Baltimore Substance Abuse Systems, Inc.

Monitoring Measures Project

Final Report

***

By Shawn M. Flower, Ph.D.
Principal Researcher
Choice Research Associates

***

February 2013

Points of view or opinions contained within this document are those of the author and do not necessarily represent the official position or policies of Baltimore Substance Abuse Systems, Inc. All errors are my own.

Table of Contents

Table of Tables

Table of Figures

Project Description

Choice Research Associates (CRA) was engaged by Baltimore Substance Abuse Systems, Inc. (bSAS) to explore existing data monitoring measures for substance abuse services and to conceptualize monitoring measures that could be developed and computed by bSAS. While the project focus is on substance abuse services, existing data systems among other behavioral health systems (e.g., Department of Mental Health, Mental Hygiene Administration) were considered and reviewed primarily to support any discussion of funding streams/resources for emerging changes in consolidation of substance abuse and mental health systems.

The key questions explored in this document are:

1. How does MD currently calculate these measures?;
2. How do others calculate these measures?; and
3. How could bSAS do this differently to capture the life course of the individual engaged in publically funded substance abuse treatment?

To the extent possible, these measures will be explored based on levels of care and/or by the categories of outpatient or residential. The primary measures of interest are retention, utilization, and continuity of care, as well as other pertinent measures such as urinalysis.

Report Overview

This report will detail the methodology and process to obtain information related to the project objectives and to support the final recommendations, including key points from meetings with Dr. Jose Arbelaez and Luis Rivera of bSAS and a review of a SMART admission data extract from July 2011. Specific deliverables include the following:

1. A table of measures currently used to monitor the provision of substance abuse treatment with how calculated, the source, and if possible, by level of care and/or by the categories of outpatient or residential.

2. A summary of how six specific states (Arizona, Massachusetts, Kentucky, New York, New Jersey, New Mexico) currently monitor substance abuse treatment provision. These states were selected for comparison based on a report written for Maryland's Department Health and Mental Hygiene which identified these states as moving more rapidly toward an integrated system and thus possibly serve as an exemplar of emerging practices.[1]

3. A template of the data monitoring dashboard with emphasis in the following domains in Substance Abuse: access, quality, effectiveness, and efficiency using indicators such as: utilization, retention, urinalysis, and continuity of care, among others.

This report concludes with recommendations related to the use of the current data monitoring system and suggestions for the future.

[1] Future Options for Integrated Behavioral Healthcare report of December 11, 2011

Methodology and Process

This report is based on a review of the available literature searching on terms including substance abuse treatment measures, performance measures, process measures, monitoring, quality measures, benchmarks, IDDT, utilization, and level of care; reviewing the Substance Abuse and Mental Health Administration (SAMHSA) website for performance measures and related information; the Maryland Alcohol and Drug Abuse Administration (ADAA) website; reviewing the Maryland Health Department's Behavioral Health Integration project including reading all related reports and documents; and several meetings with Dr. Jose Arbelaez and Dr. Luis (Omar) Rivera. In addition, bSAS[2] provided copies of the fiscal year 2012, Third Quarter 2012 Drug Stat presentations (broken out by type of service (Residential (R), Outpatient (O), and Opioid Maintenance Treatment (OMT)), a list of service providers by level of care, as well as a sample data set from SMART (without patient identifiers) from July 2011.

Another factor to consider in this effort is emerging healthcare changes toward a more managed care system. While historically administrators of publically funded treatment were focused on the number of patients with substance use disorders (SUD) provided with and completing treatment which are "historically measured outcomes consistent with federal Block Grant requirements … [but now] must prepare to collect and report measures common to commercial managed care … such as those being promulgated by the National Quality Forum (NQF)" (Gauthier & TenHoor, 2011, p. 21). The NQF website contains measures across all health areas including those of interest to managed care organizations (MCO) who want to control costs and determine if treatment had an impact on future Emergency Department (ED) visits and hospitalizations. The NQF website was searched by keyword for measures for this effort.

Based on the literature, a summary table was created of process measures (Table 1) used to monitor the provision of substance abuse treatment, how these measures are calculated, referencing the source material, and by level of care and/or by the categories of outpatient or residential. Table 2 provides similar information with respect to process measures for provision of services for the co-occurring population. With respect to outcomes, the National Outcomes Measures (NOMs) were reviewed and included in this review in Table 3 – including notes on how Maryland ADAA currently assesses these outcomes. Table 4 provides information on outcomes used to measure the effectiveness of substance abuse treatment, how these measures are calculated, referencing the source material, and by level of care and/or by the categories of outpatient or residential. Table 5 provides outcome measures for the co-occurring population.

The next step was to review the websites of six specific states to determine how these states, identified by the Consultant engaged in the Maryland Behavioral Health Integration project as six states that are moving more rapidly toward an integrated substance abuse treatment and mental health system. These state systems were compared to Maryland's system, and similarities and differences are captured in the summary in Table 6.

[2] While bSAS is the primary contractor of publically funded substance abuse treatment in Baltimore City, it is not the sole source – ADAA can contract directly with providers to provide treatment services.

The SMART data extract was reviewed to ascertain, based on the review of the material above, what additional measures could be constructed either now, or in the future (Summary Table 7). Factors considered in this process include the pending integration of substance abuse treatment and mental health (primarily from the perspective of the impact of changing funding streams from cost reimbursement to Medicaid fee for service payment and issues surrounding linking (or the *interoperability*) of these systems to provide performance data for both process and outcome measures. Once implemented, Electronic Health Records (EHRs) provide the bridge "for the "capture and reporting of behavioral health clinical and administrative data" (SAMHSA, 2007, p.16) thus are an important feature of any future monitoring system. While SMART has served as the MD EHR for substance abuse treatment, a new EHR is forthcoming that can accommodate both an interactive design and the pending behavioral health integration data requirements. A discussion of the issues related to matching individual records across multiple data systems and the need for bSAS to have full access to PAC data is also included.

Vaillant stated "the recovery process … is best catalyzed not by a single episode of treatment but by fostering natural healing processes over time" (1995, p. 359).[3] Thus, at the center of this exploration is to recognize the change from treating an individual with substance abuse and mental health issues from two separate courses of action and moving toward a holistic or "whole person" treatment approach, but also to consider this individual over the *life-course* of their engagement in substance abuse treatment and recovery.

Substance Abuse Performance Measures

As noted above, summary tables were created for process measures used to monitor the provision of treatment, how these measures are calculated, the source material, and by level of care and/or by the categories of outpatient or residential. Outcome measures are also explored including a review of the National Outcomes Measures (NOMs), and outcomes used to measure effectiveness of treatment, how these measures are calculated, the source material, and by level of care and/or by the categories of outpatient or residential.

[3]George Vaillant (1995) made this statement based on findings from his study of alcoholism with a 40 year follow-up on two samples (a group of 204 male Harvard college sophomores in 1938 the "College Sample" and a group of 456 from the comparison group of non-delinquent boys from Boston inner-city schools originally gathered by Sheldon & Eleanor Gluek in the 1920s). Further, in his 1988 study on long-term follow-up of 100 serious alcoholics found that at the end of a 10 year follow-up, 95% of the alcoholics had relapsed, yet among this group, 59% had "at least 6 months of abstinence … [therefore these patients] … could be classified as *both* treatment successes and treatment failures" (emphasis in original, p. 1148). At the eight year follow-up period, Vaillant observed that "the average alcoholic in our study was detoxified 15 times and made at least that many emergency room or clinic visits. At last contact 11-14 years after index admission, 37% of the alcoholics had died … and 38% had been abstinent at time of death or last contact" yet 32% were defined as "stable abstinent" and the fate of the remaining 17% was either uncertain or they were institutionalized (p. 1149-1150) . Further, the pattern of eventual recovery from addiction is evidenced by the number of alcoholics and addicts in this study defined as "stable abstinent" increased over time while the number still addicted decreased (e.g., from 35% stable abstinence for heroin addicts after 18 years post-treatment compared to 23% at 10 years, and 10% at 5 years while for alcoholics, at 12 years, 17% remained alcohol dependent compared to 61% at 4 years post-treatment) with the commensurate number of those defined as "uncertain" steadily decreased (p. 1149-1150).

Table 1: Monitoring Measures by Domain, Indicator, and Level of Care

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Continuity of Care	Total Number (#) of Unique Persons (UP) who completed Detox (D) or OP/IOP	# UP admitted to different LOC w/in 30 days	Percent of unique persons who completed treatment, with subsequent admission to another level of care (LOC) within 30 days post-discharge (1)+	Admin	Outpatient
Access Effectiveness	Retention	Total # UP admitted to treatment	# UP discharged successfully	Number of persons who successfully completed treatment (1)+	Admin	All Levels
Access Effectiveness	Retention Urinalysis	Total # UP admitted to treatment subject to UA	# UP in denominator discharged successfully	Number of persons with UA who successfully completed treatment (1)+	Admin & Urinalysis	Residential Outpatient
Effectiveness	Urinalysis	Total # of Positive UA results	Total # of UA tests	Number of positive Urinalysis (UA) (1)+	Urinalysis	Residential Outpatient
Access	Utilization	Total Slot Capacity (Total number of days all slots can be utilized within a given date range)	Total number of Client Days	Proportion of Treatment Slot Capacity(2)*	UP	Residential Outpatient
Access	O - Initiation	Total # UP with OP index service who received 2nd service within 14 days *Note – or can use with those with IOP index service*	Individuals with an OP index service *Note – or can use with those with IOP index service*	Initiation - % of adults with index service (defined as service preceded by 60-day period without SA service and = start of a new episode) and received a second SA service (defined as each OP encounter) (other than detox or crisis) within 14 days after index service.(3)	Admin	Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access Retention	O – Engagement	Total # UP who initiated OP service who received 2 additional services w/in 30 days *Note – or can use with those with IOP index service*	Individuals with an OP index service *Note – or can use with those with IOP index service*	Engagement - % of adults diagnosed SUD who initiated OP treatment and who receive 2 additional SA services within 30 days of initiation of care.(3)	Admin	Outpatient
Access Retention	Continuity of Care	# of UP with positive SUD assessment who received another service w/in 14 days	Individuals with positive assessment	Assessment - % of adults with positive assessment for SUD and received another service within 14 days. (No need for 60 day service-free period) (3)	Admin	All Levels
Access	Continuity of Care	# of UP with detox service who received (non-detox/non-crisis) service w/in 14 days	Individuals with detox service	Detox - % of adults who received detox service who received another service (not detox or crisis) within 14 days of discharge. (No need for 60 day service-free period) (3)	Admin	All Levels
Access	Continuity of Care	# of UP discharged from residential treatment, followed by another service w/in 14 days *Note –can use with those with Inpatient discharge*	Individuals discharged from residential service *Note –can use with those with Inpatient discharge*	Residential - % of adults discharged from residential service, followed by another service (not detox or crisis) within 14 days of discharge. (No need for 60 day service-free period) (3)	Admin	Residential Inpatient

[+] Measure used by Maryland ADAA [*]Measure used by bSAS

(1) ADAA, 2006

(2) Documentation provided by bSAS

(3) Garnick et al., (2009) Washington Circle Performance Measures

Table 2: Measures for Co-Occurring Disorders by Domain, Indicator, and Level of Care

