The Cost of Failure Revisited:

Kid Connects Mental Health Consultation as a Cost Savings Investment Strategy

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The Cost of Failure Revisited: Kid Connects Integrated Health & Mental Health Consultation as a Cost Savings Investment Strategy

Some years ago, an effort was made to estimate a number of the public costs that are potentially incurred when early childhood mental health concerns go unaddressed. That study compared the per-child cost of providing early childhood mental health consultation to the per-child cost of five other services: TANF; child welfare, special education; juvenile incarceration; and later mental health treatment costs. The cost of mental health consultation paled by comparison. However, that earlier study addressed neither the actual likelihood of service use, nor the proportion of service use that could be averted by providing mental health consultation. Although we still lack data on actual service use, this study builds upon the earlier work by including 1) evidence regarding the effectiveness of the Kid Connects mental health consultation model, 2) data on average use of services, and 3) by using the effectiveness data to estimate the proportion of the service costs that might be averted. In this way, we estimate the potential for Kid Connects to avert costs in the long run. We also put the cost of Kid Connects in context by asking just how effective it has to be in redirecting children and families away from other systems involvement in order to earn back the up-front cost of program delivery. In other words, we ask how effective Kid Connects has to be to pay off financially.

Although this study provides an inexact estimate, the savings potential is great enough to make a convincing case for further investment in Kid Connects and more detailed longitudinal research. The *next* step in a Kid Connects cost-benefit study would be to collect longitudinal data on the actual experiences of Kid Connects recipients compared to a control group of children who do not receive services.

About Kid Connects

Kid Connects is an early childhood integrated health and mental health consultation model designed for delivery in community child care centers and licensed family child care homes. The goals of this model are to enhance the capacity of parents and childcare providers to respond to the social, emotional and overall developmental needs of young children in child care centers, to identify problems early, to provide interventions that support children's optimal development and to reduce the risk of early childhood expulsions from child care (see Kid Connects Implementation Manual, Ash, 2009). To accomplish this, services are provided on two levels. Programmatic services are delivered by working with the child care providers to help them promote healthy development of all the children at the center; thus, all children present benefit from this program component. Child-specific services are delivered on a more intensive basis to selected children whose behavior or affect indicate they may benefit from closer attention and additional support. These services are focused on the needs of the children, their caregivers and their families. Consultants work with families to help them understand why their child's behavior is cause for concern, teach them strategies to address the behavior, enhance parenting skills, improve adult-child relationships, and, if needed, and provide support to address the

adult's mental health issues. So far limited to Colorado, the program has been operating in targeted child care centers, family child care homes, and preschools in Denver and Boulder Counties for almost a decade, and was replicated in Weld County in 2008-2009. Additional replication in another county and two Head Start settings is planned for 2010-2011. Kid Connects targeted settings change on a planned basis at approximately two-year intervals, selected child care settings tend to serve neighborhoods that house lower income populations or otherwise draw from a population presenting with some risk factors. According to Kid Connects primary developer, Jordana Ash, LCSW, IMH-E (IV) ®, the following are common reasons why children may be recommended to receive child-specific services:

- Persistent challenging behavior, including aggression
- Uncontrollable crying and other emotional control issues
- Communication and other developmental concerns
- Overactive behavior such that the child cannot participate in activities
- Sexualized behavior
- Unusual behaviors in relating or peer relationships
- Family relational issues, or
- Concerns from parents regarding behavior at home

Kid Connects is Effective

Among Boulder County youngsters receiving child-specific intervention services, Kid Connects has been shown to be effective in improving mental health outcomes as measured by program evaluation data[1] and the Colorado Client Assessment Record (CCAR). The CCAR is a client information system developed and maintained by the Colorado Division of Mental Health. Mental health service providers are required to complete the CCAR at admission and discharge on all clients in the Colorado public mental health system, which includes children receiving intensive child-specific Kid Connects services. The CCAR includes information on demographics, diagnosis, symptoms, behavioral and emotional history, current employment and/or school information, living arrangement, and extensive outcome measurements. The outcome assessment of the CCAR includes, among other things, measures of "overall symptom severity," "overall recovery" and "overall level of functioning" as assessed on a nine-point scale.[2] Appendix A includes the exact text of these three measures.

Using the records of children discharged in 2007 and 2008, the Colorado Department of Health compared the CCAR scores of Kid Connects children with those of other children in the Colorado public mental health system, controlling for age and intake diagnosis. Although the Kid Connects sample size was small in each year (20 and 16 in 2007 and 2008respectively), the changes between intake and discharge were statistically significant. The assessed levels of "overall symptom severity" fell by an average of 47.7% in 2007 and 40.6% in 2008. Furthermore, although both groups of children improved markedly after receiving mental health services, Kid Connects children showed substantially greater

[1]Duran, F. et al. (2009). What Works?: A Study of Effective Early Childhood Mental Health Consultation Programs. Washington, DC: Georgetown University Center for Child and Human Development.
[2]Colorado Department of Human Services, Division of Mental Health, (2006) CCAR 2006 MIS Manual v. 2.4.http://www.cdhs.state.co.us/dmh/PDFs/de_CCAR_2006_MIS_Manual_v2_4.pdf, accessed December 20, 2010.

improvement than children in other areas of the state who received other forms of therapy at publically funded mental health centers. Similar patterns appear for the other two measures of "overall recovery" and "overall functioning." Table 1 shows the scores for both groups.

