



## Top Tier Evidence Initiative

### ***Evidence Summary for the Critical Time Intervention***

#### **HIGHLIGHTS:**

- **Intervention:** A case management program to prevent recurrent homelessness in people with severe mental illness leaving shelters, hospitals, or other institutions.
- **Evaluation Methods:** Two well-conducted randomized controlled trials.
- **Key Findings:** More than a 60% reduction in likelihood of homelessness, 18 months after random assignment.

#### **I. The Top Tier initiative’s Expert Panel has identified this intervention as *Top Tier*.**

The Panel finds that this intervention meets the Congressional Top Tier Evidence standard, defined as: *Interventions shown in well-designed and implemented randomized controlled trials, preferably conducted in typical community settings, to produce sizable, sustained benefits to participants and/or society.*

#### **II. Description of the Intervention:**

The Critical Time Intervention (CTI) seeks to prevent recurrent homelessness in people with severe mental illness leaving shelters, hospitals, or other institutions. People with such illness are estimated to comprise one-quarter of the U.S. sheltered homeless population [U.S. Department of Housing and Urban Development, 2010]. CTI’s approach is to (i) strengthen the individual’s long-term ties to services, family, and friends; and (ii) provide emotional and practical support during the critical time of transition back to the community.

The nine-month intervention is delivered to each participant by a single caseworker – a bachelor or master’s level person trained in CTI and supervised by a mental health professional. The intervention has three phases, each of which lasts approximately three months.

Phase one (“transition to the community”) covers the period before and after the client’s discharge from the institution. In this phase, the caseworker gets to know the client (starting before discharge), assesses the client’s needs, and implements a transition plan intended to link the client to services and supports in the community. The plan typically includes home visits and other meetings with the client, the client’s caregivers, and community service providers, designed to teach crisis-resolution skills, provide support and advice, and mediate any conflicts. In phase two (“try out”), the caseworker monitors and adjusts the systems of support that were developed during phase one. This phase involves fewer meetings with the client, as the caseworker encourages the client to problem-solve with the help of community resources and family members, and intervenes only if the client is receiving inadequate support or if a crisis occurs. In phase three (“transfer of care”), the caseworker helps the client develop and implement a plan to achieve long-term goals (e.g., employment, family reunification) and finalizes the transfer of responsibilities to caregivers and community providers. Each CTI caseworker typically works with 10-15 clients at a time.

CTI costs \$6,290 per participant (in 2013 dollars). [Click here to go to the program’s website.](#)

### III. Evidence of Effectiveness

This summary of the evidence is based on a systematic search of the literature, and correspondence with leading researchers, to identify all well-conducted randomized controlled trials of CTI for individuals with mental illness being discharged from a shelter, hospital, or other institution. Our search identified two such studies. These trials both evaluated CTI in New York City, a setting with high-quality community services available for individuals facing homelessness. Thus, the studies' findings may not necessarily apply to settings without such services.

The following summarizes the program's effects on the main outcomes measured in each study, including any such outcomes for which no or adverse effects were found. All effects shown are statistically significant at the 0.05 level unless stated otherwise.

#### **Study 1 (All male sample in New York City, 1990s)**

This was a randomized controlled trial of 96 men with severe mental illness who were discharged from a New York City men's shelter following completion of an on-site psychiatric treatment program, and agreed to participate in the study. The men were randomly assigned to either (i) a group that received CTI plus usual services or (ii) a control group that only received usual services. Usual services included referral to community mental health and rehabilitation programs, and limited post-discharge assistance from the on-site psychiatric program staff (e.g., advice upon request).

74% of sample members were African-American, 60% were age 35 or older, 36% had five or more psychiatric hospitalizations, 68% had been diagnosed with schizophrenia, 54% were alcohol dependent, 47% were cocaine-dependent, and 78% had been homeless for more than one year of their life.

#### **Effects of CTI 18 months after random assignment (9 months after completion of the intervention), compared to the control group:**

- 67% reduction in homeless nights during the 18 months (an average of 30 nights for the CTI group versus 91 nights for the control group).
- 64% reduction in the likelihood of being homeless during the final month of the 18-month period (8.3% of the CTI group were homeless versus 22.9% of the control group).
- CTI produced savings in government/community expenditures on housing, health care, shelter, and other services of \$5,326 per person during the 18 months, which nearly offset the intervention's cost (i.e., \$6,290 per person, as noted above). The study does not report whether these savings were statistically significant.