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Utilization	Total # of UP in SA TX	Total # of UP who received MH TX while in SA TX	Percent of discharges who received mental health (MH) treatment (TX) while in substance abuse (SA) TX(1)[+]	Admin; MH TX from Chart Review or Admin	Residential, Outpatient
Access	Utilization	Total # of UP assessed w/MH problems at admission who received MH TX while in SA TX	Total # of UP in the denominator discharged	Percent of discharges assessed as having mental health (MH) problems at admission who received MH treatment (TX) while in substance abuse (SA) TX(1)[+]	Admin; MH Intake Assessment; MH TX from Chart Review or Admin	Residential, Outpatient
Access	Utilization	Total # SUD providers in SUD specialty care setting Total # MH provider	Total # of SUD specialty care providers in the denominator with documentation to provide specified mental health care Total # of MH providers in denominator with documentation to treat SUD	Assesses proportion of Substance Use Disorder (SUD) providers trained to provide specified mental health care, with a certificate, license or other documentation to demonstrate proficiency. (2) Assesses proportion of MH providers trained to treat SUD, with a certificate etc (4)	Facility Data	Residential, Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Continuity of Care	Total # of programs in a defined service area	Total # of programs in the denominator that report having integrated or co-located SUD and MHD services	Proportion of programs in defined area (e.g., county, city, state) that report having integrated services (e.g., SUD and MHD in the same treatment program) or co-located services (e.g., SUD & MHD services in the same location) (2)(4)	Program Records	Residential, Outpatient
Access	Continuity of Care	Total # of programs	Total # of programs in the denominator that report having formal relationships between SUD and MHD services	Proportion of MH programs with formal relationships (referral agreements or contractual relationships among providers) with SUD providers; and SUD providers with formal relationships w/MH providers (4)	Program Records	Residential, Outpatient
Access	Continuity of Care	Total # of programs	Total # of programs in the denominator that report having informal or ad hoc relationships between SUD and MHD services	Proportion of MH programs that report having informal or ad hoc relationships with SUD providers; and SUD providers with informal relationships with MH providers (4)	Program Records	Residential, Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access Efficiency	Other	Total number of SUD providers in a defined service area Total number of MH providers who provide SA Services	Total number of SUD providers in the denominator report the **ability** to bill for MHD provided to patients Total number of MH providers in denominator unable to bill for SA services.	Assesses proportion of SUD providers in a defined service area (e.g., county, city or state) reporting the ability to bill for MHD services provided to patients (2) % of MH providers reporting inability to bill for SA services provided to patients (4)	SUD/MH provider survey	Residential, Outpatient
Access Efficiency	Other	Total number of MH providers who provide SA Services	Total number of MH providers in denominator coding SA as MH services	% of MH providers reporting coding SA services as MH services in order to be reimbursed(4)	SUD/MH provider survey	Residential, Outpatient
Access Efficiency	Other	Total number of SUD specialty care settings in a defined service area Total number of MH providers	Total number of SUD specialty care settings in the denominator with formal documented referral policies for MHD services Total # of MH providers in the denominator with formal referral policies for SUD services	Assesses the proportion of SUD specialty care settings in a defined service area (e.g., county, city or state) that have formal documented referral policies for MHD services (2) Proportion of MH providers with formal documented referral policies for SUD services (4)	Facility survey	Residential, Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Other	Total number of individuals admitted to a SUD specialty care setting Total # admitted to MHSC setting	Total # in denominator screened for MHD upon admission Total # in denominator screened for SUD upon admission	Assesses the proportion of individuals formally screened for a MHD upon admission to a SUD specialty care setting (2) Assess for SUD upon admission to MHSC setting (4)	Admin/ Claims datasets and medical records	Residential, Outpatient
Access Effectiveness	Other	Total # in MHSC setting for 12 months	Total # in denominator identified for SUD within 12 months	% of patients in MHSC with newly identified SUD over a period of 12 months (after a 6 month washout period) (4)	Admin	Residential
Access	Utilization	Total number of individuals served by a substance abuse agency that screened positive for COD	Total number of individuals in the denominator that received a MHD service (or at least one integrated service) w/in 30 days of screening	Assesses the proportion of individuals that screened positive for COD in a SUD specialty care setting that received a MHD service (or at least one integrated service) within 30 days of screening (2)	Admin/ Claims datasets or chart review	Residential, Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Continuity of Care	Total number of COD patients with an inpatient or day/night episode (SUD or MHD related)	Total number of COD patients in the denominator whose medical records indicate that at least one SUD and one MHD outpatient clinic visit (or one integrated treatment visit) w/in 30 days of discharge	Assesses the proportion of COD with an inpatient or day/night episode (SUD or MHD related) visit that have at least one SUD and one MHD outpatient clinic visit (or one integrated treatment visit) within 30 days of discharge (2)	Admin/ Claims datasets	Residential, Outpatient
Access	Utilization	Total number of individuals identified as having a COD	Total number of individuals in the denominator that were assessed for housing stability	Assesses the proportion of individuals with COD that were assessed for housing stability (2)	Chart review	Residential, Outpatient
Access	Retention	Total # of UP initiated into medication	Total # UP in the denominator that had 3 or more follow-ups within 12 weeks	% of persons with 3 or more Outpatient follow-up visits within 12 weeks of initiating drug TX for depression. (3)	Admin	Outpatient
Effectiveness	Retention	Total # of UP initiated into medication	Total # UP in the denominator that remained on meds for at least 12 weeks; 6 months	% of persons who remain on medications for at least 12 weeks/6 months. (3)	Urinalysis Pharmacy Patient Report	Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Access	Continuity of Care	Total # of UP discharged from inpatient SA care	Total # UP in the denominator that had 1 more visit every month for 6 months.	% of persons with 1 or more visits in each 30 day interval in a 180 day period after discharge from inpatient SA care. (3)	Admin	Outpatient
Quality	O - Coordination	Total # of DD receiving case mgmt	Total # UP in the denominator reporting were assisted	% of Dually Diagnosed (DD) receiving case mgmt who report MH Manager assisted them in obtaining SSUD treatment. (4)	Patient Report	Outpatient
Quality	O - Coordination	Total # of DD receiving case mgmt	Total # UP in the denominator with case plan documenting plan to address	% of Dually Diagnosed (DD) receiving case mgmt with documented plan of care to address both conditions. (4)	Chart Review	Residential Outpatient
Quality	O - Coordination	Total # of DD admitted for SUD	Total # UP in the denominator with OP MH visit 30 days prior to admission	% of Dually Diagnosed (DD) admitted for SUD had OP MH visit 30 days prior to admission. (4)[4]	Admin	Residential Outpatient

[+] Measure used by Maryland ADAA

(1) ADAA, 2006
(2) Dausey, Pincus, Herrell (2009)
(3) Hermann, Chan, Provost, & Chiu, 2006[5]
(4) Center for Quality Assessment & Improvement in Mental Health (2006)

[4] There are additional measures that can be added from this source; will add upon request.
[5] There are more measures dealing with schizophrenia, borderline personality disorder etc; these can be added upon request.

Table 3: National Outcome Measures (NOMs)

Domain	**Defined by SAMHSA As**[6]	**Measured by MD As**[7]
Reduced Morbidity	Substance Abuse: • Abstinence from drug/alcohol use • Decreased use • Nonuser stability • Increased perceived risk • Increased Disapproval • Increased Age at First Use Mental Health: • Improved level of functioning • Decreased Mental Illness Symptomology	Percentage of patients reporting substance use 30 days prior to admittance compared to percentage of patients reporting substance use 30 days prior to discharge, by level of care and length of stay (days in treatment).
Employment Education	Employment: • Getting and Keeping a job • Workplace drug and alcohol policy Education • ATOD suspensions and expulsions • Enrolling and staying in school	Percentage of patients employed (full time, part time or on leave) upon admittance to treatment, compared to percentage of patients employed upon at discharge, by level of care and length of stay.
Crime Criminal Justice	• Decreased criminality • Decreased incarcerations • Decreased alcohol-related car crashes and injuries	Percentage of patients arrested 30 days prior to admission, compared to percentage of patients arrested 30 days before discharge, by level of care.
Housing Stability	• Increased stability	Percentage of patients who were homeless upon admittance to treatment, compared to percentage of patients homeless upon at discharge, by level of care.
Social Connectedness	• Family communication around drug use • Increasing social supports and social connectedness (e.g., sometimes measured as attendance at mutual help groups (e.g., AA, NA)	*Unable to Locate Maryland Measures*

[6] Based on National Outcome Measures (NOMs) for Substance Abuse Treatment Capacity, May 2009 and National Outcome Measures (NOMs) for Co-Occurring Disorders, April 2006. The 2006 report is available: http://www.samhsa.gov/data/NOMsCoOccur2k6.pdf

[7] From ADAA (2006) Outlook and Outcomes. Available: http://adaa.dhmh.maryland.gov/Documents/content_documents/OandO/OandO2006.pdf

Domain	Defined by SAMHSA As[6]	Measured by MD As[7]
Access/Capacity	• Increased access to services • Increased service capacity	Access to service measured by number of unduplicated individuals admitted to publicly funded treatment compared to baseline number admitted. Capacity observed as the number of providers capable of obtaining Medicaid reimbursement for OP/IOP, with corresponding drawdown of federal matching funds resulting in increase in number of grant funded treatment slots available to treat new patients.[8]
Retention	Substance Abuse • Increase retention in treatment • Access to prevention messages • Evidence based programs/strategies Mental Health • Reduced utilization of psychiatric inpatient beds	Maryland calculates as "retained at least 90 days" by length of stay from date of admission to date of discharge from substance abuse treatment.

In addition to the domains listed above, there are three additional recommended domains that Maryland should consider including Perception of Care (or Services); Cost Effectiveness; and Use of Evidence Based Practices.

[8]Discussed in the Executive Summary of Plan to Expand Access to Substance Abuse Services in Maryland by 25% by 2012, Maryland Department of Health and Mental Hygiene, March 2010 available: http://www.statestat.maryland.gov/gdu/15substanceabusedeliveryplan.pdf

Table 4: Outcome Measures by Domain, Indicator, and Level of Care

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Effectiveness	NOMs – Reduced Morbidity	Total # UP engaged in SU past month prior to admission	Total # UP engaged in SU at discharge, minus # UP engaged in SU at admission	Percent of Clients engaged in substance use (SU) in past month at time of discharge compared to SU in past month at time of admission, by Level of Care (LOC) (1) [+]	Self-Report (SR) Intake & Discharge	ALL Levels (.5 to OMT)
Effectiveness	NOMs – Reduced Morbidity	For each LOS category: Total # UP engaged in SU past month prior to admission	For each LOS category: Total # UP engaged in SU at discharge, minus # UP engaged in SU at admission	Percent of Clients engaged in substance use (SU) in past month at time of discharge compared to SU in past month at time of admission, by Length of Stay (LOS) defined as less than 30 days in Treatment, 30 to 89 days; 90 to 179 days; 180 or more. (1) [+]	Self-Report (SR) Intake & Discharge	Residential Outpatient
Effectiveness	NOMs – Reduced Morbidity	SU at admission	SU assessment discharge score, minus SU admission score	Change in reported substance use (SU) in past month at time of discharge compared to SU in past month at time of admission, by LOC(1) [+]	Self-Report (SR) Intake & Discharge	ALL Levels (.5 to OMT)
Effectiveness	NOMs – Employment Education	Total # UP employed prior to admission	Total # UP employed at discharge, minus # UP employed at admission	Percent of patients employed upon admittance to treatment, compared to percentage of patients employed upon at discharge, by LOC (1) [+]	Self-Report (SR) Intake & Discharge; wage records	Residential Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Effectiveness	NOMs – Employment Education	For each LOS category: Total # UP employed prior to admission	For each LOS category: Total # UP employed at discharge, minus # UP employed at admission	Percent of patients employed upon admittance to treatment, compared to percentage of patients employed upon at discharge by Length of Stay (LOS) defined as less than 30 days in Treatment, 30 to 89 days; 90 to 179 days; 180 or more.(1) +	Self-Report (SR) Intake & Discharge; wage records	Residential Outpatient
Effectiveness	NOMs – Housing Stability	Total # UP homeless prior to admission	Total # UP homeless at discharge, minus # UP homeless at admission	Percentage of patients who were homeless upon admittance to treatment, compared to percentage of patients homeless upon at discharge, by LOC(1) +	Self-Report (SR) Intake & Discharge	Residential Outpatient
Effectiveness	NOMs – Crime and Criminal Justice	Total # UP arrested 30 days prior to admission	Total # UP arrested 30 days prior to discharge, minus # UP arrested 30 days prior to admission	Percentage of patients arrested 30 days prior to admission, compared to percentage of patients arrested 30 days before discharge, by level of care LOC(2) +	Self-Report (SR) Intake & Discharge; Criminal History	Residential Outpatient

+ Measure used by Maryland ADAA

(1) ADAA, 2006
(2) ADAA, 2011

Table 5: Outcomes for Co-Occurring Disorders by Domain, Indicator, and Level of Care

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Effectiveness	NOMs – Reduced Morbidity	Total number of individuals discharged from an inpatient or residential SUD specialty care setting with any MHD diagnosis	Total # of individuals in denominator report abstinence from drugs and/or alcohol one year after discharge	Assesses the proportion of individuals with any MHD discharged from an inpatient or residential SUD specialty care setting with abstinence from drugs and/or alcohol one year after discharge (2)	Patient report and/or laboratory test	Residential
Effectiveness	NOMs – Employment Education	Total number of individuals discharged from an inpatient or residential SUD specialty care setting with any MHD diagnosis	Total number of individuals in the denominator that move from being unemployed to being employed either part-time or full-time one year after discharge	Assesses the proportion of individuals with any MHD diagnosis discharged from an inpatient or residential SUD specialty setting that move from being unemployed to being employed either part-time or full-time one year after discharge (2)	Patient survey and/or employment records	Residential
Effectiveness	NOMs –Crime Criminal Justice	Total number of individuals discharged from an inpatient or residential SUD specialty care setting with any MHD diagnosis	Total number of individuals in the denominator reporting an episode of incarceration within 6 months of discharge	Assesses the proportion of individuals with any MHD diagnosis discharged from an inpatient or residential SUD specialty care setting who report having an episode of incarceration within 6 months of discharge (2)	Patient survey and/or criminal justice system data	Residential

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Quality	NOMs – Perception of Care	Total number of individuals receiving care in a SUD specialty care setting with any MHD diagnosis	Total number of individuals in the denominator who report improved satisfaction with their care after 6 months of treatment	Assesses the proportion of individuals receiving care in a SUD specialty care setting with any MHD diagnosis who report improved satisfaction with their care as measured by a standardized instrument after 6 months of treatment (2)	Patient survey	Residential, Outpatient
Effectiveness	NOMs – Reduced Morbidity	Total # of UP assessed w/MH problems at admission who received MH TX while in SA TX	Total # of UP in the denominator with MH problems at discharge	Percent of discharges assessed as having mental health (MH) problems at discharge among those assessed as having MH problems at admission, who received MH treatment (TX) while in substance abuse (SA) TX(1)	Admin; MH Assessment In Admin; MH TX from Chart Review or Admin	Residential, Outpatient
Effectiveness	NOMs – Reduced Morbidity	MH assessment scores at admission of UP assessed w/MH problems at admission who received MH TX while in SA TX	MH assessment scores at discharge of UP in the denominator	Percent of discharges assessed as having fewer mental health (MH) problems at discharge among those assessed as having MH problems at admission, who received MH treatment (TX) while in substance abuse (SA) TX(1)	Admin; MH Assessment In Admin; MH TX from Chart Review or Admin	Residential, Outpatient

Domain	Indicator	Denominator	Numerator	Measure Description	Data Source	Level(s) of Care/Type
Effectiveness	NOMs – Reduced Morbidity	Patients with SUD discharged from IP or Residential MH specialty setting	# report Abstinence for 6 months	Percent of patients with SUD discharged from IP or Residential MH specialty setting (where focus is on MH) reporting abstinence over 6 months(3)	Admin Patient Report	Residential
Quality	NOMs – Perception of Care	Total # receiving MH and SUD	# Reporting High Satisfaction	Percent of patients receiving both MH and SUD reporting a high satisfaction with care(3)	Patient report	Residential, Outpatient

(1) ADAA, 2006
(2) Dausey, Pincus, Herrell (2009)
(3) Center for Quality Assessment & Improvement in Mental Health (2006)

How Other States Monitor Publically Funded Substance Abuse Treatment

When comparing how different states monitor publically funded substance abuse treatment, the following indicators (utilization and retention) and a single domain (effectiveness) were the focus of this inquiry.