Table 1: Changes in CCAR scores of Kid Connects Clients Compared to Other Clients
In all categories, decreases in scores indicate improvement.

	Score at Admission	Score at Discharge	Difference	% Change
Overall Symptom Severity 2007				
Kid Connects N=20	4.30	2.25	2.05	-47.7%
Other, all ages, N=2,196	4.75	3.61	1.14	-24.0%
Overall Recovery 2007				
Kid Connects N=20	4.05	2.15	1.90	-46.9%
Other, all ages, N=2,196	4.27	3.26	1.01	-23.7%
Overall Functioning 2007				
Kid Connects N=20	4.20	1.95	2.25	-53.6%
Other, all ages, N=2,196	4.59	3.32	1.27	-27.7%
Overall Symptom Severity 2008				
Kid Connects N=16	4.31	2.56	1.75	-40.6%
Other, all ages, N=2,182	4.43	3.51	0.92	-20.8%
Overall Recovery 2008				
Kid Connects N=16	4.69	2.38	2.31	-49.3%
Other, all ages, N=2,182	3.48	2.91	0.57	-16.4%
Overall Functioning 2008				
Kid Connects N=16	4.5	2.38	2.12	-47.1%
Other, all ages, N=2,182	3.72	3.00	0.72	-19.4%

Source: Calculations performed by the Colorado Department of Health on special request, 2009.

Since Kid Connects has been shown to be effective in accomplishing its psychological goals for children, the remaining question is whether it is also cost effective. This paper seeks to shed light on that question. Since the actual long-term outcomes of children who received Kid Connects services have not yet been studied (partly because the program is not old enough for even the earliest recipients to have reached adulthood), the study compared the cost of Kid Connects to the costs of several negative outcomes of failing to treat early mental health disorders. It uses the improvement in CCAR scores to estimate the proportion of those costs that might reasonably be averted. The results make it difficult to imagine that investing in Kid Connects would not be a good use of public funds that would pay off handsomely in the long term.

The Hidden, and Not-So-Hidden, Costs of Mental Health Disorders

Whether or not investing in Kid Connects is financially worthwhile depends on the short and long-term costs of mental health issues left untreated in early childhood. The most obvious of these figures is the direct cost of treatment required at older ages, but the real costs extend much further. Costs are incurred by the individuals themselves, their families, and often by the community as individuals come into contact with various systems. The Colorado Commission on Juvenile and Criminal Justice states the following in its 2009 annual report.

> *Behavioral health refers to the combination of issues related to mental health and substance abuse. A growing number of individuals with mental health problems find themselves patients in hospital emergency rooms or clients of the justice system, or both. This is an extremely expensive outcome resulting from a critical lack of resources to appropriately manage those with mental illness in our communities. Substance abuse, often co-occurring with mental illness particularly when individuals attempt to manage their symptoms by self-medicating with alcohol or illegal drugs, is extremely common in the offender population.*[3]

Although we cannot quantify all the costs of untreated mental health issues, it is helpful to list them here and keep them in mind. A useful dichotomy is costs incurred during the juvenile years and costs resulting from the disorders as those juveniles age and become adults. Tables 2a and 2b, respectively, list these costs along with some clues to their prevalence and size. Throughout this paper, the term juvenile refers to children from birth to age 18.

[3]CO Commission on Criminal and Juvenile Justice Annual Report 2008 p. 19.

Table 2a: Costs of Juvenile Mental Health Disorders	
Category	**What We Know**
If parents of minor children must leave jobs to care for children expelled from school or care settings there are several costs: ○ lost income to the families ○ lost income tax payments to local, state and federal governments based on that forfeited income	Nationally, the prekindergarten expulsion rate in state-run systems is 3.2 times the rate for K-12 students. Rates were highest for older preschoolers and African-Americans, and boys were over 4½ times more likely to be expelled than were girls. The likelihood of expulsion decreases significantly with access to classroom-based mental health consultation.[4] A Boulder County study showed that in 2009, 20 of 4,457 children attending centers that responded to the survey were expelled, for a rate of 4.5 per 1000.[5]
○ increased TANF and other subsidies if the lost income creates economic hardship for the family	In 2007 in Boulder County, 389 children in 204 households collected TANF benefits.[6] The maximum annual benefit in Colorado (in 2005) was $4,272 for a single parent family of three.[7] In 2007 in Boulder County, 3,194 children and 3,114 adults collected food stamps.[8] The 2007 annual maximum Food Stamp benefit was $4,896 for a family of three.[9]
Costs to public school systems that must give students extra attention, either by special education providers or counselors and office staff due to disciplinary incidents.	
Costs to public school systems when students fail classes and must retake them, thus spending an extra year or even more in public school.	Boulder Valley School District per pupil revenue for the 2007-2008 school year was approximately $6,500. [10]
Health care costs associated with self-medicating for untreated disorders.	

