

**REGIONAL CENTER DISCHARGE FOLLOW-UP SERVICES
PROJECT REPORT**

Final Report May 24, 2010



**Nebraska Department of Health & Human Services
Division of Behavioral Health**

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Glossary:

AIMS/Avatar – Advanced Institutional Management Systems (AIMS) and Avatar data systems
BHR Consumers – Behavioral Health Reform Consumers
COCE – Co-Occurring Center for Excellence
COD – Co-Occurring Disorder
DBH – Nebraska Division of Behavioral Health
DBH-CS – Division of Behavioral Health (DBH) / Community Services (CS) data system
DHHS – Nebraska Department of Health and Human Services
DSMR-IV-TR – Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision
LRC – Lincoln Regional Center
MMIS – Medicaid Management Information Systems
NASMHPD – National Association of State Mental Health Program Directors
N-Focus – Nebraska Family On-Line Client User System (Economic Assistance Program)
NRC – Norfolk Regional Center
SAMHSA - Substance Abuse and Mental Health Services Administration
URS – Uniform Reporting System

Introduction

In April 2004, the behavioral health reform bill, LB 1083, was signed into law to move Nebraska's behavioral health system toward community-based services throughout the state, and away from institutionalization. According to the Nebraska Division of Behavioral Health (DBH), under Nebraska Behavioral Health Reform (2004–2009), there were 316 Regional Center general psychiatric beds closed and approximately thirty million dollars transferred to community services. As of December of 2008, Hastings Regional Center (HRC) has been converted to a facility that serves youth who are discharged from the Youth Rehabilitation Treatment Center in Kearney, Nebraska. Norfolk Regional Center (NRC) has been converted to a facility that serves sex offenders. Lincoln Regional Center (LRC) continues to provide individuals with general psychiatric, forensic psychiatric, and sex offender services.

In 2005, the Nebraska Department of Health and Human Services (DHHS) contracted with the University of Nebraska Medical Center to initiate the "Regional Center Discharge Follow-up Services Project." Its purpose is to monitor service utilization and outcomes among adults discharged from state behavioral hospitals (i.e. Regional Centers) by developing the "Behavioral Health Reform Monitoring System," a state-wide data system that can capture information from different sources.

Data Sources

The Regional Center Discharge Follow-up Services Project used four DHHS information systems, which provided the data for this report (Table 1). This report uses the 4-year cumulative data for the period 1/1/05-12/31/08, for all analyses, with an exception of the readmission rates.

Table 1. DHHS data sources used to develop the Behavioral Health Reform Monitoring System

Data Systems	Description
DBH-CS	"Division of Behavioral Health (DBH) - Community Services (CS)" data system. The Nebraska Division of Behavioral Health contracts with Magellan for data collection and management of data relating to DBH-funded community behavioral health and substance abuse programs.
MMIS	"Medicaid Management Information Systems" (MMIS) data. Provides Medicaid claims information for those who are eligible for Medicaid.
N-Focus	Nebraska Family On-Line Client User System. Management information system operated by the Nebraska Health and Human Services System that supports over 40 economic and social service assistance programs.
AIMS/ Avatar	"Advanced Institutional Management Systems" (AIMS) and Avatar contain state psychiatric hospital data. As of January 2006, LRC began using Avatar exclusively, HRC and NRC were both fully converted to using Avatar exclusively by June 2007.

Regional Center Discharge Trend and Patterns

During the 4-year period of the Behavioral Health Reform (1/1/2005 – 12/31/2008), a total of 1,225 consumers were discharged from selected units of the Regional Centers. Hereafter, the term “Behavioral Health Reform (BHR) Consumers” will be used to describe these individuals. During the Behavioral Health Reform, the numbers of consumers admitted and discharged from Regional Centers decreased. The number of consumers discharged monthly from Regional Centers was highest in March 2005 (66 consumers) and lowest in March 2008 (5 consumers). Table 2 shows that the highest proportion of BHR consumers (33%) were admitted from Region 6, where 41% of the state population resides, followed by Region 5 (29%), where 25% of the population resides. The majority of consumers were discharged from Region 5 (32%), followed by Region 6 (25%).

Table 2. Distribution of BHR consumers by region of admission and discharged, compared to the distribution of Nebraska’s population*.