1) Utilization – How much does each state spend on substance abuse treatment, by level of care (outpatient versus residential)

    a. Who receives these services?
    b. How are these individuals entering the system?
    c. What is the mean amount spent for one person in the system?
    d. What is the cost per year, per patient, by level of care?

2) Retention

    a. How do these other states calculate retention?
    b. What is the cut-off defining retention at each level of care?

3) Effectiveness

    a. How do these other states assess treatment effectiveness?

Before exploring the six states (Table 6) on the criteria noted above, documents for Maryland were examined to provide a comparison.

How much does Maryland spend on substance abuse treatment?[9]

Outpatient: The projected cost of outpatient substance abuse treatment for FY2012 in Maryland is $174,861,508 (ADAA, 2012a, p. 4, Table 1c). This is a combination of Medicaid expenditures of $79,237,302 for non-pharmacy services, $18,283,326 for pharmacy services and ADAA grant funds of $77,340,880. Baltimore City makes up $82,641,503 of that overall figure -- $43,336,837 for non-pharmacy services; $8,631,792 for pharmacy services and $30,672,874 in ADAA funds.

Residential: Based on several documents related to the Maryland Access to Recovery (ATR), in FY2009, 8,000 received residential treatment, at an average cost of $37,704 per episode (ADAA, 2012b). This equates to an approximate cost for residential services as $301,632,000, annually.

[9] I contacted ADAA in October 2012 to request the specific costs for outpatient and residential substance abuse treatment. In November 2012, while ADAA provided the FY2012 statewide treatment expense by level of care, these figures do not include Medicaid expenditures. ADAA staff also said they would run the data by unique individual persons, and specifically for Baltimore City, however, the information was never received.

Who receives these services?

According to ADAA (2011), 42,795 individuals were admitted to state-supported treatment in FY 2011 (and data was submitted). Of these, the majority was 31 or older (with 19% between the ages of 31 and 40, 23% from 41 to 50, and 11% over 50); 13.7% were from 26 to 30 years old, 24% were 18 to 25, and the remaining were under 18. The majority of patients were male (67%) and 53% were white, 41% black, 3% Hispanic and the remaining were "other". Most had never been married (68%) and 60% did not have dependent children.

Statewide, the majority (61%) were unemployed or out of the workforce, 17% worked full-time, 6% worked part-time, 5% were incarcerated while others were in school or training (2%); disabled (8%); or retired (<1%). The Jacob France Institute provided information from the Maryland Unemployment Insurance records for 1,682 patients admitted to bSAS funded substance abuse treatment between January and March 2011. These data reflect a snapshot of clients before and after the admission quarter and generally indicate the unemployment rate of those admitted to treatment hovers around 90%.[10]

Of 38,680 reporting, 34% did not have a high school education; 41% had a high school diploma or GED, 3% were still in high school and the remaining had some college or was a college graduate. (Among the 4,115 youth reported, most (89%) were still in high school. Among these 42,795 admissions, 39% had no health insurance, 18% had HealthChoice, 12% had PAC, as well as other forms of insurance (e.g., Medicare 3%; other Medicaid 5% etc).

Among those admitted, of the 4,115 adolescents, 38% had mental health issues, 59% had at least one prior arrest in the year prior to admission, and 44% used tobacco. Among 38,680 adults, 45% had mental health issues, 49% had at least one prior arrest in the year prior to admission, and 72% used tobacco. For all admissions overall, 18% used alcohol only, 22% used only one drug, 36% used alcohol and at least one other drug, and the remaining used two or more drugs.

How are these individuals entering the system?

The source of referrals is reported in Figure 9 of the ADAA (2011) report. Of the 42,795 admissions, 40% are referred by a criminal justice organization (e.g., Probation/Parole, drug court, DWI, juvenile justice, and prison/jail); a fourth are self-referred to treatment (24.4%); 2.2% are referred by a family member or parent; 12.1% are referred by an alcohol/drug provider; and the remainder are referred by other community referrals, school, DSS/TCA and other health-care organizations.

[10] Personal e-mail communication, Treva Stack, November 8, 2012. These data are considered embargoed and not to be released publically until the Jacob France Institute report is released.

What is the mean amount of public funds are spent for one person in the system?

Data available to assess this question are focused on funding for outpatient treatment as residential services are funded through block grants (and not through PAC Medicaid) and thus are not as readily available.

What is the cost per year, per patient, by level of care?[11]

Outpatient - ADAA (2012a) reports the number of people who will participate in outpatient services -- 82,901 patients in **FY2011** (Table B.2., Page 11). Of those, approximately 51% (or 42,734) will be funded through ADAA. Recall the total projected cost of outpatient substance abuse treatment for **FY2012** in Maryland is $174,861,508 (ADAA, 2012a, Table 1c., Page 4), resulting in an average cost of $2,071.11 per patient for outpatient care. If you look at only ADAA[12] patients, the cost is slightly lower. With a projected cost statewide of $77,340,880 and 40,368 patients, the cost would be $1,915.90 per patient, per year, for outpatient services funded by ADAA.

In FY2011, Baltimore city, 29,874 individuals will receive outpatient treatment, of which 40% (12,623) will be funded by ADAA. Recall that the projected cost for outpatient substance abuse treatment in Baltimore City is $82,641,503, for an average cost of $2,711.69 per patient, per year, for outpatient treatment services. Again, the cost of treatment covered by ADAA funds is less, on average, with $30,672,874 estimated cost, and 12,239 patients, resulting in an average cost of $2,506.15 per patient, per year, for outpatient care.

Residential: The most recent figures located from FY2009, indicate 8,000 individuals received residential substance treatment, at an average cost of $37,704 per episode (ADAA, 2012b).

How does Maryland calculate retention?

Maryland calculates retention as "retained at least 90 days" by length of stay from date of admission to date of discharge from treatment.

[11] Unfortunately, the figures in this section of the report are characterized best as "estimates" that are based on several reports. This is because in the ADAA 2012a report, they don't provide actual costs by county - only estimated costs for 2012, and the number of patients is based on FY2011 numbers. Therefore, this is not an "apples to apples" synthesis. In addition, ADAA staff advised that the heading of the 2012a report, Table B.2 states "Unique Users of Outpatient Substance Abuse Services" however, these numbers s are "a bit misleading" because they added each column, even though the columns were not mutually exclusive, and thus don't truly represent unique users of services (Chad Basham, personal communication, October 10, 2012).

[12]The ADAA report (2012 a) included a footnote on Tables 1c stating that "ADAA pays for residential and community-based treatment, including buprenorphine" (p. 4). Given Table 1c heading is "Outpatient SUD Expenditures" I assume this means that expenses for residential treatment have been deducted from these figures.

What is the cut-off defining retention at each level of care?

Retention is defined by ADAA for outpatient (Level I) and residential (Level III.1) by selecting all valid cases where the length of stay was at least 90 days.

bSAS calculates retention by additional other levels of care, by provider, by the number of discharges where patients were retained as follows:

- Opioid Maintenance Therapy (OMT), in treatment at least 30 days (bSAS 2012a);
- Outpatient (OP) at least 30 days (bSAS 2012b);
- Intensive Outpatient (IOP) at least 30 days and 45 days (bSAS 2012b);
- Residential retained at least 30 days and 90 days (bSAS 2012c);
- Therapeutic Community (TC) at least 30 days and 90 days (bSAS 2012c);
- Intermediate Care Facility at least 7 days and 14 days (bSAS 2012c); and
- Inpatient Detoxification at least 3, 5 and 7 days (bSAS 2012c);

How does Maryland assess treatment effectiveness?

As detailed in Table 4, the outcomes utilized by Maryland to assess treatment effectiveness include:

- Admissions to treatment at discharge; by level of care and length of stay;
- Substance use at discharge, by level of care;
- Employment at discharge, by level of care;
- Homelessness at discharge, by level of care; and
- Arrest 30 days prior to discharge, by level of care.

Data for completion of the comparison states was sought by searching each state alcohol and drug abuse website for similar publications to those used to provide information about Maryland spending, retention and effectiveness. It was surprisingly difficult to obtain the information[13] -- blank spaces in Table 6 indicate that I was unable to locate the requested information.

I also contacted the designated Single State Agencies for Substance Abuse Services in each state. I spoke with Mr. Bill Phillips from New York, but never heard back from Massachusetts, New Mexico, or New Jersey.[14] However, in reviewing these state websites, there were other items that may be of interest in pursuit of future measuring and monitoring of the quality of substance abuse treatment services in Baltimore City. These are listed in the section entitled "State Comparisons – Additional Notes".

[13] There is the Inventory of State Substance Abuse Prevention and Treatment Activities and Expenditures which provides state by state data, but it was published in 2006, so provides data from FY 2000 to FY 2003 and thus does not provide a current assessment of publically funded treatment activities. Available: https://www.ncjrs.gov/ondcppubs/publications/inventory/2006prv_invnty.pdf

[14] The contact for New Jersey e-mailed back the same day and advised she asked another party in the state to get in touch with me. However, the delay in responding to my request may be attributed to the fact that a number of states in the Northeast, particularly New York and New Jersey, were badly damaged by Hurricane Sandy.

Table 6: Summary of How Six Other States Monitor Substance Abuse Treatment

Measure	Arizona[2]	Kentucky[7]	Massachusetts[4]	New Mexico[5]	New Jersey[6]	New York[10]
Utilization						
Annual Cost - Overall	$132,152,121	$18,000,000				
Number Rec'd SA TX	68,135	17,600	102,789			253,807
Mean spent per person? (Total spent/# rec'd SA)	$1,939.56	$2,200.00				$1,727.10[11]
Who Receives Services?	FY 2011[2] N=68,135 93% adults 56% Male 7% <18 yrs 20% 18 to 25 14% 26 to 30 22% 31 to 40 21% 41 to 50 16%>50 yrs old 82% White 7% Black 2% Multi/Other 9% Amer Indian 47% Co-Occur Primary DOC:[1] 2010 N=28,789 22% Alcohol Only 13% Alcohol and Secondary Drug 11% Heroin	2011[1] N=20,609 98% adults 59% Male 2% <18 yrs 24% 18 to 25 20% 26 to 30 28% 31 to 40 17% 41 to 50 9%>50 yrs old 88% White 10% Black 2% Other Primary DOC:[1] 2011 N=20,609 18% Alcohol Only 13% Alcohol and Secondary Drug 6% Heroin	2011[1] N=88,669 98% adults 68% Male 2% <18 yrs 24% 18 to 25 19% 26 to 30 24% 31 to 40 20% 41 to 50 10%>50 yrs old 81% White 7% Black 8% Other <1% Asian 42% Co-Occur[4] 81% Unemployed 19% homeless Primary DOC:[1] 2011 N=88,669 25% Alcohol Only 12% Alcohol and Secondary Drug 43% Heroin 6% Opiates	FY 2010 [5] N=81,750 (MH&SA) 2011 [1] N=8,935 99% adults 54% Male 1% <18 yrs 22% 18 to 25 18% 26 to 30 27% 31 to 40 21% 41 to 50 11%>50 yrs old 54% White 1% Black 13% Amer Indian <1% Other Primary DOC:[1] 2011 N=8,935 32% Alcohol Only 11% Alcohol and Secondary Drug 4% Heroin	2010[6] N=51,985 people 2011[1] N=71,760 95% adults 67% Male 5% <18 yrs 27% 18 to 25 16% 26 to 30 21% 31 to 40 20% 41 to 50 11%>50 yrs old 74% White 24% Black 1% Asian <1% Other 29% Unemplyd[6] 7% homeless 4% Arrest last 30 Primary DOC:[1] 2011 N=71,760 19% Alcohol Only 12% Alcohol and Secondary Drug 32% Heroin 12% Opiates	2011[1] 2011 N=303,608 96% adults 75% Male 4% <18 yrs 18% 18 to 25 12% 26 to 30 21% 31 to 40 28% 41 to 50 17%>50 yrs old 47% White 33% Black <1% Amer Indian 19 % Other Primary DOC:[1] 2011 N=303,608 19% Alcohol Only 25% Alcohol and Secondary Drug 19% Heroin