[4] Gilliam, Walter. (2005) Pre-kindergarteners Left Behind: Expulsion Rates in State Prekindergarten Systems, Yale University Child Study Center. http://www.plan4preschool.org/documents/pk-expulsion.pdf. Downloaded November 10, 2010.

[5] Ash, Jordana & Greenberg, Stephanie, (2009) Children with Challenging Behaviors: Survey of Boulder County Early Care and Education Providers. The Mental Health Center Serving Boulder and Broomfield Counties.

[6] Boulder County Department of Housing and Human Services. (2009) 2009 Director's Human Services Statistical Report.

[7] National Center for Children in Poverty. (2010) State Profiles, Colorado, Temporary Assistance for Needy Families.http://www.nccp.org/profiles/CO_profile_36.html Downloaded November 15, 2010.

[8] Boulder County Department of Housing and Human Services. (2009) 2009 Director's Human Services Statistical Report.

[9] National Center for Children in Poverty.(2010) State Profiles, Colorado, Food Stamps http://www.nccp.org/profiles/CO_profile_29.html Downloaded November 15, 2010.

[10] Colorado Department of Education, (2008) Fiscal Year 2007-2008 District-by-District Table, row 116, column H, http://www.cde.state.co.us/cdefinance/SchoolFinanceFundingFY2007-08.htm, downloaded November 11, 2010.

Hospitalization costs in severe cases of mental illness	In 2006 there were 98,800 hospital stays with primary diagnoses of mental health for children under 18 years old. The average cost per stay (all ages) was $15,400 for which government payers were billed for more than 60%. Hospital stays are less likely for individuals who receive ongoing care for their conditions.[11]
Juvenile justice costs associated with delinquent behavior that sometimes arises as a result of mental health problems.	In 2008 there were 783 juvenile delinquency filings and 173 truancy filings in Judicial District 20, Boulder.[12]

[11]Saba, Levit and Elixhauser (2008). Hospital Stays Related to Mental Health, 2006. Rockville, MD: Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality, Statistical Brief #62.

[12] Colorado State Judicial Branch Fiscal Year 2008 statistics
http://www.courts.state.co.us/Administration/Custom.cfm/Unit/annrep/Page_ID/204

Table 2b: Later Costs of Adult Mental Health Disorders	
Category	**What We Know**
Adults whose employment is interrupted by mental health episodes incur several costs ○ lost income to themselves and their families ○ lost income tax payments to local, state and federal governments based on that forfeited income ○ increased TANF and other subsidies if the lost income creates economic hardship for the family	An average of 135Boulder County adults per month received TANF benefits and 3114 received food stamps in 2007.[13]
Health care costs associated with self-medicating for untreated disorders	A national study concludes that "substance use varies with past year unmet need for mental health care and mental health care use in ways consistent with the self-medication hypothesis."[14]
Hospitalization costs in severe cases	In 2006 there were about 1.3 million hospital stays with primary diagnoses of mental health for adults over 18 years old. The average cost per stay (all ages) was $15,400 for which government payers were billed for more than 60%. Hospital stays are less likely for individuals who receive ongoing care for their conditions.[15]
Criminal justice costs associated with behavior that sometimes arises as a result of mental health problems.	Department of Corrections statistics show that in 2005, 25 percent of Colorado inmates were found to have significant mental health needs.[16]
If mental health challenges caused the adult to drop out of high school, costs commonly included in cost estimates of high school failure include decreased tax payments, increased social service payments and increased criminal justice costs	One of the most recent studies of the cost of high school dropout calculated it to be $209,000 per dropout.[17]

Would an investment in Kid Connects avert enough of the above costs to make it financially worthwhile? We can begin to think about this question by looking at data from 2007. If $2.4 million had been spent on Kid Connects that year – enough to have served all low income children in Boulder County– would at least that much have been saved on the above categories? Let us begin by looking at the cost of mental health care provided to older children by Mental Health Partners.

[13]Boulder County Department of Social Services Director's Report 2009.
[14]Harris and Edlund. (2005).
[15]Saba, Levit and Elixhauser (2008). Hospital Stays Related to Mental Health, 2006. Rockville, MD: Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality, Statistical Brief #62.
[16]CO Commission on Criminal and Juvenile Justice Annual Report 2008 p 33
[17] Levin et al 2007, p. 1.

