. Spanish language services available.

Hours and Crisis Phone Number: M-F, 8:30am-8 pm, Hotline 24 hrs (410) 433-5175

King County, Washington- Children's Crisis Outreach Response System (CCORS)

Contact Information

King County Crisis & Commitment Services

401 5th Avenue, Suite 400

Seattle, WA 98104

Phone: 206-263-9200; FAX: 206-205-5192

<http://www.kingcounty.gov/healthServices/MentalHealth/Services/Youth/CrisisOutreach.aspx>

Area Served: King County

Eligibility Requirement and Services: children, youth and families

Service Provided: For children who are not already enrolled in the publicly funded King County Mental Health Plan (KCMHP): mobile crisis outreach including mental health and suicide risk assessments and links to community resources; non-emergency outreach appointments (provided within 24-48 hours for those families who are not in acute crisis but need quick support and linkage to services); crisis stabilization services w/ in-home support is available for up to 8 weeks following the initial acute crisis. For children and youth who are currently enrolled in the KCMHP: intensive crisis stabilization services provides immediate crisis stabilization and ongoing in-home service for up to 90 ; crisis stabilization beds up to 14 .

Hours and Crisis Phone Number: Crisis Clinic at 206-461-3222 or 1-866-4CRISIS. 24/7

Milwaukee, Wisconsin - Mobile Urgent Treatment Team (MUTT)

Contact Information

Dr. Chris Morano – Director, cmorano@wrapmilw.org,

Phone: 414-257-7621

Fax: 414-257-7575

<http://www.kingcounty.gov/healthServices/MentalHealth/Services/Youth/CrisisOutreach.aspx>

Area Served: Milwaukee County

Eligibility Requirement: any family in Milwaukee County with a child who is having a mental health crisis when the behavior of the child threatens his or her removal from home, school, etc.

Service Provided: crisis intervention services, short-term case management, linkage to other community services. Also operates an 8-bed crisis/respite group home.

Hours and Crisis Phone Number: 9:00 a.m. to 10:00 p.m. Monday through Friday; 1:30 p.m. to 10:00 p.m. Saturday and Sunday. During all other hours, MUTT can be reached by telephone through an on-call system, 24/7 mobility, 24/7 crisis phone:414-257-7621

Massachusetts Behavioral Health Partnership (MBHP)

Contact Information

<http://www.masspartnership.com/about/index.aspx?lnkID=contactUs.ascx>

Areas Served: 21 emergency service providers (ESP) in 63 locations in 6 regions across the state

Eligibility: youth under the age of 21

Services Provided: crisis assessment; development of a risk management/safety plan, if the youth/family does not already have one; up to 72 hours of crisis intervention and stabilization services including: on-site face-to-face therapeutic response, psychiatric consultation and urgent psychopharmacology intervention, as needed; referrals and linkages to all medically necessary behavioral health services and supports, including access to appropriate services along the behavioral health continuum of care.

Hours and Crisis Phone Number: 24/7 Phone: (800) 495-0086

Tennessee Mobile Crisis Response Services

Contact Information

TN Department of Mental Health & Developmental Disabilities

www.tn.gov/mental

Areas Served: State

Eligibility: youth

Services Provided: specialized crisis response service

Hours and Crisis Phone Number: 8 Toll-Free Youth Telephone Lines across Tennessee, 24/7

Connecticut's Emergency Mobile Psychiatric Services (EMPS)

Contact information

www.chdi.org

Tel: 860-679-1519

Fax: 860-679-1521

<http://www.ct.gov/dcf/cwp/view.asp?a=2558&q=314354>

Areas Served: 16 providers across State

Eligibility: The target population is any child or youth in crisis including any HUSKY (Healthcare for Uninsured Kids and Youth) A or B or Voluntary Services Program enrollee and any other child or youth. The EMPS service is available across child welfare, juvenile justice, prevention and behavioral health systems.

Services Provided: mobile response; psychiatric assessment; medication consultation, assessment, and short-term medication management; behavioral management services; substance abuse screening and referral to traditional and non-traditional services for any family with a child in crisis.

Hours and Crisis Phone Number: a centralized, 24/7 toll-free phone number (2-1-1) is point of entry. In the event of a psychiatric emergency, a trained screener facilitates direct contact with a licensed EMPS staff member or other emergency service.

