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DISTRIBUTION AND COSTS OF MENTAL HEALTH SERVICES WITHIN A SYSTEM OF CARE FOR CHILDREN AND ADOLESCENTS

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ABSTRACT: As the concept of the system of care is implemented in states and localities across the country, it is important to define the kinds, the volume, and the cost of services necessary to address the needs of children and adolescents with mental health problems. This article focuses on the services that are usually the responsibility of the mental health system and provides a model for planning based on experiences in one state.

Nationally, increased attention has been focused on children and adolescents with serious mental health problems or who are at risk to develop such problems. Through the federal initiative, the Child and Adolescent Service System Program (CASSP) begun in the 1980s and more recently, through the implementation of P.L. 99-660, there has been an increased focus on state level planning to respond to the needs of these children and adolescents. The goal of the states has been to address these needs by developing a comprehensive array of public and private services, called a continuum of care or system of services, implying an organized, systematic method of planning and delivering services. As the needed services are frequently delivered by multiple agencies, a coordinated approach across agencies is an essential part of this approach.

The belief is not new that a continuum of care is an important foundation for

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service delivery, being first stated in the White House Conference on Children in 1909. The concept was later recommended by the Joint Commission on Mental Health of Children (1969) in their report, *Crisis in Child Mental Health: A Challenge for the Seventies;* it was further emphasized in *Unclaimed Children* (Knitzer, 1982) and in the Office of Technology Assessment background paper, *Children's Mental Health: Problems and Services* (Saxe, Cross, & Silverman, 1986). The mental health continuum and its interface with other agencies was most clearly defined in *A System of Care for Severely Emotionally Disturbed Children and Youth* (Stroul & Friedman, 1986).

There appears to be a consensus among child mental health professionals that treatment for children and adolescents with mental health problems needs to involve a coordinated continuum of community-based services, with components ranging in intensity of treatment and in restriction of movement. The continuum has been described in numerous publications (Behar, 1987, 1988; Butler, 1988; Friedman, 1986; Knitzer, 1982; Lourie & Issacs, 1988; Melton, 1987; Macbeth, 1992; Soler & Warboys, 1990; Stroul & Friedman, 1986). These writings address (1) the use of these programs as less restrictive, less costly and as more clinically appropriate alternatives to the more traditional approach of residential treatment programs and psychiatric hospitals; and (2) the use of these programs as a "step-down" following hospitalization or residential treatment. This latter use of the continuum allows for more timely and appropriate discharge from more restrictive settings (Behar, 1985; Knitzer, 1984; Lourie & Katz-Leavy, 1984).

When less restrictive, nonresidential, alternatives are not provided, this may merely redirect clients to residential treatment. Further, when appropriate, non-residential follow-up services to hospitalization and residential treatment do not exist, there is evidence to support an increase in readmissions and/or a loss of the therapeutic gains (Bloom & Hopewell, 1982). Many professionals believe that by developing less intensive follow up services, many children can enter the system at these levels which precludes the need for hospitalization or residential treatment (Behar, 1987, 1988; Lourie & Issacs, 1988; Lowman, 1987; Meyers, 1987; Munger, 1991; Schwartz, AuClaire & Harris, 1991; Weithorn, 1988; Wells, 1991).

The development of a continuum of mental health services should include the following major levels of care, each with several sub-parts (Behar, 1990): outpatient counseling, day treatment/education, therapeutic home/specialized foster care, supervised apartment living, group home, larger residential treatment center, and hospital. The complexity of children and adolescents' mental health problems demands that, within each of these levels of care, additional components be available.

Unfortunately, despite a belief that a continuum of care provides the best way to serve very troubled children and adolescents, little has been accomplished by states toward putting a continuum in place. This is well documented

by Jane Knitzer (1982) in *Unclaimed Children.* Progress has been made since its publication, partly as a result of the emphasis placed on encouraging states to develop systems of care through the National Institute of Mental Health's initiative, the Child and Adolescent Service System Program (CASSP). However, difficulties still exist for states attempting to implement a full array of services. States have had problems translating the underlying concepts of a continuum of care into practice; and historic turf battles between agencies, differing agency mandates, and the continued reliance on traditional service modalities that represent only a part of the continuum have all contributed.