#### **Discussion of study quality:**

- The study had very low sample attrition: At the 18-month follow-up, outcome data were obtained for 95-98% of the original sample (depending on the outcome measure).
- At the start of the study, there were no statistically-significant differences between the CTI and control groups in their observable characteristics. (Two differences – in prior homelessness and cocaine use – approached statistical significance, but they favored the control group and so would tend to result in conservative estimates of CTI's effects.)

- The study appropriately sought to measure outcomes for all men assigned to the CTI group, regardless of whether or how long they participated in the program (i.e., the study used an "intention-to-treat" analysis).
- Outcome data were collected through face-to-face interviews with sample members, by interviewers who were unaware ("blind") as to which sample members were in the CTI group versus control group. (In a few cases, when a man could not be directly interviewed, the interview was conducted with a family member or caseworker.)
- The study evaluated CTI as delivered in a typical inner-city setting by bachelor or master's level caseworkers, thus providing evidence of the program's effectiveness under real-world implementation conditions.
- A limitation of this study is that its follow-up period was only 18 months after random assignment. Longer-term follow-up is needed to determine if the sizable effects at 18 months persist.

### **Study 2 (New York City, 2000s)**

This was a randomized controlled trial of 182 men and women with severe mental illness who (i) had been discharged from psychiatric hospitalization in New York City and were residing in transitional, hospital-based housing; (ii) had been homeless at some point during the 18 months preceding their hospitalization; and (iii) had agreed to participate in the study. These individuals were randomly assigned to (i) a group that received CTI plus usual care, or (ii) a control group that only received usual care (i.e., community-based services that typically included various types of case management and clinical treatment).

The study analyzed CTI's effects on the subsample of 150 individuals who were actually discharged from the hospital-based housing to a location in New York City, as opposed to those who stayed in such housing or were discharged to a location outside the city or to a hospital or jail. This analysis plan was decided upon prior to random assignment (and is discussed further below, under "study quality"). Hereafter, we refer to this group of 150 as the study sample.

The study sample averaged 38 years of age, 71% were male, 62% were African-American, 61% had been diagnosed with schizophrenia, 80% had a substance use disorder, 79% had experienced two or more previous homeless episodes, and 34% had experienced five or more such episodes.

#### **Effects of CTI 18 months after random assignment (9 months after completion of the intervention), compared to the control group:**

- 24% reduction in homeless nights during the 18 months (an average of 31 nights for the CTI group versus 41 nights for the control group).
- 72% reduction in the likelihood of being homeless during the final 18 weeks of the follow-up period (5.2% of the CTI group were homeless versus 18.6% of the control group).
- 24% reduction in nights spent in a psychiatric hospital during the 18 months (an average of 81 nights for the CTI group versus 107 nights for the control group). Because of the high cost of psychiatric hospitalizations, this effect generated health care savings of approximately \$24,000 per person during the 18 months, more than offsetting the cost of CTI (i.e., \$6,290

per person, as noted above).<sup>1</sup>

- 26% reduction in the likelihood of psychiatric hospitalization during the 18 months (20% of the CTI group were hospitalized versus 27% of the control group).

#### **Discussion of study quality:**

- The study had low-to-moderate sample attrition: At the 18-month follow-up, outcome data were obtained for 78% of the study sample. Follow-up rates were similar for the CTI versus control group (75% and 81%, respectively).
- At the start of the study, the CTI and control group members of the study sample were highly similar in their observable characteristics (e.g., demographics, prior homelessness, mental illness diagnosis, substance use).
- Outcome data were collected through interviews with sample members, by interviewers who were unaware (“blind”) as to which sample members were in the CTI group versus control group. (In a few cases, when a sample member could not be directly interviewed, the interview was conducted with a family member or caseworker.)
- A limitation of this study is that, as noted above, it analyzed outcomes for the subsample of 150 randomly-assigned individuals who were actually discharged from hospital-based housing to a New York City location, excluding 32 individuals who stayed in such housing or were discharged to a location outside the city or to a hospital or jail. Such analysis is not ideal because the discharge decisions occurred after random assignment and potentially could have been affected by intervention, undermining the equivalence of the CTI and control groups. However, we believe this is unlikely to have occurred in this case because (i) the hospital-based housing staff making the discharge decisions were unaware of which housing residents were involved in the study; (ii) approximately equal numbers of CTI and control group members were excluded (17 and 15, respectively), and there were no statistically-significant differences between these two excluded groups in their observable pre-program characteristics; and (iii) the researchers’ plan to analyze the subsample discharged to New York City was developed prior to random assignment, and so is not a post-hoc analysis.
- A second limitation of this study is that its follow-up period was only 18 months after random assignment. Longer-term follow-up is needed to determine if the sizable effects at 18 months persist.