Measure	Arizona[2]	Kentucky[7]	Massachusetts[4]	New Mexico[5]	New Jersey[6]	New York[10]
	5% Opiates 18% Marijuana 4% Cocaine 14% Amphet.	32% Opiates 14% Marijuana 7% Cocaine 5% Amphet.	4% Marijuana 4% Cocaine <1% Amphet.	5% Opiates 7% Marijuana 3% Cocaine 9% Amphet.	16% Marijuana 6% Cocaine <1% Amphet.	8% Opiates 16% Marijuana 11% Cocaine <1% Amphet.
How Enter System?	50% Self Ref. 16% Crim. Jus. 11% SA Prov. 12% Agency 11% Other	34% Crim. Jus. 17% DUI 14% State Protective Agency [8]			35% Self Ref. 23% Crim. Jus. 21% Other 16% Agency 5% SA Prov.	35% Self Ref. 21% Crim. Jus. 15% SA Prov. 12% Agency 3% Other
Annual Cost or Admission Data where not Available	$132,152,121 N=Persons[9]	$18,000,000[7]	**Admission Data**		**Admission Data**	N=303,245 Admissions[10]
Detoxification						"Crisis" 30% N=90,974
Hospital	N=239				22% N=15,058	
Residential	N=1,885					
Outpatient	N=59,212	$2,500[7] (Planning $)	20% N=19,263		29% N=19,969	46% N=139,493
Intensive Outpatient	N=1,708				21% N=14,272	
Opioid Maintenance	N=4,006		7% N=6,779		10% N=6,810	4% N=12,130
Residential			6% N=6,392		18% N=12,282	8% N=24,260
Short Term (<30 days)	N=5,281					
Long Term (>30 days)	N=1,092					
Inpatient	N=4,759		38% N=37,585		2% N=1,100	13% N=39,422
Post-Detoxification			10% N=9,938			
Other/Non-Traditional			19% N=18,581		<1% N=278	
Cost Per Patient by Year	Average[9]					
Detoxification						
Hospital	$4,083					
Residential	$2,382					
Outpatient	$1,995					
Intensive Outpatient	$1,866					

Measure	Arizona[2]	Kentucky[7]	Massachusetts[4]	New Mexico[5]	New Jersey[6]	New York[10]
Opioid Maintenance	$416					
Residential						
Short Term (<30 days)	$6,632					
Long Term (>30 days)	$3,095					
Inpatient	$11,703					
Retention						
Formula to Calculate	Calculated on Admission Date vs. Discharge Date for inpatient settings, and date of first service vs. date of last service during reporting period	Observation of period from first date of services to last date of services, for those discharged (90 days without services).				Calculated as retained at least 90 days by length of stay from date of admission to date of discharge from treatment.
Cut-off Periods						
Detoxification						
Outpatient						
Intensive Outpatient						
Opioid Maintenance						
Residential						
Inpatient						

Effectiveness/Outcomes

Measured By:	% Change	Change Intake to Follow-up [8]		Beh. Health Collaborative [5]	Client Goal Met or Status [6]	Change Admit to Discharge[10]
Reduced SA Use	12.6%	21% less Alcohol use; 57% drugs		80% alcohol & 67% drug users state improvement; Less high risk drinking behavior in prior 30 days	64% Not Using	38% less using alc./other drugs
Not Homeless	2.1%				4% Homeless	3% more stable
Employed	2.0%	Full time emp. Up by 24%; increase in # days paid 48%			25% Unemployed	6% more employed or enrolled in school
No Recent CJ	.9%	33% arrested (down 44%)			4% Arrest last 30	13% less arrested
School or Voc Ed	.5%				13% Educ. met	See employment
Self-Help (Mutual Help Groups)	3.9%	39% increase attendance				14% more attendance
Conducts Client Survey?	Yes	Yes – CAPHS[3]		Yes		77% providers use

May not total 100% due to rounding or missing data Blanks indicate unable to locate relevant Information or N/A

(1)N does not represent unique individuals; data is based on admissions and multiple admissions can occur in a single year. Source: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). State tables available: http://wwwdasis.samhsa.gov/webt/newmapv1.htm

(2) Arizona Department of Human Services Annual Report (2011a) http://www.azdhs.gov/bhs/documents/reports/Substance-Abuse-Treatment-Programs_Annual-Report.pdf

(3) Source: http://dhmh.maryland.gov/bhd/Documents/CHCS_BH_ModelsMatrix06042012.pdf

(4) Massachusetts Bureau of Substance Abuse Services, Substance Abuse Treatment Annual Report - FY 2011 All Admissions http://www.mass.gov/eohhs/docs/dph/substance-abuse/large-cities/statewide-fy2011.pdf

(5) New Mexico Behavioral Health Collaborative Fact Sheet, 2011 http://www.hsd.state.nm.us/pdf/LegislativeSession/2011/BH%20Collaborative%20Fact%20Sheet%202-3-11.pdf

(6) New Jersey Substance Abuse Overview FY 2011 http://www.state.nj.us/humanservices/das/news/Substance%20Overview/Sus-11.pdf

(7) Robert Walker, University of Kentucky, Center on Drug and Alcohol Research (Personal Communication, October 30, 2012)

(8) Kentucky Treatment Outcomes Study (2012) N=1,225 http://cdar.uky.edu/bho/Downloads/KTOS%202011%20Outcomes%20Report_complete%20.pdf

(9) Claudia V. Sloan, Division Chief of Communications ADHS/Division of Behavioral Health Services, Data from July 2008 to June 2009 (Personal Communication, October 31, 2012)

(10) New York State Office of Alcoholism and Substance Abuse Services (OASAS)) (2012) Statewide Comprehensive Plan 2012-2016 (Report received via personal communication, William J. Phillips, MSW, Associate Commissioner, OASAS, November 9, 2012)

(11) Includes all sources of funding – Medicaid & Medicare, Federal, state, and local. Personal Communication, William J. Phillips, MSW, Associate Commissioner, OASAS, November 19, 2012

State Comparisons – Additional Notes

When conducting this review of the state substance abuse treatment systems, a number of states had activities, information, and/or resources which may be of interest.

Arizona

Arizona conducts annual consumer surveys with those who receive publically funded behavioral health services. "Survey measures seven domains: (1) Service Accessibility; (2) Service Quality or Appropriateness (which includes one item concerning cultural sensitivity); (3) Consumer Participation in Treatment Planning; (4) Outcomes; (5) General Satisfaction; (6) Improved Functioning; and (7) Social Connectedness. In addition, the questionnaire includes a module of questions to determine the impact of services received on the recipient's involvement with the criminal justice system" (Arizona Department of Health Services (ADHS), 2011b, p. 27). They use the survey results to monitor quality of services, to provide information to the public via their website and to report the results to a variety of national and local agencies (including SAMHSA). A copy of the surveys is provided in the Appendix of the 2011b ADHS report.

In addition, ADHS has published both their 012 Annual Quality Management Plan (Available: http://www.azdhs.gov/bhs/documents/reports/2012_QMPLAN.pdf) their Quality Management Work Plan (Available http://www.azdhs.gov/bhs/documents/reports/2012_QMWP.pdf) which sets out the procedures with respect to a number of measures to monitor contractors or providers of behavioral health services, improve performance, oversight, outcomes and reporting requirements. These measures set not only a "Minimum Performance Standard" (MPS) but also goals for performance (e.g., access to care, coordination of care, service plan and service provision, but also measures to track follow-up efforts; how the measures will be assessed, by whom, and during what period. The 2012 Annual Quality Management Plan also includes a description of their Outcomes Dashboard report (based on NOMs). They also have this dashboard (as well as dashboards related to access to services, service delivery and collaboration and coordination) available on their website at http://www.azdhs.gov/bhs/dashboard/index.htm.

Kentucky

In response to my query related to information on substance abuse treatment, Robert Walker of the Center on Drug and Alcohol Research advised that given that Kentucky is primarily a rural state, there is very little residential treatment available. In addition, their block grant funds 14 community based centers and clients move from modality to modality (e.g., 7 days of residential treatment, followed by 1 week of IOP, and 5 outpatient sessions) throughout a year – making it very difficult to assess the number of unique persons receiving treatment by modality. In addition, Kentucky is one of seven states that do not include substance abuse as a service to be paid from Medicaid[15] (Musgrave, 2012). The Governor of Kentucky requested an expansion of funding to cover the cost of treatment for 4,500 people (at a cost of $11.6 million) in the first

[15] An issue Kentucky shares with Baltimore is opioid addiction – with high rates of opiate prescription drug use/abuse. A related challenge is buprenorphine diversion, particularly as Medicaid covers for the cost of the medication, but not the cost of substance abuse treatment (Personal communication, Robert Walker, October 30, 2012).

year, and $14.9 million to cover up to 6,000 people in the second year. In part due to this lack of Medicaid funding, Mr. Walker advised that Kentucky has traditionally had a more difficult time focusing on provision of substance abuse treatment. This is evidenced by the numbers of patients receiving substance abuse treatment -- 17,600 -- compared to 310,000 patients who receive mental health services every year. One of the challenges for behavioral health integration is that if someone receives several substance abuse counseling services, and a mental health issue is detected, then the patient will be billed for (and categorized under) mental health services, and virtually disappears from the substance abuse treatment system.

Kentucky state law also mandates research into publically funded treatment outcomes among Kentuckians. The University of Kentucky has conducted this research and provides reports dating back to 2003 through 2012, including follow-up outcome information, and is available at http://cdar.uky.edu/KTOS/. Information and reports are also available back to 2003 on the Adolescent Kentucky Treatment Outcome Studies (AKTOS) at http://cdar.uky.edu/aktos/. The 2012 KTOS study calculates an overall savings of approximately $10 Million for those in the study sample; translating to avoided costs of $4.24 for every dollar spent on treatment.

Massachusetts

Massachusetts has a series of "Practice Guidance Modules" on their website (see http://www.mass.gov/eohhs/provider/licensing/programs/substance-abuse-treatment/principles-of-care-and-practice-guidance.html) for a variety of topics including medication assisted treatment, treatment targeted toward the LGBT community, older adults, pregnant women, working with families involved with Department of Children and Families, and youth and their families. Each guide includes measures specific to that particular population as well as resources.

New Mexico

New Mexico has a Behavioral Health Collaborative which focuses a lot of resources on children (e.g., 43% of consumers are under 18 years old). Substance abuse and mental health services are not broken out. However, New Mexico measures "quality of care" by 1) percent of individuals discharged from inpatient facilities who receive community follow-up services within 7 days and 2) for those with 30 days; 3) percent of those readmitted to same or higher level of care within 30 days after discharge from residential treatment. They utilize evidence based practices (e.g., have 20 Multi-systemic therapy teams); their Core Service Agencies all use the same assessment scale (the Children & Adolescent Functional Assessment Scale (CAFAS) and have developed a manual "for family practitioners, physician assistants, and other prescribers on protocols for safely and therapeutically prescribing psychotropic medications for persons who have co-occurring disorders" (New Mexico Behavioral Health Collaborative Fact Sheet, 2011, p. 3).

New Jersey

A Co-Occurring task force completed a report on (New Jersey Department of Human Services, 2010) that may provide some notes of interest including specific strengths and weaknesses of their current system, as well as identifying problems, recommendations and next steps. The report also includes an appendix with core competencies for those working with clients with

co-occurring disorders; as well as work force training. This report is available at http://www.state.nj.us/humanservices/das/boards/codtf/FINAL%20COD%20Task%20Force%20Report%209%2022%2010%20_2_.pdf. In addition, the New Jersey Substance Abuse Overview from 2010 generated from the statewide New Jersey Substance Abuse Monitoring System (NJ-SAMS) includes a number of additional outputs assessed at discharge categorized as "Significant Problems or Conditions" and listing percent of discharged clients who have issues such as a mental health problem, compulsive gambling, physical disability of handicap, victim of abuse (physical abuse/neglect and sexual), whether pregnant, had a suicide attempt, runaway behavior, neglect or abuse of their children, batterer, criminal activity and other. These additional outcomes may be worth examining for possible application the new EHR data system (including compulsive gambling given the emergence of casinos in Maryland). Report available: http://www.state.nj.us/humanservices/das/news/Substance%20Overview/Sus-11.pdf

New York

New York State Office of Alcoholism and Substance Abuse Services (OASAS) is a large and diverse system with 844 employees, 500 of whom work in the 12 directly operated Addiction Treatment Centers. Funding includes $1 billion in Medicaid support, $113 million through the Federal Substance Abuse Prevention and Treatment (SAPT) Block Grant and $400 million in other State funds as well as private insurance resources.[16] OASAS conducted two studies which may be worth exploring further. One is a study to determine which factors indicate a treatment provider will engage in evidence based practices and the impact on retention rates (OACS, 2006a). These factors include (among other findings) "the presence of an experienced, knowledgeable Clinical Director that respects his/her staff and seeks input from the" (p. 4); "flexible treatment approach that quickly adapts to the changing needs of clients" (p. 6); and "highly experienced treatment staff involved in client intake interviews" (p. 7) and wide range of services including family, vocational and intensive track for clients in need of such services (p. 7). This report is available at available http://www.oasas.ny.gov/hps/evaluation/documents/BestPractices_Final.pdf. The second report is a "Treatment Outcome Study" also produced by OASAS (2006b) using data from the Addiction Severity Index and capturing domains from medical to family support to criminal justice to substance use.