Although there appears to be consensus concerning the parts of the overall services to children that belong within their purview, there has been little available to states to help determine how much of which types of services are needed in each locality to implement a continuum of care. Information concerning types and volume of child mental health services is needed to assist in planning for services and projecting costs.

This paper addresses the issues specific to the continuum of services that are the responsibility of the mental health system and discusses a planning model for a continuum of care for seriously emotionally disturbed and at risk children and adolescents, focusing on the distribution and costs of services. The North Carolina model has been derived from the implementation of statewide services in response to a class action law suit (Willie, M., et al. v. James B. Hunt, Jr., et al., 1980) and further tested in a demonstration program for the Department of the Army which provides a comprehensive system of mental health services for children.

North Carolina, through the public sector Willie M. program, has over the past 10 years provided services through a continuum of care across the state to meet the obligations of a right to treatment lawsuit against the State. Since 1981, the Division of Mental Health, Developmental Disabilities and Substance Abuse Services (MH/DD/SAS) as the lead agency, has treated within a continuum of care approximately 1,100 children annually, almost all of whom would meet the criteria for serious mental illness.

Based on the Willie M. program experience, in 1989 MH/DD/SAS received a 57 month contract from the Department of the Army for a demonstration project at Fort Bragg, North Carolina to provide a full continuum of mental health care for the 46,000 children and adolescents of military families living in the Fort Bragg catchment area.

The following observations gained from these two programs may be helpful in developing similar ventures in other states:

1. Once a continuum of care is in place, the mental health needs of a population with serious disturbance can be met, primarily through community based, non-hospital services. A key is to provide services based upon carefully constructed, individualized treatment plans for each child, which may involve one service or a combination of services. Although hospital services and other

types of intensive treatment may be necessary for some children for short periods, non-institutional settings seem to be adequate as well.

2. Overall costs per child outside of institutions and residential treatment centers is less, in terms of new dollars needed (Figs. 1 & 2).

3. Having seen the mental health continuum of care mature into a stabilized system, it appears that professionals have too quickly removed children from their homes into residential settings. New program strategies to keep children and families intact appear effective and are being evaluated, especially those that serve seriously disturbed children in their homes. An example of a successful program is Homebuilders, Inc. (Kinney, Haapala, & Booth, 1991) in which trained staff provide crisis stabilization services in the home and maintain the child and family through the crisis, avoid the need for removal and link the family to needed community services. Combined with other components of the continuum, such as day treatment or respite care, this service suggests new and effective directions.

4. Children with serious disturbances use multiple services at the same time. A continuum must have a wide range of accessible services. For example, a child with serious disturbance may need day treatment, an after school program, vocational training, drug education, family counseling, occasional weekend respite care, periodic crisis stabilization, and medication.

FIGURE 1
Comparison of Services for a Child with Serious Mental Health Problems for 18 Months of Treatment*