The Cost of Juvenile Mental Health Care Provided Through Mental Health Partners

Mental Health Partners primarily serves very low-income clients. (There are many private mental health service providers in Boulder and Broomfield Counties accessed by families of greater means or better insurance coverage.) According to their annual report, clients' average family income in 2007-08 was $10,600 for an average family size of 2.3; the median income was $6,600 for a median family size of 2.0. Therefore, the population of preschool-aged children living in poverty can be thought of as roughly equivalent to the population from which juvenile clients of Mental Health Partners are, or eventually will be, drawn because children of wealthier families tend to find care elsewhere. The same report shows the Mental Health Partner's total expenses for the year as just over $28 million, and 29% of their clients were juveniles aged zero through 18. We can estimate, then, that about $8.1 million was spent on mental health care for juveniles. According to data provided by the Colorado Department of Mental Health, about 23% of the juvenile discharges in 2007 were for children aged zero through four. Therefore the cost of providing mental health care to juveniles between the ages of 5 and 18 is 77% of $8.1 million, or $6.2 million.

The Cost of Kid Connects

Kid Connects served an average of just under 300 mostly low-income children each year between 2002 and 2007. Fiscal year 2007 was the most recent year for which data were available at the start of this study. Systems cost data were collected on juvenile mental health treatment, TANF and food stamps in Boulder County from that year. We could have assumed the cost of delivering Kid Connects to equal the $851 per child reported for 07/08 in Table 3 below. However, both the number of children served and the cost of Kid Connects per child served have varied considerably over the years as the program operated with different funding sources, different funding levels, and in different child care settings. We chose to use the more conservative measurement of the average cost across all years of available data, from 2002 to 2007, excluding 2006 for which staff is less confident about their records. That average came to about $925 per child per year. After converting the costs from earlier years into 2007 dollars using a multiplier based on inflation figures from the Colorado Consumer Price Index, the adjusted average cost of Kid Connects per child from 2002 to 2007 was $1,008, shown in italics in Table 2 below. Even though we are using the higher cost figure, note that data on the effectiveness of Kid Connects come from years in which the per-child cost of Kid Connects was below average – 2007 and 2008. Thus, achieving the degree of effectiveness reported above is *not* dependent on the higher levels of funding seen in FY 03/04 and 04/05.

In order to compare countywide costs of mental health care, TANF and food stamps for the low-income population, we must calculate the cost of providing Kid Connects to the low-income population countywide. What would it have cost to deliver Kid Connects services to *all* low-income children in Boulder County during the 2007/08 school year? According to Boulder County demographic data, there were almost 19,000 children under school age in 2007. (This figure includes all zero through four-year-olds and ¼ of the 5-year-olds because children born before September 30 would already have started Kindergarten.) The 2008 issue of *The Status of Children in Boulder County* reports that the Federal poverty rate in 2008 was $17,600, and that 12.6% of Boulder County children lived below that threshold. Applying the 12.6% 2008 rate suggests that between 2,300 and 2,400 Boulder County children were

living below the poverty level between 2002 and 2007. Providing Kid Connects to all children estimated to have been living below the poverty level in 2007 would have cost 2,390 times $1,008, or about $2,397,000. Obviously, this is a hypothetical scenario because not all zero-to-five-year-olds are cared for in group settings. There would be no practical way to extend the program to literally all children. For purposes of our calculations we could reduce the number of children according to the proportion estimated to attend a preschool or day care setting, and reduce the costs and savings accordingly, but ultimately that would change neither the ratio of benefits to costs nor the estimated return per dollar invested.

Table 3: The estimated Cost of a Kid Connects Scale Up to All of Boulder County

Year	02/03	03/04	04/05	05/06	07/08	Average
Total Kid Connects enrollment	192	215	247	492	321	293
Total Kid Connects program costs	$99,584	$286,347	$333,489	$280,764	$273,252	$254,687
Kid Connects cost per child	$519	$1,332	$1,350	$571	$851	$925
Inflation multiplier, 2007 dollars	1.15	1.13	1.10	1.06	1	
Kid Connects cost per child in 2007 dollars	$598	$1,501	$1,482	$606	$851	***$1,008***
Children 0-5.25 years old, (those too young for Kindergarten)	18,640	18,797	18,944	19,018	18,982	
Children 0-5.25 years old living in poverty, 2007 rate of 12.6%	2,349	2,368	2,387	2,396	2,392	
Cost of providing Kid Connects to all low-income children0-5.25 years old in millions of 2007 dollars	$1.4	$3.6	$3.5	$1.5	$2.0	***$2.4***

Averting Mental Health Care Costs for Juveniles by Scaling up Kid Connects

How much of the $6.2 million spent by Mental Health Partners on services for juveniles between five and 18years old might have been averted by full implementation of Kid Connects for all low-income children in Boulder County? Ideally, we would use retrospective data on Kid Connects recipients now grown older to calculate this figure. However, the oldest program recipients would have been only nine years old in 2007, and such data have not been collected. Therefore, we must use a different strategy. One reasonable approach is to use the changes in CCAR scores as a proxy for the percent of care that could be averted. In other words, let us go back to the changes in CCAR scores resulting from Kid Connects services, and assume the percent improvement in scores would equal the percent reduction in need for services later on.