Finally, after contacting OASAS, they sent a copy of their recently completed Statewide Comprehensive Plan for Substance Abuse Treatment 2012-2016 (available at http://www.oasas.ny.gov/pio/commissioner/documents/5YrPlan2012-2016.pdf) which included three additional resources for consideration by bSAS. The first was an outcomes dashboard (see http://www.oasas.ny.gov/pio/oasas/documents/2012dashboard.pdf). This may be useful as bSAS continues efforts to define and refine their own dashboard. The second was a discussion of their publically available "Treatment Program Scorecards" which rate each provider on "five domains of access, quality, patient outcomes, efficiency, and regulatory compliance" (OASAS, 2012, p. 6). These scorecards also include client demographics, payor source and primary addiction. The scorecards are available at http://www.oasas.ny.gov/providerDirectory/index.cfm. Note that in calculating the score cards, patients who leave within 30 days without completing

[16] Personal communication, William J. Phillips, MSW, Associate Commissioner, OASAS, November 16, 2012.

treatment (approximately 10% of clients) are excluded from the analysis.[17] Finally, New York surveyed treatment providers to assess their existing capacity and future plans for an Electronic Health Record (EHR) system. Among their providers, overall, 37% use an EHR; 28% planned to implement an EHR within 12 months; 28% were exploring the issue; and 7% had no plans. In addition, the survey looked at the "Functionality Incorporated into Existing EHR" (OASAS, 2012, Table 5.2, p. 58) including whether or not the system reports quality measures, includes lab tests, and if maintains up-to-date list of current diagnoses. This section of the report also notes barriers for providers to EHRs -- by financial, functionality, and usability.

SMART Data Review

bSAS provided a combined data set for admissions beginning the first two weeks of July 2011. As a preliminary test of population differences by facility (and the possible impact on outcomes) the data was reviewed by comparing the patient id and identifying 357 unique individuals.

Then several variables were recoded so to provide the proportion of the population, per clinic, with a particular attribute. So, for male, the data was coded 1 if the individual admitted to treatment was a male, and 0 if a female. A similar process was conducted to determine the percentage of the clinic population that was black, had at least 12 years of education, whether they had kids, and whether they had current mental problems.

Four facilities with the greatest number of admissions were reviewed on these variables; notably, there are some differences by clinic (see Figure 1 below). Clinics A, C, and D have more male admissions than in Clinics B and E; there is a higher number of African Americans in Clinic C than in Clinic E (91% vs. 73%); and there were fewer individuals with at least 12 years of education in Clinic C (50%) compared to 67% of those in Clinic D. While these differences may appear meaningful, an Analysis of Variance revealed that none of these three variables were statistically different.

However, the percentage of the population with a co-occurring issue and those who had children did reveal significant differences among the clinics. Clinic B had 64% of their admissions had mental problems compared to Clinic C (28%) or D (22%). Clinic C is also significantly different from Clinic E (28% vs. 73%), as is Clinic D (22% vs. 73%) from Clinic E. In terms children, only Clinic B with 70% of those admitted were parents, is statistically significantly different from one of the other clinics – Clinic C with 31% parents.

[17] Personal communication, William J. Phillips, MSW, Associate Commissioner, OASAS, November 16, 2012.

Figure 1: Exploring Populations Differences By Clinic

	Clinic A N=36	Clinic B N=33	Clinic C N=32	Clinic D N=18	Clinic E N=15
Male	.72	.52	.75	.72	.60
Black	.81	.76	.91	.78	.73
High School Graduate (or more)	.64	.45	.50	.67	.47
Co-occurring**	.42	**.64**	**.28**	**.22**	**.73**
Have Kids**	.44	**.70**	**.31**	.33	.33

**Difference Between Group is Significant at p<.05

Co-Occurring Significant Differences Among Clinics:
Clinic B is sig different from Clinics C and D
Clinic C is sig different from Clinic E
Clinic D is sig different from Clinic E

Have Kids Significant Differences Among Clinics:
Clinic B is sig different from Clinic C

Based on this very cursory review, it appears that some of the populations can be different from clinic to clinic. In the event differences have an impact a person's odds of success, then it may be advantageous to compare clinics on performance measures that share similar populations and level of care, rather than by level of care alone.

These data could also provide programmatic information. The issue of significant differences in admissions for those having mental health issues could indicate that Clinics B and E may need to focus more resources on co-occurring treatment mental. Moreover, perhaps performance expectations of clinics with higher saturations of populations with mental illness should be modified to account for increased level/different treatment necessary for this population.

Likewise, from a programmatic perspective, it may be useful to explore the inclusion of family focused services (e.g., counseling for family members either with or without the primary treatment patient and/or a parenting class) in those clinics where more parents are admitted. In addition, it is possible that, overall, a group of parents may have a different treatment experience than a group of non-parents, in part due to both their life experiences and to sharing those experiences with one another. It may also be that those with children may be differentially motivated to succeed than those without children.

Notably, this is a very small sample, and there may be some systematic reason these clinics have these differences in their populations within these first two weeks of July. It may also be that there are no substantial differences in outcomes by these populations. However, a next step would be to conduct this type of analysis on a larger dataset (e.g., a year's worth of admissions and treatment data) and explore these populations on a variety of factors including retention and treatment completion rates, and on outcomes such as arrest and employment. If differences are found, then customization of performance measures to accommodate these populations may be warranted.

Monitoring Dashboards

One of the deliverables of this project was to provide dashboard templates that could be used to monitor key aspects of the provision of substance abuse treatment. One way to approach the development of a dashboard is to look at key evaluation and performance measure components of *inputs* (resources and expenditures to conduct program); *processes* (measures activities to determine if program implemented as intended); *outputs* (products or activities); and outcomes (impacts of the program activity).[18]

For substance abuse treatment, dashboards should reflect domains and indicators discussed (domains of access, quality, effectiveness, and efficiency, using indicators such as utilization, retention, urinalysis, and continuity of care). A challenge to creating robust dashboards is the need for these reports to be comprehensive, accurate, and data must be readily available and accessible. This is no small task and likely will require additional examination of existing and future datasets. Therefore, the dashboards below represent ideas of what could be created, provided ideal circumstances. Ultimately, the final dashboards will require additional thought, discussion, and exploration to become a reality.[19]

Several sources provided ideas and information for this dashboard discussion, including conversations with Dr. Arbelaez of bSAS, a review of the FY2013 Maryland Executive Budget, 2012[20], and an internet search using the words "substance abuse treatment dashboards" (which netted a number of interesting results including dashboards in Maine[21], a discussion on SAMHSA's use of dashboards[22], a poster presentation by Research Triangle Institute on the Services Accountability Improvement System (SAIS) system of dashboards to monitor substance abuse outcomes[23]. In this process, the website of the Oklahoma Department of Mental Health and Substance Abuse Services was discovered which contains a variety of statistical reports – including outcome monitoring reports – which can be generated by the user by agency (including level of care and population), by report (engagement, planned discharge, arrests) and by type of report (pie chart, trend line, detailed, by demographics) for the most recent year of data[24].

---

[18] http://www.nextgov.com/cybersecurity/2010/05/making-dashboards-meaningful/46650/

[19] bSAS may want to consider whether they want to invest in dashboard software/technology. There are free tools available to create dashboards (e.g., http://www.dashboardfree.com/) and this website provides video presentations of different dashboard software (some commercial, some free). Another website provides links to a variety of dashboard software platforms: http://www.top20sites.com/Top-Dashboard-Software-Sites. Depending on the software, some include the function to serve as "middle-ware" -- acting as a translator between varieties of data systems (including legacy and relational databases) and combining data into a form to be reported in the dashboard.

[20] http://mlis.state.md.us/2012rs/budget_docs/all/Operating/M00K_-_DHMH_Alcohol_and_Drug_Abuse_Administration.pdf

[21] https://gateway.maine.gov/dhhs-apps/dashboard/Default.aspx

[22] http://www.nextgov.com/health/2010/05/treatment-program-agency-shows-how-a-dashboard-can-work/46663/

[23] http://www.rti.org/pubs/apha11_lakshmikanthan_poster.pdf

[24] http://www.odmhsas.org/eda/reports/index.htm

The figures that follow are either existing dashboards, or are examples which can be used to spark discussion about use of data to create dashboards. In most cases, while the dashboard may report overall data (e.g., substance abuse expenditures over 5 years), the ideal, perhaps similar to the Oklahoma website, would be to allow the user to "drill down" into the dashboard to allow for information by level of care, and then look still further to examine data at the provider level. If possible, dashboards would also have the capacity to run user-specified date ranges.

Dashboards with Combined Data Points

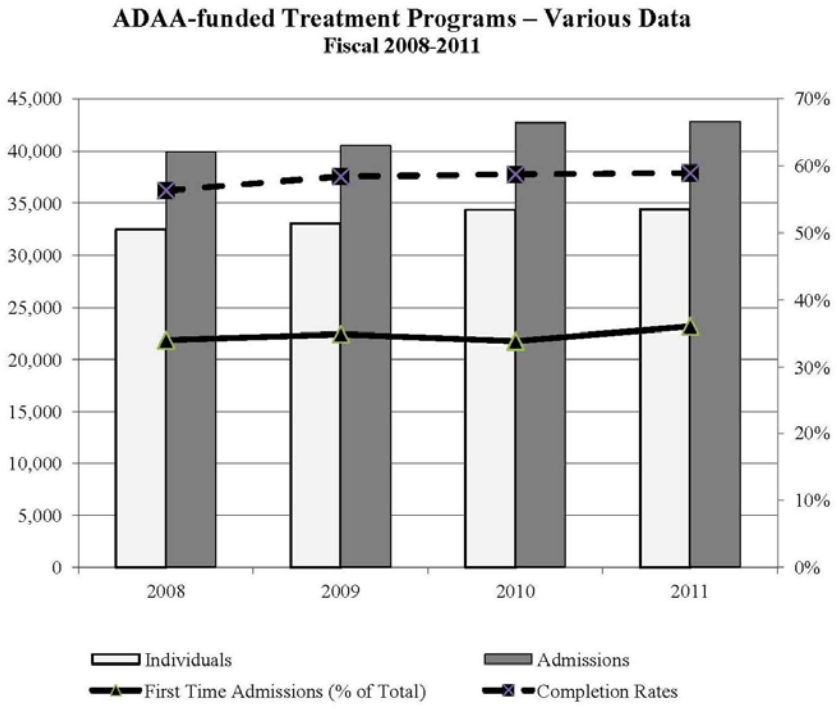
One interesting source for ideas for dashboards, particularly those encompassing multiple data points, was the FY2013 Maryland Executive Budget document. This report included a variety of graphs (replicated below in Figure 2). The first graph provides the number of individuals and admissions over multiple years with trend lines for first time admissions and completion rates. Similar tables could be created by bSAS by *level of care* on a semi-annual basis, or by *provider* on a monthly basis.

The second figure from the FY2013 Maryland Executive Budget document captures the percent of those admitted to ADAA funded programs by health insurance. This type of chart, particularly if coupled with the number of *unique individuals* and generated with more frequency (e.g., quarterly) and by *level of care* may help to broaden our understanding of the challenges with ensuring treatment coverage for individuals who have a need for services.

Another table in this report which combines multiple data points that may be of interest includes Exhibit 5 (on page 10 which illustrates retention rates for substance abuse treatment clients from FY2007 to 2011. This table includes retention for ADAA funded programs overall, but also provides the trend lines for the counties with the highest and lowest retention rates. Finally, the report also includes of treatment outcomes (page 11) including the percent change of substance abuse 30 days prior to admission and discharge; employment status at admission and discharge from FY2003 to 2011 and continued criminal justice involvement (among those reporting having been arrested in prior 30 days of admission). These outcomes could be reformatted to continually monitor the impact of treatment on these outcomes by provider and/or by level of care.