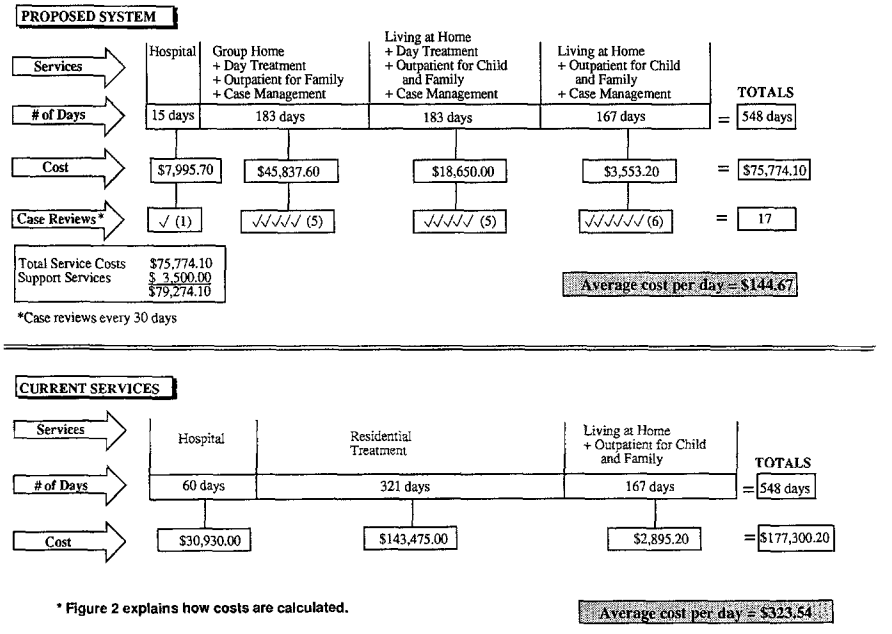


FIGURE 2
Comparison of Services for a Child with Serious Mental Health Problems for 18 Months of Treatment

PROPOSED SYSTEM

Services	Unit Cost x # of Units	Total Unit Cost	Total
Hospital			
-Room	$415.50 x 15 days	$6,232.50	
-Physician	$100.00 x 15 days	$1,500.00	
-Case Management	$65.80 x 4 hours (2 x week)	$263.20	$7,995.70
Group Home	$150.00 x 183 days	$27,450.00	
Day Treatment	$105.00 x 130 days (5 x week)	$13,650.00	
Outpatient (child/family)	$65.80 x 48 hours (2 x week)	$3,158.40	
Case Management	$65.80 x 24 hours (2 x week)	$1,579.20	$45,837.60
Day Treatment	$105.00 x 130 days (5 x week)	$13,650.00	
Outpatient (child/family)	$65.80 x 48 hours (2 x week)	$3,158.40	
Case Management	$65.80 x 24 hours (1 x week)	$1,579.20	$18,387.60
Outpatient (child/family)	$65.80 x 44 hours (2 x week)	$2,895.20	
Case Management	$65.80 x 10 hours (2 x month)	$658.00	$3,553.20
Support Services			
-Emergency Services			
-After School Services	$3,500.00 (estimated cost)		$3,500.00
-Weekend Therapeutic Camping	provided as needed		
			$79,274.10

CURRENT SERVICES

Services	Unit Cost x # of Units	Total Unit Cost	Total
Hospital			
-Room and ancillary services	$415.50 x 60 days	$24,930.00	
-Physician	$100.00 x 60 days	$6,000.00	$30,930.00
Residential Treatment			
-Room	$375.00 x 321 days	$120,375.00	
-Physician	$100.00 x 231 days	$23,100.00	$143,475.00
Outpatient (child/family)	$65.80 x 44 hours (2 x week)	$2,895.20	$2,895.20
			$177,300.20

5. Reliance on the concept of "treatability" is not well founded. The capacity to predict for hospital settings who will do well and who will not diminishes when a wide range of creative, individually tailored services are available. The issue is not "treatability," but "treatable by what means."

6. Many children with serious disturbance may also be the responsibility of

other service systems, including the courts, child welfare, and education, which all have specific roles in serving the child and family. Planning for a continuum of care should be a multi-agency process; each agency should develop programs to meet its responsibilities and mandates and should coordinate with other agencies to prevent overlap and to facilitate transitions for children and families across programs.

7. The funds available for services for children in the public sector are complex, sometimes involving a mixture of entitlements and mandated public programs. The planning and budgeting for a continuum of care should involve mechanisms to blend agency funds in order to maximize available dollars.

8. Case management appears to be a vital part of an effective, organized assessment, service planning, and service delivery system. Children with serious emotional disturbances and their families have complex needs, complex funding eligibilities, multi-agency involvement, and changing situations. Case management is necessary to ensure that all factors are addressed adequately.