We have changes in three measures of CCAR scores across two years from which to select. In order to offset the rather optimistic assumption that long-term effectiveness will remain equal to short-term effectiveness we have chosen the score with the least improvement. Overall symptom severity among children discharged in 2008 improved by 40.6%, less than the other five measures. Table 4 below shows the dollar savings resulting from this method of estimation. If the changes in CCAR scores are predictive of the amount of later juvenile care that would be averted, we estimate that it could yield a net savings of $100,000 just in mental health costs for older children.

Table 4: Estimated Savings in Mental Health Care Expenditures Resulting from a Kid Connects Scale Up					
		Percent improvement	**Estimate of Costs Averted**	**The Cost of Kid Connects**	**Estimated Annual Dollar Savings**
Least effective measure of KC	**Overall Symptom Severity 2008**	40.6%	$2.5 million	$2.4 million	*$100,000*
Most effective measure of KC	**Overall Functioning 2007**	53.6%	$3.3 million	$2.4 million	$900,000
Average of all 6 measures		47.5%	$2.9 million	$2.4 million	$500,000

Next we add potential reductions in some other expenditures, namely 1) TANF and food stamp costs resulting from preschool or daycare expulsion that requires a parent to leave a job, 2) Child Welfare costs saved because parents have received parenting assistance, and 3) the cost of high school dropout resulting from the multiple school problems that mental health care recipients experience during their high school years.

Averting Additional Costs

TANF and Food Stamp Costs

When a prekindergarten child is expelled there is a high probability that a parent must forfeit employment to care for the child as a result, at least in the short run as other, perhaps less optimal arrangements are obtained. Since our analysis focuses on low-income families, the loss of a job would likely qualify a family for Food Stamps or even TANF benefits. Ash and Greenberg's 2009 research indicates that for every 1,000 preschoolers in Boulder County child care settings, 4.5 were expelled. Gilliam's research shows that nationwide, children in child care centers with on-site mental health consultation were 47% less likely to be expelled than those in centers with no access to such consultation. Applying the 47% reduction to the Boulder County expulsion rate of 4.5 per 1,000 children, providing access to on-site mental health consultation would be expected to eliminate 2.1 expulsions per 1,000. Applying this rate to the 2,390 low-income preschoolers in Boulder County in 2007, we would expect that providing Kid Connects (or any other mental health intervention) would eliminate 4.8 expulsions. If each of those expulsions resulted in the child's family qualifying for food stamps at an annual rate of $4,896, the total cost would be $4,896 * 4.8 = $23,501, or $23.5 thousand. If TANF benefits were added to that sum, the total annual cost would be ($4,896 + $4,272) * 4.8 = $44,006, or $44 thousand.

School Failure Costs: School Problems Among Juveniles Served by Mental Health Partners

The Colorado Department of Health provided a dataset that includes all admissions, discharges or updates made to the records of youths 18 and under served by Mental Health Partners during the 2007-2008 fiscal year.[18] The dataset includes 1,652 records for 1,258 children, because some children have multiple entries. Only changes made to records in FY 2007-2008 are included; neither intakes in previous years nor discharges in subsequent years appear in the dataset. Therefore, an individual client may have any combination of records in the dataset. For example, she may have an update only, an

[18]To ensure patient confidentiality, the Colorado Department of Health removed all personally identifying information from the file.

intake and an update but no discharge, a discharge only, etc. In most cases the records indicate admissions, updates and discharges in the expected order. However, seven children had multiple admissions (admission, discharge, then another admission within the same 12-month period), and ten had multiple discharges (discharge, admission, discharge) – evidence of a revolving door for some youth. We have no way of knowing how many times in earlier years these children may have been admitted and then discharged from the Center, or how many other children may have had multiple periods of involvement that are not reflected in this dataset. What is clear is that some children experience multiple episodes of need.

Table 5 shows the ages of children enrolled in care in 2007 and present in the dataset. Of the 1,258 different children served, 106 were infants who were most likely enrolled as part of a preventive program in which at-risk families received intensive in-home parent/child psychotherapy and public health nursing support. Many of these babies are discharged quickly. The single most populous age categories are 14 and 16, at which 121 and 120 children are represented. The oldest age group, 16-18, is smaller because so few 18-year-olds (only 13) are included. This is probably a function of the way in which the data were pulled for the report rather than a reflection of any decreased need for services at that age.