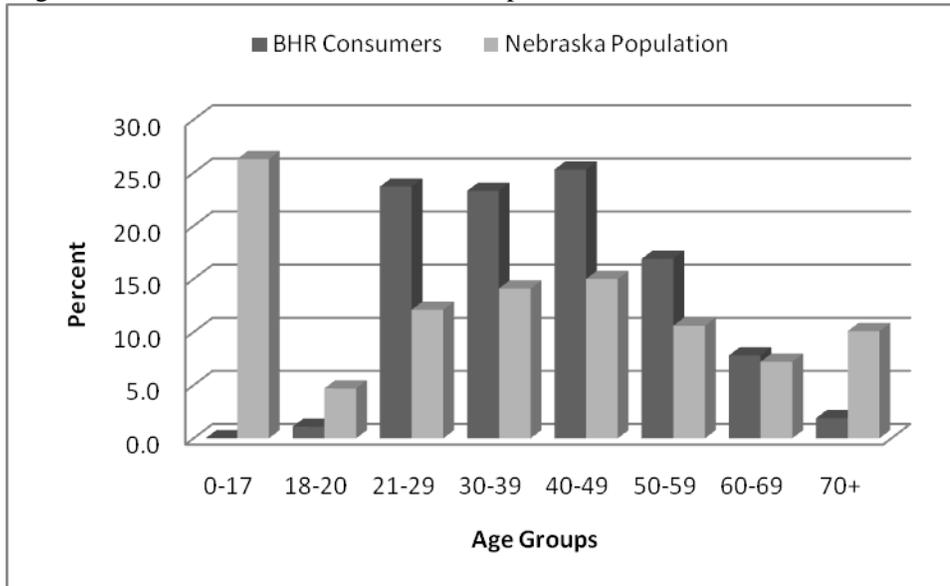
Region	BHR Consumers				Nebraska Population Distribution*	
	Region of Admission		Region of Discharge		No.	%
	No.	%	No.	%		
1	19	1.6	16	1.3	86,072	4.9
2	52	4.2	26	2.1	99,683	5.6
3	215	17.6	206	16.8	222,813	12.6
4	171	14.0	214	17.5	205,912	11.6
5	351	28.7	395	32.2	434,379	24.5
6	409	33.4	307	25.1	725,712	40.9
Other	8	0.7	61	5.0	N/A	N/A
Total	1225	100.0	1225	100.0	1,774,571 (100.0)	100.0

* US Census 2000

Demographic Characteristics

Some of the demographic characteristics of the BHR consumers differ from the Nebraska adult population. About 47% of the BHR consumers are between 21 and 39 years of age compared to 26% of the Nebraska adult population (Figure 1), using the 2000 US Census data. The proportion of people in the age 60 and older category is much lower in the BHR population than the Nebraska adult population (10% vs. 17%). Fifty-nine percent (59%) of BHR consumers are men, compared to 49% of Nebraska's adult population, and 79% of the BHR consumers are Caucasian, compared to 91% of the Nebraska's adult population.

Figure 1. Age distribution of BHR Consumers, compared to the distribution of Nebraska's population*



*US Census 2000

Living Status at Admission

At the time of admission to a Regional Center, 59% of BHR consumers were living in private residences. A smaller, but substantial, number of consumers were living in homeless shelters (9%) or came from correctional facilities (5%).

Insurance Status at Admission

According to the Regional Center admission records, only 12% of the BHR consumers had private insurance or paid the cost of care themselves. Forty-two percent (42%) of BHR consumers reported they did not have insurance. The proportion of consumers with Medicaid and Medicare were 25% and 18%, respectively. The other insurance status for the remaining 3% was unknown.

Psychiatric Diagnosis

Clinical characteristics of consumers were examined using all diagnostic codes found in data extracted from the Regional Center data system (AIMS/Avatar) and Division of Behavioral Health community service data system (DBH-CS). Diagnostic codes are based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSMR-IV-TR)¹. The DSM-IV-TR uses a system which involves an assessment on several axes, each referring to a different domain of information.