A PLANNING MODEL FOR CHILD MENTAL HEALTH SERVICES

In planning a child mental health continuum of care, it is important to estimate the relative proportion of each program component to the whole continuum and to determine the numbers of children and families to be served at any one time in each component. The estimates presented are based on the following:

1. A comprehensive statewide assessment of service needs completed on a case by case basis of children identified by mental health and other child-serving agencies;

2. Ten years of experience with continuums of care for a statewide (sub)population of the child and adolescent population with the most serious problems;

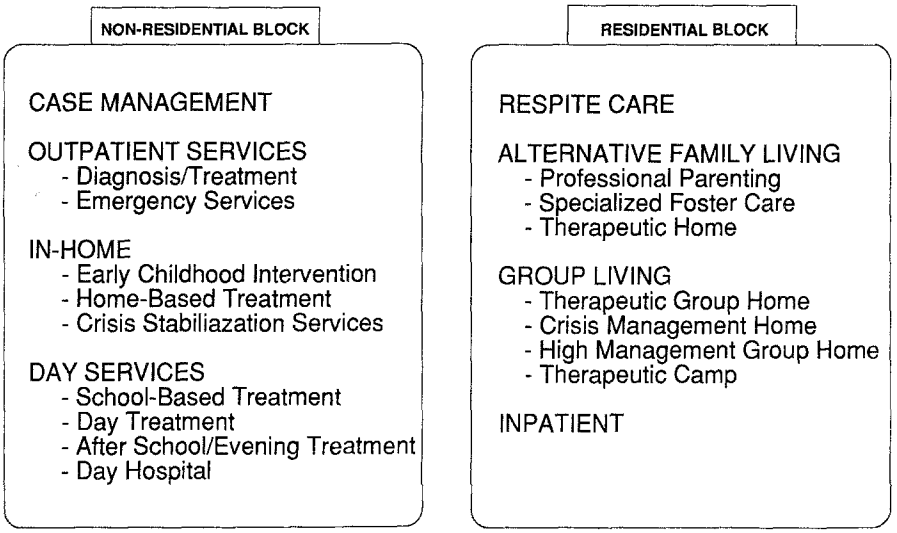
3. Two years of experience with geographically concentrated continuum of care for the entire range of mental health problems (at Fort Bragg); and

4. The consensus of a professional panel, experienced in the planning and delivery of child mental health services.

Distribution of Services

The planning model for a network of child mental health services is described in terms of Child Mental Health Service Blocks which have been calculated in relation to the population to be served. A Service Block is a constellation of mental health services divided into two parts; non-residential and residential (Fig. 3). Within each part the components represent major categories of services, with the possibility for an unlimited number of subcategories. Within a treatment system, it is expected that each plan is to be individualized, based on the needs of the child and family; creative sub-

FIGURE 3



categories are possible to allow for both traditional services, as well as non-traditional services to be wrapped around the child as described by Behar (1986), Burchard & Clarke (1990), and VanDenBerg (1992).

The proportion of component parts of the continuum have been estimated based on the designs of the systems discussed above. As noted earlier, the emphasis has been shifted to non-residential components and thus, the recommendation for the residential components may be less than some states now have in place. Possibly, funds could be shifted from the residential to cover some of the costs of new, non-residential services (Fig. 4).

It is assumed that children with more severe impairments may need more than one service at a time to provide the required intensity of treatment. The service system shown in Figure 4 is designed in terms of spaces available, rather than in terms of the numbers of children and families to be served, at any given time. The assumption is that approximately 90–100 children and families will use approximately 120 slots at any one time. Thus, the Service Block has been designed in the quantity sufficient to serve, at any given time, a client population of 90–100 children and adolescents. One can also assume a turnover of active cases approximately every six months, so that within one Service Block, 180–200 children and families may be served per year. The turnover rate will vary by service. For example, intensive in-home services could be provided by a clinician to a new family each six weeks. Overall, however, a six month turnover rate can be assumed across all services. The turnover rate will be slower initially as the number of children with more serious disturbances who have gone without services for a long time may