Table 5: Age of Students at First Record in FY 2007
First Record Could Be an Admission, Update or Discharge.

Age	Frequency	Percent	Cumulative Percent
Less than 1	106	8	8
1-3	120	10	18
4-6	134	11	29
7-9	164	13	42
10-12	202	16	58
13-15	306	24	82
16-18	226	18	100
Total	1258	100	

Clients 18 years and under who are served by Mental Health Partners are quite likely both to have difficulties in school and to be involved in other systems concurrently. Tables 6 through 8 below paint the portrait of troubled youths, struggling in many ways. Table 6 shows the percent of school-aged children who have school difficulties. About one third have unexcused absences from school, one fifth to one fourth were suspended at least once during the 12 months prior to data entry, and a large proportion were failing at least one class. A disturbing number had been expelled. While an average of 2.62 of every 1,000 Colorado students – less than .3% – were expelled in 1999/2000, 6% of those admitted to Mental Health Partners had been expelled within the past 12 months, and 10% of those discharged from Mental Health Partners had been expelled. The latter figure is more than 38 times the state average.

It is puzzling that the rates of school problems are higher, rather than lower, among discharged youth. However, only 27% of the discharges were made because treatment was completed successfully. Another quarter occurred because the clients themselves withdrew, essentially refusing treatment. Forty percent were administratively terminated, generally meaning they ceased attending and were automatically removed. Still others were transferred, possibly to more intensive treatment, and tragically, two died. Of the children who received updates, indicating that they were receiving on-going

care, the expulsion rate was equivalent to the state average; it appears that on-going mental health care effectively promotes school success for many young people with mental health challenges.

Table 6: School Difficulties Among Mental Health Partners Juvenile Clients, 2007					
Status at time of:	**N**	**Unexcused Absences in Prior 12 Months**	**Suspended in Prior 12 Months**	**Expelled in Prior 12 Months**	**Not Passing All Classes**
Admission	**461**	31%	22%	6% (N=28)	30%
Update	**333**	22%	21%	3% (N=11)	18%
Discharge	**425**	32%	24%	10% (N=42)	26%
First FY 2007 Record, Youth 14+[19]	**444**	49%	30%	10%	36%

Many students experience multiple problems in school. Table 7 shows that of the 963 students with school information attached to the first record entered in FY 2007 (whether that record be an admission, update or discharge), only 7% experienced no unexcused absences, suspensions, expulsions or class failures. On the other hand, 28% experienced more than one of these problems. Among clients 14 and older, only 6% experienced none of the problems, while almost 40% experienced more than one. In addition to the short-term difficulties that both cause and result from these issues, there are longer-term consequences. Research from Johns Hopkins shows that the intersection of school problems in 9th grade – namely poor attendance coupled with failing English or Math – significantly increases the likelihood of high school dropout. Adding suspensions to the mix further increases the risk. Dropout carries with it a clear cost to society - $209,000 per dropout as cited above. The youth represented in this dataset are also battling mental health disorders, which is a significant risk factor that Johns Hopkins did not measure.

Fifteen students experienced all four school problems within the twelve months prior to their mental health update. Given that during the 2006/07 and the 2007/08 school years 271 and 212 students dropped out of Boulder Valley School District, it is not difficult to imagine all 15 children eventually leaving school without a high school diploma. The cost to society would be 15 X $209,000 = $3,135,000. If we assume that Kid Connects could avert 40.6% of this cost, the savings would be $3,135,000 X .406 = $1,272,810. It is not a stretch to think that early childhood programs can increase the chances of high school graduation. Several preschool programs have been shown to do just that, including the Abecedarian Project, the Early Childhood Education and Assistance Program and the Perry Preschool Project linked below.

[19] These records could be admissions, updates or discharges depending on which came chronologically first in FY 2007. The critical factor is that children under 14 are excluded, which explains the higher rates of school problems.

Table 7: Incidence of Multiple School Problems Among School-Aged Clients				
	All		Aged 14+	
Number of School Problems	Frequency	Percent	Frequency	Percent
0	69	7.2	26	5.9
1	626	65	243	54.7
2	177	18.4	104	23.4
3	75	7.8	56	12.6
4	16	1.7	15	3.4
Total	963	100	444	100

Dual Systems Involvement Among Juveniles Served by Mental Health Partners

Table 8 shows the percentages of juvenile clients who were concurrently receiving services from other systems at time of admission to the clinic, at time of update, and at time of discharge. The percentages are not trivial; indeed, it is more likely than not that a juvenile Mental Health Center client will also receive at least one other service, each of which comes with its own substantial cost. The percent involved with Child Welfare is particularly notable. An important part of Kid Connects is intervention with family members to improve parenting skills and parent-child relationships – precisely the kind of intervention that should directly reduce the need for Child Welfare involvement at older ages.