Serious mental illness is the most commonly given diagnostic category (96%), followed by substance-related disorder (68%), personality disorder (67%), mental retardation (7%), dementia (3%), and autism (0.4%). Many consumers had more than one category of psychiatric diagnosis (Table 3). The most common psychiatric combination among BHR consumers was “Serious Mental Illness, Substance-Related Disorder, and Personality Disorder” (46%) followed by “Serious Mental Illness and Personality Disorder” (15%), and “Serious Mental Illness and Substance-Related Disorder” (15%).

Clinical characteristics of BHR consumers are considerably different from the overall DBH-CS consumer population (i.e. the entire consumer population receiving state-funded behavioral health services during the BHR period). As indicated in Table 3, the most common psychiatric diagnostic combination among BHR consumers was “Serious Mental Illness, Personality Disorder, and Substance-Related Disorder” (46%), while only 5% of the overall DBH-CS population had this combination category. Similarly, the second most common combination was “Serious Mental Illness and Personality Disorder” (15%) among the BHR consumers, which affected only 4% of the overall DBH-CS population. Of the 1,225 BHR consumers, 64% (790) had both serious mental illness and substance-related disorders, alone or in combination with other disorders.

Table 3. Ten most common psychiatric diagnosis combinations among BHR consumers compared to diagnostic combinations among DBH-CS Consumers*

Rank	Psychiatric diagnosis combination	BHR Consumers		DBH-CS Consumers	
		Number	%	Number	%
1	Serious mental illness, personality disorder, and substance-related disorder	561	45.8	3,619	5.3
2	Serious mental illness and personality disorder	182	14.9	2,893	4.2
3	Serious mental illness and substance-related disorder	180	14.7	4,785	7.0
4	Serious mental illness only	146	11.9	8,329	12.2
5	Personality disorder and substance-related disorder	26	2.1	1,725	2.5
6	Serious mental illness, personality disorder, mental retardation, and substance-related disorder	23	1.9	60	0.1
6	Serious mental illness and mental retardation	23	1.9	262	0.4
8	Serious mental illness, personality disorder, and mental retardation	14	1.1	74	0.1
9	Serious mental illness, mental retardation, and substance-related disorder	12	1.0	59	0.1
10	Substance-related disorder only	8	0.7	34,228	50.1
	All other	50	4.0	12,334	18.0
	Total	1,225	100.0	68,368	100.0

*Note: BHR Consumers and DBH-CS Consumers are mutually exclusive in this table.

Medical Diagnosis

In recent years, more attention has been paid to medical comorbidity among people with serious mental illnesses. According to a report published by the National Association of State Mental Health Program Directors (NASMHPD), people with serious mental illness die, on average, 25 years earlier than the general population². Furthermore, the report states that people with serious mental disorders have a 2 to 3 times higher risk of dying from preventable medical conditions, such as diabetes, cardiovascular disease, respiratory diseases, and infectious diseases, compared to the general population. People with serious mental illness are at higher risk of morbidity and mortality due to a number of factors, including: higher rates of modifiable risk factors (e.g. smoking, alcohol consumption, poor nutrition, obesity, unsafe sexual behavior, intravenous drug use); vulnerability due to higher rates of homelessness, victimization/trauma, unemployment, poverty, incarceration, and social isolation; and impact of symptoms associated with serious mental illness (e.g. paranoid ideation causing fear of accessing care, disorganized thinking causing difficulty in following medical recommendations). Also, some psychiatric symptoms can mask symptoms of medical/somatic illnesses. Psychotropic medications may mask symptoms of medical illness and/or contribute to symptoms of medical illness and cause metabolic syndrome. The NASMHPD report points to the lack of access to appropriate health care and the lack of coordination between behavioral health and general health care providers, as additional factors contributing to excess morbidity and mortality.

To understand the medical conditions of BHR consumers, Axis III diagnoses found in the Regional Center data system (AIMS/Avatar) were examined. Axis III diagnoses are part of DSM codes that are commonly used in diagnosis of individuals with mental illness. It is possible that Axis III diagnoses do not capture all the medical conditions that consumers have; therefore, it is likely that the following numbers are underestimates of the comorbid medical conditions found in the population. Table 4 shows the four most common major disease categories found in the Axis III diagnoses, and the most commonly associated conditions. Note that individuals can have multiple diagnoses.