Figure 2: Dashboard Templates – Combined Data

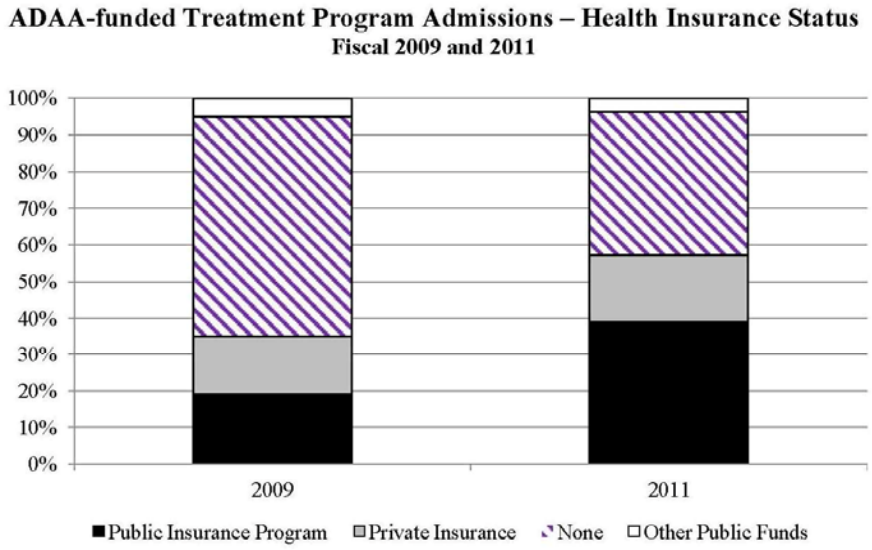
The FY2013 Maryland Executive Budget[25] provides the following graph which could serve as an exemplar of how to present multiple data points in a single dashboard.



ADAA: Alcohol and Drug Abuse Administration

Source: Alcohol and Drug Abuse Administration

This report also contains a graph that looks at health insurance status of publically funded treatment. This type of information could be reported by level of care on a quarterly basis. It may also be helpful if this type of dashboard could also include the number of unique users by insurance status.



ADAA: Alcohol and Drug Abuse Administration

Source: Alcohol and Drug Abuse Administration

[25] http://mlis.state.md.us/2012rs/budget_docs/all/Operating/M00K_-_DHMH_Alcohol_and_Drug_Abuse_Administration.pdf

Dashboard Templates by Domain

The conceptualization of dashboards by domains of access, quality, effectiveness, and efficiency are informed by the information provided in Tables 1 to 4 of this report. The examples below (measures of access (examined with engagement into treatment and continuity of care) and efficiency (measured as cost of services), merely illustrate the potential – the decision of which measures should be included in the domain specific dashboards, again require exploration of the data and prioritizing the areas of interest.

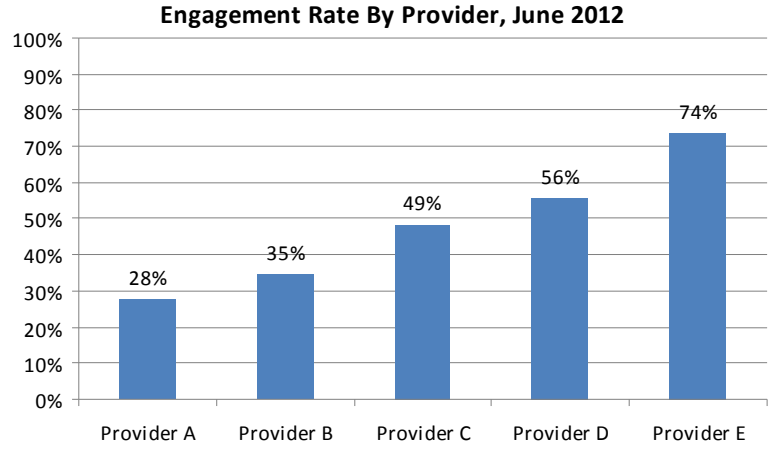
In terms of performance standards for quality of services (e.g., if a customer satisfaction survey was implemented, the data could be displayed on a monthly basis), ideally, the survey could be completed on line with the responses populating and updating the dashboard on a real-time basis.

bSAS may also wish to consider a dashboard that measures intensity of service given that as a certain number of hours are required for intensive outpatient, a dashboard could be developed that reflects the percentage of clients who received all required hours within a given time frame (e.g., within the month or week). SMART encounter data can provide this information (e.g., from the progress and case management notes data; or the other option is to use existing calculated variables of the number of group and individual sessions while in treatment, then bounded by length of stay in treatment. This assumes that there is variation in treatment among clients (e.g., given no-show to treatment counseling) but this could also serve as an indicator of adherence to data collection if there are consistent gaps in the recording of treatment hours by provider.

Figure 3: Dashboard Templates – by Domain and Indicator

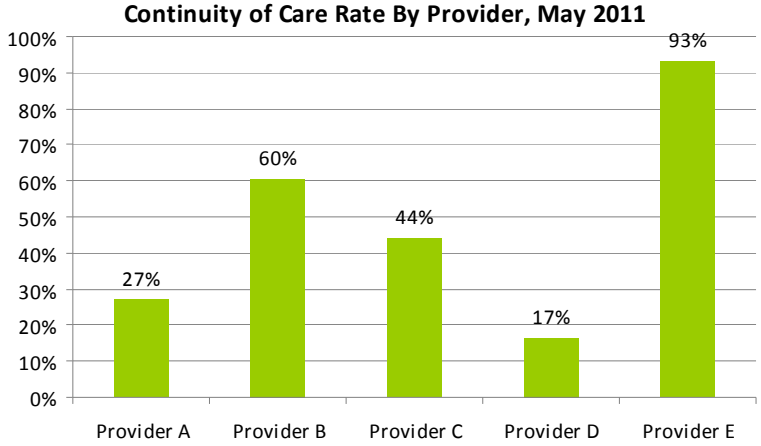
Domain: *Access* Indicator: *Engagement*

Defined as: Percent of unique persons who initiated outpatient services who had received 2 additional services w/in 30 days, among those with an OP index service



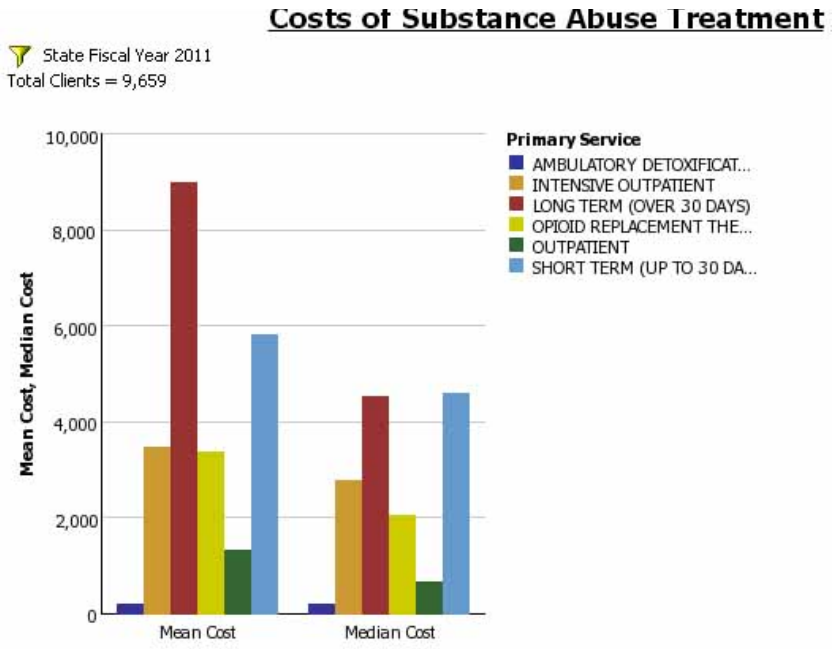
Domain: *Access* Indicator: *Continuity of Care*

Defined as: Percent of admitted to different LOC within 30 days among those who completed Detox or OP/IOP



Domain: *Efficiency* Indicator: *Cost of Services*

One measure of efficiency could be cost of services by type of service. Maine's Department of Health and Human Services has a dashboard on their website related to the cost of treatment by level of care. This can be compared over time.



Primary Service/Level of Care (LOC)	Number of Clients	Mean Cost	Median Cost
AMBULATORY DETOXIFICATION	2	$185.42	$185.42
INTENSIVE OUTPATIENT	1,699	$3,479.60	$2,776.67
LONG TERM (OVER 30 DAYS)	1,030	$8,993.60	$4,543.50
OPIOID REPLACEMENT THERAPY	984	$3,384.79	$2,047.50
OUTPATIENT	5,580	$1,326.40	$672.00
SHORT TERM (UP TO 30 DAYS)	364	$5,817.32	$4,609.08

Recommendations

New Questions, More Data Needs -- A Data Wish List

The existing monitoring structure was designed to capture the key features needed to monitor block grant substance abuse treatment. As services were paid on a fixed cost, the primary interest was in observing *utilization* of services, *retention* of clients in those services, utilizing *urinalysis* to assess effectiveness of services, and *continuity of care* to assess if clients moved along the treatment continuum from detoxification into higher levels of care.

With more individuals provided treatment through the fee for service structure provided by Medicaid, the focus turns to other possible measures to monitor and measure performance under this new rubric. The key questions are:

1) How do we apply current and existing data to accommodate these new measures?; and
2) What data do we need to collect in order to assess measures of the future?

Given the forthcoming integration of substance abuse and mental health treatment and the new EHR system under development, this is an opportunity to explore the possibilities.

Incorporate Needed Data in New EHR to Phase Out UP

When a client goes to a treatment provider for assistance, the providers are required to enter data into both the UP and SMART. bSAS created UP to calculate utilization (days in treatment used of slots available, by cost center). While SMART contains admission and discharge dates, providers are allowed to wait for the client to show up/return to treatment for 30 days before discharge, thus using SMART admission and discharge data overestimates treatment participation. In addition, UP does not contain the SMART ID, so matching and linking across records systems can be difficult. This is burdensome from both a provider and monitoring perspective – double entry and difficulty in fully using SMART data coupled with UP. The new EHR system should include cost center functionality to allow for more precise measurement of days in treatment. This will likely be necessary to accommodate PAC Medicaid fee for service billing.

Continuity of Care – Tracing the Individual Through the Treatment Lifecourse

The Recovery Oriented Systems of Care (ROSC) model is one embraced by bSAS and recognizes substance abuse as a chronic condition influenced by many factors such as the severity of impairment, age, gender, and social circumstances (e.g., level of family support). This calls for treatment that is responsive to these fluctuations and recognition that an individual may need assistance at various times, not just once, in their life. In the spirit of this holistic treatment approach, it would be useful for providers to understand the individual's treatment history and be able to access and update the treatment plan, provided that privacy concerns can be sufficiently addressed.[26] The ability to understand the history of an individual could be

[26] Balancing the need for personal privacy and security with access to history for treatment purposes is difficult, and the discussion would be beyond the scope of this project. There are a number of resources which address this issue,

particularly important for justice involved individuals, especially if the new EHR system has the capacity to link with the new DPSCS Offender Case Management System (OCMS). OCMS will have the capacity to track an individual through their engagement in the Maryland State criminal justice system – from arrest to detainment to incarceration to community supervision. OCMS contains the Level of Service Inventory-Revised (LSIR) a validated risk/needs assessment tool which includes in the domains of substance abuse and mental health. The new EHR system should include the capacity to retain historical treatment information (including level of treatment, length of stay, and whether discharged successfully), as well as allow providers to incorporate the existing treatment plan to render the best treatment recommendations and decisions for the patient at that stage of their recovery.

Tracking Individuals As They Move from Block Grant to PAC to Exchange

To understand the scope of participation in publically funded health systems, one needs to know how much we spend, patterns of how that money is spent, and by level of care (Croze Consulting, 2011). As detailed more fully in the discussion of Jurisdictional Access for Data below, one key public health concern is to predict trends in the need for and access to treatment, retention in treatment, and continuity of care. Given the reimbursement gap between PAC Medicaid and block grant funding, there may be a substantial number of people who do not access, utilize, or remain in treatment. It would be important to observe the populations in the coming years to ensure that the treatment needs are met. To do this, individual level and linkable treatment data from all three funding sources is required.

At times providers use the SMART system for insurance validation purposes (e.g., to determine if the service to be covered under PAC, Medicaid, or block grant funding). SMART was never intended for this purpose, thus an information system should be established to meet this need and allows providers and others to track the individual across the three systems to immediately and correctly designate the funding source for treatment services. [27]

Consider Including Program-Level Contextual Variables

Continuity of care from detoxification to OP/IOP treatment is important to successful outcomes of patients – particularly among injection drug users, and program-level factors can influence that outcome, even after controlling for individual differences among the participants (Campbell, Tillotson, Choi, Bryant, DiCenzo, Provost, Zammarelli, Booth & McCarty (2010). These factors include the length of time the detoxification "unit had been in operation; how long patients stayed in detoxification; number of detoxification beds; the combined total number of primary and ancillary services (e.g., detoxification, residential, halfway house, outpatient as well as case management, vocational assistance); accreditation in addition to having a state/county license; distance (more or less than 1 mile) from detoxification to the outpatient treatment unit associated

---

including one from the Legal Action Center entitled Confidentiality of Alcohol and Drug Records in the 21st Century available at http://www.lac.org/doc_library/lac/publications/Confidentiality_of_Alcohol_and_Drug_Records_in_the_21st_Century-1-20-10.pdf.