Figure 4
Sample Worksheet for Projecting Services and Costs

Service Component	# of Treatment Slots At Any One Time	# Units	X Cost/Unit (Note a)	= Cost/Svc Block (Note b)	x # Blocks Needed = Cost All Blocks	- Existing Funds (Note c)	- Revenues (Note c)	= Add'l $$$ Needed/ (Surplus $$$)
NON-RESIDENTIAL SERVICES								
Case Management	15.00	769.5 hrs	$65.80	$50,633.10				
Outpatient Services	60.00	2683.0 hrs	$65.80	$176,541.40				
-Diagnosis/Treatment								
-Emergency Services								
In-Home Services	10.00	1173.0 hrs	$65.80	$77,183.40				
-Early Childhood Intervention								
-Home Based Treatment								
-Crisis Stabilization								
Day Services	18.00	4320.0 days	$105.00	$453,600.00				
-School-Based Treatment								
-Day Treatment								
-After School/Evening Treatment								
-Day Hospital								
Total (Non-Residential)	103.00	|||||||||||	|||||||||||	$757,957.90				
RESIDENTIAL SERVICES								
Respite Care	1.00	365.0 days	$73.00	$26,645.00				
Alternative Family Living	2.00	511.0 days	$105.00	$53,655.00				
-Professional Parenting								
-Specialized Foster Care								
-Therapeutic Home								
Group Living	4.00	1022.0 days	$200.00	$204,400.00				
-Therapeutic Group Home								
-Crisis Management Group Home								
-High Management Group Home								
-Therapeutic Camp								
Residential Treatment Center	0.00	0.0 days		$0.00				
Inpatient	2.00	548.0 days	$415.50	$227,694.00				
Total (Residential)	9.00	|||||||||||	|||||||||||	$512,394.00				
Total (Non-Resident and Residential)	112.00	|||||||||||	|||||||||||	$1,270,351.90				

Average cost per slot = $1,270,351.90/112 = $11,342.43
Average cost per client anticipating turnover every 6 months = $1,20,371.90/112/2 = $5,671.21

Note a: Unit costs are estimates based on Pioneer data.
Note b: One service block serves approximately 90-100 clients.
Note c: These figures may be difficult to project by service and may need to be reflected as totals only.
Note d: Slots and costs have been averaged across sub-categories.

require longer lengths of interventions at the more intensive levels of treatment.

Volume of Services

The quantity of each component service, including sub-categories, that are needed in a geographic area can be estimated by combining population data with an estimate of the percent of the population that will access services. Based on projections developed by the National Institute of Mental Health (1987) for use in preparing the state plans required under P.L. 99-660 and on data from the public mental health systems in North Carolina and the District of Columbia (Pires, 1990), it is suggested that approximately 2½-3% of the population under age 18 would seek services annually if services were available. However, more recent experience with the Fort Bragg population, especially during the heightened stress period of Desert Storm, found that 6% of the child and adolescent population sought services. Clearly, the 2½-3% can be an underestimation, if the numbers using public and private sector services are combined, if the population is subject to unusual stress, or if the families are otherwise high volume users of services. The child and adolescent population can serve as a planning base and provide a method to determine the volume of services needed for a geographic area; but, it is important to recognize that variations in service utilization exist and that the population should be assessed as part of the planning process.

For example, North Carolina has a child and adolescent population, aged birth to 18, of 1,608,567 and thus should require 160.86 Child Mental Health Service Blocks for the entire state, if the rate of accessing services is 1-1¼% at any given time and 2-2½% annually. In North Carolina, the system shown in Figure 4 at full implementation would have approximately 26,500 slots serving about 20,000 clients and families at a time; 40,000 children and families would be served each year. Note that this figure represents 2½% of the North Carolina child population to be served each year, or 1¼% at any given time. Although the Children's and Communities Mental Health Systems Act of 1991 (Senate Bill 924), introduced by Senator Edward Kennedy, indicated that 12% of the child population may have mental health problems, similar to the rate of 11.8% adopted by Gould, Wunsch-Hitzig, and Dohrenwend (1980), planning services for this number of children and families is unrealistic and far beyond what already is in place within states. As noted above, the population of children accessing services appears to be between 2½% to 6% of the population in a year's time, combining clients of both the public and private sectors. Thus planning for public sector services can reasonably begin with the 2½-3% range except that for areas where there are no private sector services, the percentage might be higher.