Bronx, New York -- All Children's House Mobile Crisis Team (Association to Benefit Children)

Contact information

Association to Benefit Children www.a-b-c.org

1841 Park Avenue, New York, NY 10035

Phone: 212-845-3821

Fax: 212- 426-9488

Areas Served: catchment area, Manhattan CD 8, 11

Eligibility: youth under the age of 18

Services Provided: Interventions on a short-term basis including: psychiatric evaluation, brief counseling and referrals to agencies and services that can help stabilize the client in the community, authorized to involuntarily hospitalize clients who are at risk to themselves or others. Mobile Crisis Teams generally attempt to make contact with the client within 72 hours of the initial referral. Polish and Spanish language services available.

Hours and Crisis Phone Number: Phone: 646-459-6165. Fax: 646-459-6086

APPENDIX D
Cost Effectiveness Calculations

CAMT vs. Police
Equal Probability (0.15) of Hospitalization

							Total cost	Total effects
CAMT	Not hospitalized	Cost	200	Effects	1	CAMT	1490	0.85
	Probability		0.85			Police	1479.75	0.85
Police	Hospitalized	Cost	8800	Effects	0			
	Probability		0.15					
CAMT	Not hospitalized	Cost	141	Effects	1			
	Probability		0.85			CAMT incr. cost vs police		10.25
Police	Hospitalized	Cost	9066	Effects	0			
	Probability		0.15			CAMT incr. effectiveness		0
						ICER CAMT vs. Police		#DIV/0!

	Cost		Effects
CAMT	200	Hospitalized	0
		Not	
Police	141	Hospitalized	1
Crisis eval	325		
Hospitalization	8600		

CAMT vs. Police
Probability of hospitalization is 0.15 for CAMT and 0.26 for Police

						Total cost	Total effects		
CAMT	Not hospitalized		<i>Cost</i>	200	<i>Effects</i>	1	CAMT Police	1484 2461.5	0.82 0.74
	<i>Probability</i>			0.82					
	Hospitalized		<i>Cost</i>	8800	<i>Effects</i>	0			
	<i>Probability</i>			0.15					
Police	Not hospitalized		<i>Cost</i>	141	<i>Effects</i>	1	CAMT incr. cost vs police CAMT incr. effectiveness	-977.5 0.08	
	<i>Probability</i>			0.74					
	Hospitalized		<i>Cost</i>	9066	<i>Effects</i>	0			
	<i>Probability</i>			0.26					
						ICER CAMT vs. Police	-12218.75		

	Cost		Effects
CAMT	200	Hospitalized	0
		Not	
Police	141	Hospitalized	1
Crisis eval	325		
Hospitalization	8600		

CAMT vs. MCT
Equal Probability (0.15) of Hospitalization

							Total cost	Total effects
CAMT	Not hospitalized	<i>Cost</i>	200	<i>Effects</i>	1	CAMT	1490	0.85
	<i>Probability</i>	0.85				MCT	1434.75	0.85
	Hospitalized	<i>Cost</i>	8800	<i>Effects</i>	0			
	<i>Probability</i>	0.15						
MCT	Not hospitalized	<i>Cost</i>	96	<i>Effects</i>	1			
	<i>Probability</i>	0.85				CAMT incr. cost vs MCT		55.25
	Hospitalized	<i>Cost</i>	9021	<i>Effects</i>	0	CAMT incr. effectiveness		0
	<i>Probability</i>	0.15				ICER CAMT vs. MCT		#DIV/0!

	Cost		Effects
CAMT	200	Hospitalized	0
MCT	96	Not Hospitalized	1
Crisis eval	325		
Hospitalization	8600		

CAMT vs. MCT
 Probability of hospitalization is 0.15 for CAMT and 0.26 for MCT

				Cost	Effects		Total cost	Total effects
CAMT	Not hospitalized			200	1	CAMT	1490	0.85
	<i>Probability</i>	0.85				MCT	2416.5	0.74
	Hospitalized			8800	0			
	<i>Probability</i>	0.15						
MCT	Not hospitalized			96	1			
	<i>Probability</i>	0.74						
	Hospitalized			9021	0			
	<i>Probability</i>	0.26						
							CAMT incr. cost vs MCT	-926.5
							CAMT incr. effectiveness	0.11
							ICER CAMT vs. MCT	-8422.73

	Cost		Effects
CAMT	200	Hospitalized	0
		Not	
MCT	96	Hospitalized	1
Crisis eval	325		
Hospitalization	8600		