Table 8: Previous or Concurrent System Service Usage Among Mental Health Partners Juvenile Clients, 2007								
Status at time of:	N	Juvenile Justice	Special Education	Child Welfare	Adult Corrections	Substance Abuse	Developmental Disability	None
Admission	630	17%	16%	37%	.3% (N=2)	7%	4%	47%
Update	411	12%	39%	45%	0%	3%	6%	35%
Discharge	561	21%	19%	39%	.4% (N=2)	7%	3%	45%

Child Welfare Costs

Sometimes a young child's difficult behavior stems from ineffective parenting. In those cases, Kid Connects staff teaches parents about the behaviors that are developmentally appropriate for their children and gives parents' strategies for eliciting desired behavior from their children, thereby reducing stress and minimizing the potential for abusive behavior. In the extreme, Kid Connects intervention can eliminate the need for child welfare involvement. According to data from the Colorado Department of Human Services[20], there were 1,739 children involved with child welfare in Boulder County in fiscal year 2007. The total program services cost was almost ten million ($9,987,134 exactly). Dividing gives us a per child cost of $5,743 for 2007. How many of these cases could Kid Connects hope to avert? If we assume that child welfare cases are not correlated with income, then 12.6% of these cases, or 219, would occur among the population that would receive Kid Connects during our proposed scale up.

[20] Downloaded from http://www.cdhs.state.co.us/childwelfare/PDFs/Allocation_Data_Trends_All_Counties_SFY_2006-2009.pdf. on December 7, 2010.

Those 219 cases would be expected to cost $5,743 each for a total of $1,257,717. If Kid Connects can avert 40.6% those cases, the savings would be $510,633. Alternatively, of the 630 children who were admitted to care at Mental Health Partners at some point during FY 2007, 233 of them (37%) also had Child Welfare involvement. The two numbers of cases – 219 and 233 – are comfortingly similar. In order to take the more conservative approach we will use the smaller one.

Table 9 shows the combined savings in the four measured service areas that can be expected to accrue from providing Kid Connects to all low-income children aged 0-5.25 in Boulder County. Investing $2.4 million will generate savings of $4.3 million, for a benefit to cost ratio of 1.80. This means that we estimate that for every dollar invested in Kid Connects we could hope to see a payoff of $1.80.

Table 9 Net Savings Expected From a Scale-up of Kid Connects to All Low Income Children 0-5.25 Years Old Assuming a 40.6% Reduction in Other Service Use			
Cost of Kid Connects	Scaled Up For All Low-Income Boulder County Children Aged 0-5.25		$2,400,000
Mental Health Care Costs for Older Juveniles Averted	Assuming a 40.6% reduction from $6.2 million total	$2,500,000	
TANF and Food Stamp Costs Averted	Assuming a 47% reduction in pre-K expulsions	$44,000	
High School Dropout Costs Averted	Assuming a 40.6% reduction from the $3,135,000 cost if the 15 students with all four school problems drop out.	$1,272,810	
Child Welfare Costs Averted	Assuming a 40.6% reduction from the total $9,987,134 program services cost	$510,633	
Total Costs Averted			$4,327,443
Net Savings			**$1,927,443**
Ratio of Savings to Investment	For each dollar spent on Kid Connects we could expect a return of $1.80		**1.80**

Method II: The Breakeven Point

Another useful way to estimate whether a program is cost effective or not, particularly when data on actual service use over time are unavailable, is to calculate how effective the program must be in order to earn back the cost of implementation. If program outcomes can reasonably be expected to exceed this minimum level even slightly, the program will yield a positive rate of return. We have established costs for juvenile mental health treatment, high school dropout, TANF and food stamps, and child welfare, but we should also remember that the costs of special education, substance abuse treatment, juvenile delinquency and adult crime are not inconsequential.

Table 9 compares the cost of Kid Connects to the total costs of all measured services, i.e. juvenile mental health care, TANF and food stamps, high school dropout and child welfare. The cost of providing Kid Connects to all low-income children in Boulder County for one year equals about twelve percent of the sum of these other costs. In other words, if universal provision of Kid Connects could avert 12.4% of these costs (rather than our earlier estimate of 40.6% based on CCAR scores), it would pay for itself. If

we added the costs of additional services in which children become involved– most notably juvenile and adult criminal justice expenses – the relative cost of Kid Connects would be smaller still.