Table 4. Four most common Axis III diagnostic categories among BHR Consumers (1/1/05-12/31/08) and the commonly associated conditions*

Axis III Diagnostic Categories	No.	%
Endocrine, Nutritional, and Metabolic Diseases and Immunity Disorders	528	43.1
Overweight or obese	293	23.9
Lipoid metabolism disorder	213	17.4
Hypothyroidism	140	11.4
Diabetes mellitus	125	10.2
Diseases of the Nervous System and Sense Organs	362	29.6
Eye refraction disorder/accommodation	240	19.6
Hearing loss	65	5.3
Epilepsy and recurrent seizures	28	2.3
Diseases of the Digestive System	296	24.2
Diseases of esophagus (including esophageal reflux)	135	11.0
Functional digestive disorders, not classified	104	8.5
Disorders of function of stomach	44	3.6
Gastritis and duodenitis	34	2.8
Diseases of the Circulatory System	270	22.0
Essential hypertension	243	19.8
Ischemic heart disease	22	1.8
Heart failure	8	0.7

*Note: Percents are based on the total BHR population (N=1,225)

Information about Deceased Consumers

In this project, reported deaths among the BHR consumers were identified through information found in the DBH-CS and AIMS/Avatar databases. Death certificate data was provided by the DHHS Vital Statistics Office and was used to confirm deaths and to obtain detailed information about the deceased individuals.

Of the 1,225 BHR consumers discharged during this 4-year reporting period (1/1/05-12/31/08), 28 consumers (2.3%) are known to have died at some point after their first discharge. The average age at death among the 28 deceased individuals discharged from selected units of Regional Center was lower than the average age for the Nebraska general population: 47 vs. 75 years old³. This is partially due to the fact that BHR consumers are younger than the general population of Nebraska. Also, as described in the previous section, comorbid medical conditions are likely to have played a role in the premature deaths of these BHR consumers.

Death certificates use the following codes to indicate the manner of death: “natural”, “accidental”, “suicide”, and “undetermined”. According to this coding, 28 deaths among BHR consumers are classified as the following: natural (15 consumers), accidental (6 consumers), suicide (4 consumers) and undetermined (3 consumers). Of the 15 individuals with a natural manner of death, 3 had cancer, 3 had sepsis or septic shock as a cause of death, 8 died of conditions related to the heart, and 1 of unknown conditions. Further, the death certificates indicate that alcohol or drugs played a direct or indirect role in the deaths of 7 individuals: 5 accidental deaths, 1 suicidal death, and 1 undetermined manner of death. Fourteen (14) individuals died during the first year after discharge, and 12 individuals died between 1 to 3 years after discharge. Two (2) individuals are recorded to have had zero number of days between discharge and death. This is because these two individuals died at a Regional Center, one from ovarian cancer and the other from cardiac failure. Both deaths were classified as “natural”.

Services Utilization in Community

Analysis of service utilization is based on information from the Regional Center data system (AIMS/Avatar), community-based behavioral health services data system (DBH-CS), Medicaid (MMIS), and social services/economic assistance data system (N-Focus). Note that the AIMS/Avatar data system includes information about both inpatient and outpatient services provided by Regional Centers. The MMIS provides information about both behavioral (including substance abuse) and medical care.

After discharge from a Regional Center, the majority of BHR consumers (76%) used both behavioral health and non-behavioral health services (e.g. medical care, social services/economic assistance) in community settings. A small proportion of people used only behavioral health services (10%) or only non-behavioral health services (4%). Six percent (6%) of BHR consumers had no record of using behavioral health or non-behavioral health service funded by the state.

After discharge from a Regional Center, 72% of BHR consumers received DBH-CS community services. Thirty-seven percent (37%) of BHR consumers received Regional Center outpatient services and 61% received behavioral health care services funded by Medicaid.

DBH-CS Services Use

According to the DBH-CS, BHR consumers received a variety of services in the community. Table 5 shows the number and percentage of consumers who received specific type of services. The percentages are based on the total number of consumers (N=1225). Consumers may have received more than one type of service during this reporting period. About 25% of consumers had no record of using community-based behavioral health services after discharge from the Regional Centers.