#### **Other Studies**

Two other randomized controlled trials have evaluated other versions of CTI – versions that differed from the original model described above in some key features. In one case, the program worked with families (instead of individuals) with much less severe mental illness; in the other, the program was less intensive and considerably shorter in duration (three months, as opposed to nine months). Because of these programmatic differences, these studies are not summarized here, except to note that they did not contain any countervailing findings.

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<sup>1</sup> To obtain this cost savings estimate, we multiplied the reduction in psychiatric hospitalization nights (i.e., 26 nights per person) by the cost of such hospitalizations per night in New York (\$947), obtained from the Agency for Healthcare Research and Quality’s *State Statistics on All Stays* (<http://hcupnet.ahrq.gov/>)

#### IV. Summary of the Intervention’s Benefits and Costs:

If taxpayers fund implementation, what benefits to society can they expect to result, and what would be their net cost? The following table provides a summary.

<b><u>Benefits To Society</u></b>
<ul style="list-style-type: none"><li>▪ <b>Sizable reductions (24-67%) in average number of nights spent homeless over the 18-month follow-up period.</b> (Studies 1 and 2 above)</li><li>▪ <b>More than a 60% reduction in likelihood of being homeless in the final weeks of the 18-month follow-up.</b> (Studies 1 and 2 above)</li></ul>
<b><u>Net Cost To Taxpayers</u></b>
<ul style="list-style-type: none"><li>▪ <b>\$6,290 per person in 2013 dollars, to deliver CTI program services.</b></li><li>▪ <b>This cost was <u>mostly offset</u> in study 1 by savings of \$5,326 per person in other government/ community expenditures, and <u>more than offset</u> in study 2 by savings of \$24,000 per person.*</b></li></ul>

\*Many of these savings accrue to the taxpayer (e.g., in reduced Medicaid costs), but some may also accrue to other community service providers (e.g., charity-run shelters).

#### V. References:

##### Study 1 – All male sample in New York City, 1990s

- Herman, Daniel, Lewis Opler, Alan Felix, Elie Valencia, Richard Jed Wyatt, and Ezra Susser. “A Critical Time Intervention with Mentally Ill Homeless Men: Impact on Psychiatric Symptoms.” *The Journal of Nervous and Mental Disease*, March 2000, vol. 188, no. 3, pp. 135-140.
- Jones, Kristine, Paul W. Colson, Mark C. Holter, Shang Lin, Elie Valencia, Ezra Susser, and Richard Jed Wyatt. "Cost-Effectiveness of Critical Time Intervention to Reduce Homelessness Among Persons With Mental Illness." *Psychiatric Services*, June 2003, vol. 54, no. 6, pp. 884-890.
- Lennon, Mary Clare, William McAllister, Li Kuang, and Daniel B. Herman. “Capturing Intervention Effects Over Time: Reanalysis of a Critical Time Intervention for Homeless Mentally Ill Men.” *American Journal of Public Health*, October 2005, vol. 95, no. 10, pp. 1760-1766.
- Susser, Ezra, Elie Valencia, Sarah Conover, Alan Felix, Wei-Yann Tsai, and Richard Jed Wyatt. "Preventing Recurrent Homelessness among Mentally Ill Men: A 'Critical Time' Intervention after Discharge from a Shelter." *American Journal of Public Health*, February 1997, vol. 87, no. 2, pp. 256-262.

## **Study 2 – New York City, 2000s**

- Herman, Daniel, Sarah Conover, Prakash Gorroochurn, Kinjia Hinterland, Lorie Hoepner, and Ezra Susser. "Randomized Trial of Critical Time Intervention to Prevent Homelessness After Hospital Discharge." *Psychiatric Services*, July 2011, vol. 62, no. 7, pp. 713-719.
- Tomita, Andrew and Daniel B. Herman. "The Impact of Critical Time Intervention in Reducing Psychiatric Rehospitalization After Hospital Discharge." *Psychiatric Services*, September 2012, vol. 63, no. 9, pp. 935-937.
- Clarifying correspondence with Daniel Herman (June 2011 and March 2013)

## **Other references**

- *The 2009 Annual Homeless Assessment Report to Congress*. U.S. Department of Housing and Urban Development, Office of Community Planning and Development, June 2010, page 17.
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- Samuels, Judith, Nancy Travers, Terese Lawinski, Ilyssa Berg, Dei-In Tang, and Andrea Ault. "Homeless Families Program Final Report: Homeless Families in Westchester County, N.Y. – Phase 2." Final report to SAMHSA, September, 2006.