Table 9: Cost of Kid Connects Compared to the Costs of All Measured Services in Boulder County How Effective Does Kid Connects Have to Be to Break Even?						
Cost of Kid Connects Countywide	Cost of Juvenile Mental Health Care Countywide	Estimated Cost of TANF and Food Stamps due to Prekindergarten Expulsions	Estimated Cost of High School Dropout	Child Welfare Costs	Total Cost of the Four Services	Ratio of Countywide Kid Connects Cost to Service Costs
$2,400,000	$6,200,000	$99,014 N=10.8 expected preschool/daycare expulsions @ $9,168	$3,135,000 N=15 dropouts @ $209,000 each	$9,987,134 for 1739 "involved" children @ $5,743 each, OR $4,197,319 for 483 children placed out of home @ $8,690 each	$19,421,148	**12.4%**
Conclusion:	If Kid Connects averts 12.4% of the above costs, and no other costs, it will pay for itself. Additional savings in these or other areas will make the program yield a positive rate of return.					

What might averting 12.4% of these expenses look like in terms of the number of children who would NOT utilize the other measured services? As an example, if Kid Connects were provided to all 2,300 to 2,400 low-income children in Boulder County, it would pay for itself if it eliminated the following:

- TANF and food stamp benefits for three families,
- Child Welfare involvement for 214 children,
- Later mental health services to 155 school-aged juveniles, and
- Two high school dropouts

Since we do not have juvenile justice cost data, *any* savings in that area would be an additional benefit.

Summary

This report has taken two approaches to address the likelihood that investing in Kid Connects would be a wise fiscal strategy. First, it highlights the various ways in which Kid Connects could be expected to generate both short-term and long-term savings, and makes some reasonable efforts to estimate the actual dollar savings that are possible given the effectiveness of the program to improve child functioning. It does so by estimating the cost of providing Kid Connects to the entire low-income population in Boulder County ($2.4 million) and estimating the various public expenditures on later mental health care, food stamps and TANF, child welfare, and high school dropout that might be avoided as a result ($4.3 million). This estimate yielded a total possible savings of $1.9 million annually,

assuming Kid Connects could be delivered to all low-income children. Each dollar invested would yield a return of $1.80 under this scenario.

As this report makes clear, the cost of untreated mental health issues is astounding. If implementing Kid Connects universally can in fact yield the benefits estimated here, the annual savings would be in the millions. Notably, the costs estimated here do *not* include the emergency room and criminal justice expenditures referenced earlier in the quote from the Colorado Commission ion Juvenile and Criminal Justice.

More extensive investment in Kid Connects should yield a substantial payoff in the long run. This should come as no surprise. There is considerable agreement that investment in early childhood pays off; it is far easier to prevent or intervene early in a problem than to fix a well-entrenched one. The following are examples of programs shown to have benefits that extend well beyond the early years during which they are implemented. Although the goals and methods of implementation vary, outcomes are measured in terms of improved school performance (higher learning levels, high school graduation, and in some cases continued schooling beyond high school), better health, and lower criminal activity.

- Abecedarian Project (http://evidencebasedprograms.org/wordpress/?page_id=70)
- Early Childhood Education and Assistance Program (http://www.promisingpractices.net/program.asp?programid=96)
- Incredible Years (http://www.promisingpractices.net/program.asp?programid=134)
- Nurse-Family Partnership (http://evidencebasedprograms.org/wordpress/?page_id=57)
- Perry Preschool Project (http://evidencebasedprograms.org/wordpress/?page_id=65)

Kid Connects is effective and will pay off. What remains is for us to muster the political will to make, now, the good “business” investments that will pay off later.

Appendix A: CCAR Outcome Scales

The following three outcome measurements were used in assessing the effectiveness of Kid Connects.

Overall Symptom Severity

①②③④⑤⑥⑦⑧⑨

Rate the severity of the person's mental health symptoms.

1)No symptoms are present for this person.

3) Symptoms may be intermittent or many persist at a low level.

5) Symptoms are present which require formal professional mental health intervention.

7) Significant symptoms affecting multiple domains exist, often requiring external intervention.

9) Symptoms are profound and potentially life-threatening.

Overall Recovery

①②③④⑤⑥⑦⑧⑨

Extent to which a person is involved in the process of getting better and developing/restoring/ maintaining a positive and meaningful sense of self.

1) Views self positively with the knowledge that setbacks may occur AND is able to actively pursue and access resources to support recovery with a sense of empowerment and hopefulness about future outcomes.

3) Hopeful about future outcomes AND is actively participating and using resources to promote recovery.

5) Expresses hopefulness about future outcomes AND is willing to begin to engage in using available resources to promote recovery.

7) Expresses a mixture of hopefulness and hopelessness about future outcomes and is interested in discussing available options and resources to aid in recovery.

9) Entrenched in symptoms, expresses hopelessness about future outcomes AND does not actively engage in using available resources that might promote recovery.

Overall Level of Functioning

①②③④⑤⑥⑦⑧⑨

Extent to which a person is able to carry out activities of daily living, despite the presence of mental health symptoms.

1) Functioning well in most activities of daily living.

3) Adequate functioning in activities of daily living.

5) Limited functioning in activities of daily living.

7) Impaired functioning that interferes with most activities of daily living.

9) Significantly impaired functioning; may be life-threatening.

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