[27] Personal communication, Dr. Jose Arbelaez, bSAS, October 9, 2012

with the same treatment organization and population of the city where the detoxification facility was located" (p. S91). Campbell et al., found that patients were more likely to enroll in outpatient treatment (odds would triple) when the unit was accredited in addition to being licensed, more than double the likelihood of enrollment if the treatment facility was less than a mile from the detoxification; for every additional day patients remained in detox, patients were 33% more likely to enroll; for each additional bed in the unit, patients were 3% less likely to enroll into outpatient treatment. In sum, "smaller detoxification units with longer lengths of stay and treatment services nearby may boost continuing treatment" (p. S95).

This Campbell et al., 2010 study supports work I conducted as a graduate student and presented at the American Society of Criminology in 2003.[28] I examined the contextual effects within the treatment provider environment (including client characteristics) with the National Treatment Improvement Evaluation Study (NTIES) data. I aggregated information on patients (e.g, severity of addiction, education etc) in various treatment centers (excluding criminal justice and methadone maintenance clinic settings), and created group means for each of these characteristics. I found, preliminarily, that outcomes significantly differed by treatment center controlling for individual population differences. The treatment environment may matter – including the aggregated patient characteristics as well as program-level differences such as a lower staff to client ratio; higher proportion of qualified staff, a larger (or smaller) treatment center, gender and racial breakdown of staff which mirror the clients – and may likewise provide a different and maybe better treatment experience. That, in turn, may equate to better outcomes. From a policy perspective - if you find that certain types of treatment centers and/or certain characteristics of treatment have higher success rates (including retention, utilization etc) then bSAS could consider contracting more of those types of providers.

Assessing Quality of Treatment

In the future, substance abuse treatment monitoring will require an assessment of not simply the quantity of treatment provided – but the quality of treatment – including the "content, intensity and duration" (Hermann & Palmer, 2002, p. 284). Currently, SMART captures encounter data which provides intensity and duration of treatment, but measures of the content of treatment are not available. One of the key aspects to consider is the quality of the relationship between the patient and the substance abuse counselor. It is also important to note that treatment plans are generally "standard" plans (e.g., 9 hours of substance abuse counseling per week) rather than individualized. While this is necessary in order to respond to needs of patients overall -- there likely remain clients whose treatment requirements differ from the standard plan. Clinicians should be able to modify the treatment plans to accommodate these needs.

Quality measures should also consider aspects of the counselor-patient relationship that may impact engagement and retention in treatment as well as outcomes. Measures could include patient reports of the degree of trust and respect between the patient and the counselor, and the degree to which the patient feels they are heard and concerns are considered and addressed. These types of measures could be captured in a patient satisfaction survey or interview during and/or following treatment.

[28] Draft paper available upon request.

Establish Process Measure Benchmarks

As evidenced in the dashboard discussion above, the focus of monitoring measures is on the examination and comparison of treatment provision *within* the Maryland publically funded systems. However, (in the event that specific performance benchmarks and best practices have not yet been developed), then bSAS should consider comparing Maryland data to process measure benchmarks established by other agencies (such as those identified by the National Council[29]). For instance, in the domain of engagement and retention, the "Top Performers" in the National Council study retained at least 85% of their clients. The practices of those top performers were then compared to those with a retention rate of 67% or less. Included in this specific study were measures surrounding engagement and retention of clients include whether the clinic avoids the use of voice mail 95% of the time those making an initial call for service; completing intake process in an hour or less; introducing client to a member of their treatment team during or immediately following intake; whether staff assess and discuss barriers to care as part of the intake process; whether clinicians call patients who haven't shown up to treatment two times in a row; and whether the staff have a scripted response when patients request to reduce or terminate treatment.

Alternatively, Maryland could establish *internal* benchmarks and best practices to assess provider performance. The process for establishing benchmarks includes determining the area for examination and review data to ascertain who are the "Top Performers". Once potential best practices have been identified, conduct interviews, surveys, or focus groups to determine which of those practices distinguish the top performers from other performers, and finalize the list of best practices. Once established, conduct ongoing assessment as to which providers meet the standards in comparison to the top performers.

Establish Pharmacotherapy Performance Measures

The Baltimore Buprenorphine Initiative was initiated in 2006 and sought to expand the use of buprenorphine as a treatment strategy through a collaborative effort among the Baltimore City Health Department (BCHD), Baltimore Healthcare Access, Inc., (BHCA) (now called Healthcare Access Maryland (HCAM) and Baltimore Substance Abuse Systems Inc (bSAS) (BCHD/BHCA/BSAS, 2007). The objectives of the initiative were to engage individuals into buprenorphine treatment by working with substance abuse treatment programs (which provide both buprenorphine medication and outpatient counseling treatment services), by assisting individuals to obtain health insurance to cover the costs associated with buprenorphine, and through the recruitment and training of physicians into the administration of buprenorphine treatment. While many of the stated goals of the initiative were met (including the number of those retained in treatment and qualified for insurance) and other goals were nearly achieved (such as the number of those transferred from substance abuse treatment programs to community medical care or a primary care physician), questions remained concerning the need "to identify factors associated with success in buprenorphine, both to enhance retention and facilitate timely transfer to the medical system" (BCHD/BHCA/BSAS, 2007, p. 21).

[29] http://www.thenationalcouncil.org/galleries/resources-services%20files/NC%20Live%204-27-10%20Lefkovitz%20Presentation.pdf

An article by Thomas, Garnick, Horgan, McCorry, Gmyrek, Chalk, Gastfriend, Rinaldo, Albright, Capoccia, Harris, Harwood, Greenberg, Mark, Un, Oros, Stringer & Thatcher (2011) presents a variety of ideas about how to begin to set up performance measures for Medication Assisted Treatment (MAT) which can assist in achieving this objective. Thomas et al., map out various key factors relevant to this type of effort including challenges (resistance to change, inconsistent coverage, lack of monitoring standards, etc) and suggest that measures need to be "simple, easy to use and specific to the system's goals, data, and resources … [and] be standardized … support cost containment … used as a tool to improve quality of care" (p. 39-40). They suggest that MAT performance measures include whether "pharmacotherapy is considered [by the provider], offered [to the patient], is pharmacotherapy used? And, if used, is it used appropriately (i.e., in appropriate populations, appropriate dosage and duration, used in conjunction with clinical services, adequate follow-up") (Thomas et al., 2011, p. 37). While Thomas et al., state they are in the process of pilot-testing specific performance measures with the Washington Circle Group, these draft measures do not appear to have been released. Given this, bSAS may wish to consider factors of implementation of buprenorphine that are important to expanded and efficient use of MAT in Baltimore and formulate performance measures accordingly.

Process measures may include number assessed as opioid addicted, of those, number offered buprenorphine; number of those who engaged into buprenorphine, days to medication initiation, dosage (including strength of medication and attendance at IOP/OP sessions). Outcomes (e.g., employment, substance use at discharge, arrests, positive urinalysis) could also compare those taking buprenorphine versus methadone; by dosage amounts; by patient characteristics, and length of stay in treatment.

Table 7: Summary of Questions and Data Needs

Questions/Measures	**Do we have data needed to answer the question?**	**If not, what is needed?**
How many billed days of treatment services did the client receive?	Yes – UP which requires provider double entry and hard to match to SMART	Include cost-center and other needed variables in EHR system.
Can we track an individual through their substance treatment and recovery lifecourse?	With Consent, providers can share records in SMART – but not automatic.	EHR system would have to allow; resolve consent and privacy (e.g., 42 CFR Part 2) issues.
How can we validate insurance eligibility?	?? – if data exists, systems are not connected.	An information system or module in the new EHR system that connects between the various funding sources to determine eligibility and cost-center for services.

Questions/Measures	Do we have data needed to answer the question?	If not, what is needed?
Can we incorporate a person's past treatment plan to address a current treatment concern?	There is a treatment plan module in SMART.	EHR system would have to allow access to the treatment plan module.
Do aggregated participant-level factors make a difference in outcomes?	Yes – patient characteristics (demographics, drug of choice, % unemployed etc) – from SMART admission data can be extracted and aggregated by Treatment Center.	N/A
Do program-level factors make a difference in outcomes and service delivery?	?? – Accreditation and licensee data may be easily obtainable, but would need to be entered into database to utilize. Additional variables (e.g., how strongly staff emphasize ROSC or other treatment factor, scope of primary and ancillary services provided) patient/staff ratios, and staff education levels may require a provider survey.	Explore what information is available; Create a provider survey (Consider using all/part of NTIES survey given comparison data would be available).
How can utilization, access, engagement, and retention in Buprenorphine treatment be monitored?	?? – depends on the performance measures selected. Measures could include whether all opiate addicted patients are offered buprenorphine, another factor may be time to initiation to medication; may also want to consider if dosage has varying impacts on retention, outcomes.	If not in SMART; include buprenorphine specific measures into EHR including whether offered to client, client engagement, duration of buprenorphine treatment etc.
What is the quality of treatment provided? Need Measures of content of treatment, intensity and duration.	Have SMART data for treatment encounters – which address intensity (e.g., number of hours per week) and duration (number of weeks attended treatment).	Specific content of treatment (e.g., curriculum, modules, administrative notes on deviations from planned services).

Questions/Measures	Do we have data needed to answer the question?	If not, what is needed?
What is the quality of the patient-counselor relationship? What is the impact of that relationship on engagement, retention, and outcomes?	No	Would need to add a patient satisfaction survey or interview module to EHR. Suggest seek all those engaged in treatment services – including dropouts – may require completion of surveys in institutional settings (e.g., jail or hospital); set standards for percent of patients who complete survey.

Key Issues to Consider

Matching Records Across Agencies

A principal issue with respect to assessing treatment to outcomes is matching the patient with the correct individual in various state administrative records. Common challenges when working with data from multiple agencies include ensuring compliance with state and federal policy and regulations regarding data security and confidentiality; resolving differences in the use of terms and variables in the data to ensure common meanings and consistent formatting and coding; reliably linking the records of an individual from one dataset to the next; matching files across agencies and identifying and managing mismatches; and managing and compensating for missing data within each agency's information system.

One way to manage this difficulty is to integrate the State ID number (SID) into these respective data systems. The SID is issued to everyone who is fingerprinted and is the only biometrically linked identification number, and thus is the most reliable ID. bSAS should explore the possibility of incorporating the SID as the matching ID in any of the administrative data systems that contain key information required to measure outcomes (e.g., Department of Labor and Licensing (DLLR) which hosts the Maryland Workforce Exchange utilization data; health records from Medicaid; and Criminal Justice Information System (CJIS) data from Department of Public Safety and Correctional Services (DPSCS)).

If incorporating the SID isn't feasible (or desirable), then social security number is the common ID shared by most systems including DLLR, Medicaid, and DPSCS. However, there are restrictions regarding the use of SSN due to concerns over identity theft. Even if the SSN could be used freely, there remains the matching problem in part because many times individuals use multiple aliases and provide incorrect social security numbers at point of intake. bSAS should seek agreement with various data partners to match not only name and social security number, but also by gender, date of birth, and race (when available).

If bSAS does not already use a probabilistic algorithm for matching individuals across datasets, one option is Link Plus software, developed by the Centers for Disease Control. With Link Plus, a master file of treatment clients can be matched to other data sets by calculating a score for up to five matching variables for each comparison pair within selected variables. The summed score is based on the probability the identifier fields agree, less the probability that the fields agree by chance, if they belong to the same person. Records are matched based on a cut-off score selected by the user – those above the score are matched, those below are not (Link Plus Users Guide Version 2.0, 2007). Research into the sensitivity (defined as "proportion of "true" links captured by the linkage algorithm") and positive predictive value (the "proportion of linked records that, in fact, represent the same person") of Link Plus and Link King for SAS (both publically available link software programs) were at mid-90% (Campbell, 2009, p. 111).[30]

Another possibility is the model employed by the Maryland LINKs Data Collaborative at the University of Maryland (UM). While Maryland LINKs is primarily focused on children, youth and family service agencies, the structure of this endeavor may be worth exploring. In essence, data is supplied by the agencies to UM and a unique identifier is created using a variety of identifiers and is attached to each agency's data extraction. Once the data is linked by this identifier, all other identifiers are removed, and the data is securely maintained in a data warehouse at the UM. Requests for data are vetted through the LINKSs research committee. If the various agencies involved in the lives of those receiving publically funded substance abuse treatment were hesitant to share data with each other, a structure such as Maryland LINKs project would provide oversight and security.[31]

Jurisdictional Access to Data

Another important issue to be resolved is access to data. bSAS is the provider of publically funded substance abuse treatment to the uninsured and underinsured in Baltimore through a block grant. As administrators of the block grant, bSAS is provided data by ADAA for patients funded by the block grant. In recent years, individuals have increasingly obtained access to Primary Adult Care (PAC) insurance, which funds substance abuse treatment services through Medicaid.[32] PAC clients have a separate designation (cost-center) in the SMART system and

[30] Campbell, 2009 explored three link methods – match-merge (the most restrictive requiring an exact match across the variables); a deterministic link program "with decision rules slightly more relaxed than the match-merge algorithm" (p. 112); and Link King – a probabilistic linking software similar to Link Plus - to combine data from substance abuse treatment administrative records to criminal justice records. Campbell found a higher degree of matching records using probabilistic methods, particularly with women (due to the higher chance of a last-name mismatch due to name changes after change in marital status) and the use of "phonetic equivalence algorithms … [which uses] alternative pronunciations for names from Italian, Spanish, French and various Germanic and Slavic languages" (p. 115) for those belonging to racial/ethnic minority group. Further, estimates of outcomes (e.g., arrests) varied depending on the matching method utilized.