Table 5. Type of DBH-CS services used in the community among BHR consumers after discharge from selected Regional Center units 1/1/05-12/31/08 (N=1225)

Type of DBH-CS Services*	No.	%
Psychiatric Residential Rehabilitation (includes "MH", "Dual Disorder Residential" and "Day Rehabilitation")**	432	35.3
Community Support-MH/SA	431	35.2
Emergency Protective Custody	359	29.3
Emergency Shelter/Crisis Inpatient Treatment; Post Commitment Treatment Days-MH/SA; Intermediate & Secure Residential-MH*	317	25.9
Individual Psychotherapy; Home Based Therapy; Outpatient Therapy-MH/SA**	299	24.4
Medication Management-MH/SA	253	20.7
Evaluation Assessment-MH/SA	195	15.9
Professional Partner/School Wraparound; Mobile Crisis/Crisis Intervention Teams-MH/SA; Emergency Community Support-SA**	191	15.6
Short-term Residential-SA	115	9.4
Assertive Community Treatment	103	8.4
Crisis Protective Custody	72	5.9
Intensive Outpatient-MH/SA	71	5.8
Psychiatric Respite Care-MH	67	5.5
Social Detoxification-SA	59	4.8
Day Support-MH	47	3.8
Vocational Support-MH	46	3.8
Crisis Stabilization and Treatment Services-MH/SA	43	3.5
Half-way House-SA	29	2.4
Day Treatment-MH	20	1.6
Long-term Residential; Therapeutic Community-SA**	18	1.5
Group or Family Psychotherapy/Counseling	9	0.7
Partial Care-SA	1	0.1

*Types of services in this table are based on labels found in the DBH-CS database

**For these services, there were multiple service descriptions associated with one service code, and so all associated service descriptions are combined.

Medicaid Services Use

Services provided through Medicaid were grouped into three categories: medical services, behavioral health services (including substance abuse), and other services. Of the 1,225 BHR consumers, 799 (65%) had information in the Medicaid database. Of those 799 BHR consumers in the Medicaid dataset, Medicaid claims data show that 767 (96%) of those received medical services at hospitals or clinics. Six hundred ninety-two (692 or 87%) of these consumers had a record of pharmacy use related to medical conditions and/or were prescribed medications by non-behavioral health care providers. Medicaid records show that 684 (86%) of the BHR consumers in the Medicaid database used behavioral health care services at hospitals or clinics. Four hundred fifty-seven (457 or 57%) of these consumers had a record of pharmacy use related to psychiatric care and/or were prescribed medications by behavioral health care providers. Other common behavioral health related services found in the Medicaid claims data include day treatment (220 consumers; 28%), day rehabilitation (148 consumers; 19%), Assertive Community Treatment (183 consumers; 23%), and behavioral services (128 consumers; 16%).

Economic Assistance/Social Services Use

Of the 1,225 BHR consumers, information for 1,006 individuals was found in the N-Focus data system. Of those 1,006 BHR consumers found in the N-Focus data, the most common N-Focus social services programs consumers enrolled include: Assistance to the Aged, Blind, Disabled/Medicaid (756 consumers; 75%), Food Stamp Program (700 consumers; 70%), Medicaid (572 consumers; 57%), Social Services Aged and Disabled (431 consumers; 43%), and Children and Family Services/Medicaid (103 consumers; 10%).

Enrollment in N-Focus programs does not necessarily mean that the consumer received N-Focus services. Only four-hundred ninety-four (494) BHR consumers had a record of N-Focus program use after first known discharge from a Regional Center. For those 494 BHR consumers that received N-Focus services, the most commonly used program was “Social Services Aged and Disabled” (430 consumers; 87%), followed by “Children and Family Services/Medicaid” (46 consumers; 9%), “DD Adult Comp Waiver” (18 consumers; 4%); “DD State Aid” (18 consumers; 4%); “Employment First” (13 consumers; 3%) and “Personal Assistance Services (10 consumers; 2%).

Emergency Admission and Regional Center Readmission

Emergency Shelter/Crisis Inpatient Services

In order to investigate the volume of emergency shelter or crisis inpatient services use, all emergency shelter or crisis inpatient admissions that occurred after the first discharge from Regional Centers were identified. It was found that a total of 2,296 emergency shelter/crisis inpatient admissions occurred among the 1,225 BHR consumers during the 4-year reporting period (1/1/05-12/31/08). Forty-three percent (43%) of consumers had at least one emergency use contact after the first discharge during this period.