Costs of Services

The cost of components within a Service Block must be presented to legislators and policymakers in a way that can be easily understood. Figure 4 depicts 1) the number of treatment slots per Service Block; 2) the numbers of units of services to be provided; 3) the unit costs of providing each of the component non-residential and residential services; and 4) the cost per year for the system for one Child Mental Health Service Block. These calculations are based upon a variety of cost factors, such as the average cost per bed per day and the average cost of an outpatient therapy hour multiplied by the number of hours per year a therapist works. Each calculation is adjusted for a reasonable utilization rate. The rates are as follows:

Case management services	1,040 hours/staff/year
Outpatient services	1,040 hours/staff/year
After school programs	2½ hours/day, 5 days/week 48 weeks/year
Other day services	6 hours/day, 5 days/week 48 weeks/year
Respite	365 days, 100% utilization
Inpatient	365 days, 75% utilization
All other residential	365 days, 70% utilization

The costs of units of services are derived by the method used in North Carolina, called the Pioneer system, which involves a comprehensive method of cost-finding for each unit of service provided within the community mental health system and is based on direct and indirect actual costs. The sample worksheet in Figure 4 provides for calculating and subtracting the services already in place and for estimating and subtracting the potential reimbursements. The model presented depicts the type and volume of services needed, displays the costs of the services, and provides a method for projecting the cost of the full continuum in a geographic area based on the anticipated client population.

This method of presentation has proved useful in North Carolina to reflect the development of cost projections for a continuum of child mental health services. As the complete continuum is put in place, it will be important to document expenditures of funds to provide ongoing assessment of the adequacy of these cost projections. It will also be important to chart trends to reflect changes in the distribution of services commensurate with changes in the needs of the client population.

APPLYING THE MODEL

In applying this model, the following activities are suggested for states:

1. The number of Service Blocks should be determined based on the number of people under age 18 or the age of majority designated by the state.
2. A needs assessment of the client population should be considered to verify the service needs, as well as to project utilization rates.
3. An inventory of the services already in place and their costs should be completed and this information factored into the implementation plans of each locality.
4. The unit costs should be modified by local costs if they differ substantially from North Carolina costs. They should be updated yearly.

There are several points which underlie the design of the model presented that are considerations in applying this model.

First, early intervention is important. The population of children, ages 0–7, has been underserved in the past and it is believed that this underservice has contributed to the severity and chronicity of problems in later childhood and adulthood. Such services should eventually reduce some of the need for services for older adolescents.

Second, flexible funding and flexible program components are essential. The configuration of services within a given Service Block must be flexible to adapt to individual child needs, ethnic diversity, and local situations. This requires that funds be allocated in ways that allow localities to move funds from service to service, as needed, and to change parts of specific service components to adapt to an individual child.

Third, certain essential services should be considered for development first. All mental health catchment areas should provide certain essential mental health services to children, before other services are developed. These essential services include: case management; emergency response; outpatient (including diagnosis, treatment, and home-based interventions); day treatment; residential and inpatient. Additional services will be required to develop a full continuum. Those more individualized services could be added when the essential services are in place.

Fourth, services must be applicable to specific sub-populations. The design of the system is based upon the assumption that the child with cronic problems, the child with serious impairments, and the child with acute treatment needs can be served within the same system. The system can also serve different ethnic groups and most children with multiple impairments within the same components. In order for this to occur, the system must be driven by individualized treatment and education plans for each child accomplished through multi-agency assessment and planning. In this way, the individual needs of each child and family can be accommodated in the delivery of services.

Finally, having designed this part of the implementation phase for the public sector system, the next steps should involve a meshing of the public and private systems. This model incorporates services provided in the private sector. For example, inpatient hospitalization could be provided in the private sector or in a combination of public and private sites. The number of hospital beds in this model is less than the number that currently exist in many states. As less restrictive services and early intervention services mature in the continuum of care, less hospital beds should be needed. The private sector can be involved in helping to shift the balance into other needed services. Without such cooperation, differing goals between the public and private sectors can undermine the effectiveness of a system of care approach.

SUMMARY

This paper has presented a model for states to consider in planning, budgeting, and implementing a mental health continuum of care for children and adolescents and their families. Particular emphasis is placed on the distribution of component services within a complete continuum of care and the cost of those services. A population based approach has been described that can be easily illustrated to policy and decision makers. At each step there are important strategies to be considered. These strategies have been learned from an example of successful systems of care in North Carolina.

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