Readmission to Regional Center

Of the 1,225 consumers discharged from selected Regional Center units 1/1/05-12/31/08, 78% of the consumers had no readmission, 16% had one readmission, and 6% had two or more readmissions to the Regional Center within the reporting time period.

Table 6 shows the 30-day and 180-day readmission rates calculated according to the Substance Abuse and Mental Health Services Administration's (SAMHSA) Uniform Reporting System (URS) requirements for fiscal years 2007 - 2009. Note, the URS specifies using the number of discharges as the unit of analysis, not the number of unduplicated consumers. Also, because this data looks specifically at the given fiscal years, the number of discharges here will not equal the total number of BHR consumers (N=1,225). Individuals were counted if the discharge date fell within a given fiscal year, and they were admitted or discharged from a behavioral health unit from one of the Regional Centers. The 30-day readmission rate increase slightly from 1.3% to 2.3%, while the 180-day readmission rate increased from 8.6% to 12.3%.

According to the Data Infrastructure Grant Annual Meeting, for the 2008 Fiscal Year, the national average for 30-day and 180-day admission rates are 9.3% and 21.3%, respectively⁴. Because of differences in the population served and data sources used, a caution needs to be used when comparing and interpreting the national average to the individual state's rates.

Table 6. 30-day and 180-day readmission rates^{*}

Fiscal Year of Discharge	Total number of Discharges in Year	Number of Readmissions to ANY STATE Hospital within		Percent Readmitted	
		30 days	180 days	30 days	180 days
2007 (07/01/06-06/30/07)	302	4	26	1.3%	8.6%
2008 (07/01/07-06/30/08)	218	10	25	4.6%	11.5%
2009 (07/01/08-06/30/09)	219	5	27	2.3%	12.3%

* Count of discharges from behavioral health units at Regional Centers during the given fiscal year.

Summary of Findings

- This study followed 1,225 adult consumers discharged from selected units of the Regional Centers between 1/1/2005-12/31/2008, while Nebraska reformed the public mental health system from a reliance on state hospital care to community-based services.
- Data on psychiatric diagnosis indicates that Behavioral Health Reform (BHR) consumers have more serious and difficult to treat behavioral health conditions than the general population of DBH-CS behavioral health consumers. Close to 50% of BHR consumers had a combination of “Serious Mental Illness, Personality Disorder, and Substance-Related Disorder”, while only 2% of the overall DBH-CS behavioral health consumers had this combination category.
- According to SAMHSA’s Co-Occurring Center for Excellence (COCE), having co-occurring disorders (COD) increases the likelihood of having additional medical, social and legal problems⁵. Our finding indicates that 64% of BHR consumers have serious mental illness, in combination with substance abuse disorders. The COCE states that individuals with COD require a breadth of services including employment, education, housing, and legal assistance which is only possible by inter-agency collaboration to provide integrated care.
- Nationally, awareness of medical comorbidities among people with serious mental illness has increased in recent years². Preliminary analysis of medical comorbidities among BHR consumers indicates that medical conditions such as hypothyroidism, diabetes, and hypertension are relatively common in this population. Prevention and treatment of chronic and acute medical illnesses are important in increasing longevity and quality of life among people with behavioral health disorders.
- After discharge from a Regional Center, 76% of BHR consumers used both behavioral and non-behavioral health services (e.g., medical care, social service/economic assistance). The trend data shows that the proportion of people receiving Medicaid services remained stable while some other services, such as community-based behavioral health and economic assistance, declined over time. The proportion of people who used emergency service also declined during this period.
- Substance Abuse and Mental Health Services Administration collects selected indicators such as readmission rates from state behavioral health programs. Because the type of consumer population served and data systems implemented differ considerably across states, comparison and interpretation of findings from different states needs to be done with caution. Nevertheless, Nebraska has considerably lower readmission rates than the national average – 180 day readmission for Nebraska was 12.3% in 2009 compared to 21.3% nationally for 2008⁴.

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