[31] The Project Director of Maryland LINKs is Dr. Terry Shaw at the University Of Maryland School Of Social Work.

[32] While PAC provides access to many services, some substance abuse treatment services are either not eligible for payment or have thresholds (e.g., residential treatment), consequently, individuals are underinsured. HIV/AIDS patients face a similar situation and in 2009, a bill was introduced in the U.S. House of Representatives "The Ryan

these patient records could be provided to bSAS. However, as of late summer, 2012, PAC clients are no longer included in data extractions provided to bSAS for monitoring. This is problematic from a public health and policy perspective, for several reasons.

First, it is unknown if those who are underinsured and uninsured (and are receiving treatment services through the bSAS fixed cost reimbursement block grant), are representative of insured PAC clients (fee for service paid by Medicaid). If these two populations are sufficiently similar in their utilization of services and outcomes, then bSAS and other public agencies can continue to extrapolate from the uninsured population use of service data for funding and policy decisions. However, if these populations are dissimilar in significant ways, then policies and procedures may have to be revised. It is important that bSAS have access to publically funded PAC data at a minimum to conduct this initial assessment between the two populations, then periodically to observe significant changes.

Second, the income eligibility limit for PAC insurance is below 116% of the Federal Poverty Level (approximately $12,563 for one person or $16,901 for two people). It is likely that there will be a significant number of people who move in and out of employment, thus they may periodically will lose and then regain eligibility for PAC insurance. If data are not available to monitor this movement, it will be difficult to observe and predict important trends in treatment utilization, retention, urinalysis, continuity of care, and outcomes among this population.
In addition to the need for PAC data, there is also interest in tracking engagement of individuals who purchase insurance through the Maryland Exchange, available in January 2014. The Exchange will provide subsidies for premium costs for those making less than 400% of the Federal Poverty Level (about $44,000 annually) so they may obtain insurance at competitive rates. A number of previously uninsured and underinsured individuals would benefit from this program. While bSAS does not monitor substance abuse treatment services provided to the insured, given the Exchange provides a subsidy for insurance premiums from public funds, there is interest in tracking individual's use of services and experiences as they transition from services provided through block funds, PAC, and the Exchange (and back again depending on individual circumstances such as loss of a job). One possible way to do this may be to utilize the model in the Maryland LINKs Data Collaborative where de-identified but linked data could be routinely shared among the agencies.

Finally, at the present time, bSAS is provided selected sections of SMART data as well as computed variables generated by ADAA. However, jurisdictions responsible for monitoring substance abuse treatment need to be able to access raw data in order to fully maximize the data potential. One of the key recommended performance measures (below) is that all performance measures should be should be explored by demographic characteristics, aggregating and/or disaggregating by all levels of care, length of stay, and by provider to ascertain patterns that exist to lead to system improvements. Raw data would be required to conduct that level of analysis for BSAS to perform its jurisdictional strategic planning role we will have to be able to match client data across multiple payor sources.

A summary of recommendations conclude this report.

White Medicaid Grantee Payment Equity Act" which would have closed the payment gap by increasing Medicaid reimbursements for HIV/AIDs patients. The bill did not move beyond the House Health Subcommittee.

Summary of Recommendations and Conclusion

The following recommendations are based on the overall findings in this report.

Data Needs

- bSAS should be provided access to raw SMART data and data required to trace an individual through all three funding streams – block grant, PAC and Exchange – as well as provide a means of insurance validation to ensure that patients receive needed services on a timely basis. If consent and privacy concerns prohibit sharing data across systems, bSAS should consider engaging into a data collaborative similar to the Maryland LINKs project, which acts as a data intermediary and warehouse.

- The new EHR system should include variables needed to determine the number of billed days of treatment, sharing records and treatment plans among providers to allow for a fuller understanding of the patient's history and avoid duplication of services.

- Develop a patient satisfaction survey. Seek to include all engaged in treatment – particularly those who do not complete treatment.

- Consider creating a provider survey using NTIES as a survey template to capture program-level data to complement accreditation and licensee data. Ideally database would allow providers to add and update their information.

Process Measures

- Key performance indicators (e.g., engagement, retention) should be explored by demographic characteristics, as well as aggregating and/or disaggregating by level of care, length of stay, type of medication assisted treatment and by provider to ascertain patterns that exist to lead to system improvements.

- Establish and routinely assess process standards compared to performance and practice benchmarks based on the top performers within Maryland, or against previously established benchmarks from external agencies or studies.

- The quality of the data used to assess performance can influence the outcome (Purrington, Gauthier, Patel & Miller 2011). Standards should be established that routinely monitor completeness and quality of data entered by providers. Currently, bSAS contracts with individual providers with respect to data entry deadlines for admission and discharge activity (e.g., providers have a 30 day window to discharge patients). There may be additional treatment activities which are not covered under existing contractual standards, and if so, then those should be established and routinely monitored. For example, data entry standards could include that 100% of treatment encounters will be entered into SMART (or the new EHR system) within 3 business days, 100% of data is entered into the appropriate module, and 90% of data is complete. Ideally, all providers and payor sources would be subject to the

same performance expectations. This would require agreement among the various stakeholders on common performance measures and monitoring standards.

- Develop and/or expand standards to capture utilization, access, engagement and retention for those in buprenorphine treatment.

- Add measures of treatment quality to EHR beyond intensity and duration to include *content* of treatment; explore if patient outcomes vary based on content received.

- Assess the counselor-client relationship through development of patient satisfaction survey. Observe the impact of the relationship on engagement and retention in treatment.

Outcome Measures

- All outcomes should be explored controlling for age, gender, race, primary drug of choice and age at first use, to allow a more robust examination of predictors.

- Explore how variations of buprenorphine dosage and time in treatment impact treatment and other outcomes.

- Observe the impact of the counselor-client relationship on treatment and other outcomes.

- The impact of treatment on employment outcomes should distinguish between part time and full time employment, and also observe change in level of household income at admission and discharge. As bSAS presently has access to wage and unemployment data from the Department of Labor and Licensing (DLLR), which hosts the Maryland Workforce Exchange utilization data, bSAS should routinely exchange data with DLLR to complement data provided in SMART. At the present time, researchers at the Jacob France Institute at University of Baltimore are engaged in a study of employment outcomes for Baltimoreans who received publically funded substance abuse treatment services. The Jacob France Institute is uniquely situated to conduct this research given their partnership with DLLR. Ms. Stack of the Jacob France Institute advised that the linking ID used in their work is the social security number and they have been quite successful in matching employment and treatment records. Their report to bSAS is forthcoming.[33]

- The assessment of the impact of treatment on other outcomes, particularly criminal justice, would be greatly enhanced by the integration of the State ID number (SID) across data systems. The SID is issued to everyone who is fingerprinted and is the only biometrically linked identification number, and thus is the most reliable ID. bSAS should advocate incorporating the SID as the matching ID in administrative data systems that contain key information required to measure outcomes.

[33] Personal communication, Treva Stack, November 6, 2012.

- Until (and if) the SID becomes a linking ID, bSAS should consider partnering with the relevant agencies to conduct a pilot extraction using available identifiable data (e.g., name, date of birth, race, gender, social security number) to assess the level of matching across key datasets. This would be desirable in order to determine the level of linkage and missing data across these two systems.

Clearly there is much work that can be done to monitor substance abuse treatment and outcomes. This report and these recommendations are intended as a jumping off point – a beginning of the brainstorming to enhance data-driven decision making to improve the provision and effectiveness of substance abuse treatment.

References

Alcohol and Drug Abuse Administration (ADAA) (2012a). Department of Health and Mental Hygiene, 2011 Joint Chairmen's Report - Updated Report on Addiction Treatment Spending for Individuals in the Primary Adult Care Program Available: http://dhmh.maryland.gov/publicrelations/pr/pdfs/81-MA-Addiction-Treatment-Spending%20_Final_Signed_06-19-12__2.pdf

_____(2012b). ATR Summary Document Available: http://adaa.dhmh.maryland.gov/Documents/content_documents/ATR/ATRsummary.doc

_____ (2011). Outlook and Outcomes FY2011 Maryland Department of Health and Mental Hygiene Alcohol and Drug Administration Available: http://adaa.dhmh.maryland.gov/Documents/content_documents/OandO/FY11O_O_2.pdf

_____ (2006). Outlook and Outcomes for Maryland Substance Abuse Prevention, Intervention and Treatment Maryland Department of Health and Mental Hygiene Alcohol and Drug Administration Available: http://adaa.dhmh.maryland.gov/Documents/content_documents/OandO/OandO2006.pdf

Arizona Department of Human Services (ADHS) (2011a). Annual Report on Substance Abuse Treatment Programs, Fiscal Year 2011 Division of Behavioral Health Services, Bureau of Quality Management Operations Available: http://www.azdhs.gov/bhs/documents/reports/Substance-Abuse-Treatment-Programs_Annual-Report.pdf

_____(2011b). 2011 Annual Consumer Survey Report December 2011, Arizona Department of Health Services, Division of Behavioral Health Services, Bureau of Quality Management Operations
Available: http://www.azdhs.gov/bhs/documents/reports/2011AnnualConsumerSurveyReport.pdf

BCHC/BHCA/BSAS - Baltimore City Health Department, Baltimore Healthcare Access, Inc., & Baltimore Substance Abuse Systems. Inc., (2007). The Baltimore Buprenorphine Initiative: Interim Progress Report, Maryland: Baltimore City.

Baltimore Substance Abuse Services (bSAS) (2012a). Drug Stat Q3, FY2012 OMT.

_____ (2012b). Drug Stat Q3, FY2012 OP/IOP.

_____ (2012c). Drug Stat Q3, FY2012 Residential.

**Campbell, K.M. (2009). Impact of Record-Linkage Methodology on Performance Indicators and Multivariate Relationships. Journal of Substance Abuse Treatment, 36, 110-117.

**Campbell, B. K., Tillotson, C.J., Choi, D., Bryant, K., DiCenzo, J., Provost, S.E., Zammarelli, L., Booth, R.E., & D. McCarty (2010). Predicting Outpatient Treatment Entry Followign Detoxification for Injection Drug Use: The Impact of Patient and Program Factors. Journal of Substance Abuse Treatment, 38, (Supp 1), S87-S96.

Center for Quality Assessment & Improvement in Mental Health (2006). Table 3 – Quality Measures for Patients with Co-Occurring Substance Use & Psychiatric Conditions Treated in Mental Health Specialty Settings. Available: http://www.cqaimh.org/QM%20Tables_PsychSUDMD.pdf

Center for Substance Abuse Treatment (CSAT) (2006). Detoxification and Substance Abuse Treatment. Treatment Improvement Protocol (TIP) Series 45. DHHS Publication No. (SMA) 06-4131. Rockville, MD: Substance Abuse and Mental Health Services Administration. Available: http://www.ncbi.nlm.nih.gov/books/NBK64115/pdf/TOC.pdf

Coffey, R.M., Buck, J.A., Kassed, C.A., Dilonardo, J., Forhan, C., Marder, W.D., and R. Vandivort-Warren (2008). Transforming Mental Health and Substance Abuse Systems in the United States. Psychiatric Services, 59, (11) 1257-1263. Available: http://www.samhsa.gov/Financing/file.axd?file=2011%2F3%2FRita1.pdf

Croze Consulting (2011). Future Options for Integrated Behavioral Healthcare, Presented to The Maryland Department of Health and Mental Hygiene, December 2011. Available: http://dhmh.maryland.gov/bhd/Documents/68_BHD_BehavioralHealthIntegrationFinalSigned%20_12_27_11_OGA_1205.pdf

Dausey, D. J, Pincus, H.A., & J. M. Herrell (2009). Performance Measurement for Co-Occurring Mental Health and Substance Use Disorders. Substance Abuse Treatment, Prevention, and Policy, 4:18 Available: http://www.substanceabusepolicy.com/content/pdf/1747-597X-4-18.pdf

Garnick, D.W., Lee, M.T., Horgan, C., Acevedo, A., Botticelli, M. Clark, S., Davis, S. Gallati, R., Haberlin, K., Hanchett, A., Lambert–Wacey, D., Leeper, T., Siemianowski, J. and M. Tikoo (2011). Lessons from Five States: Public Sector Use of Washington Circle Performance Measures. Journal of Substance Abuse Treatment 40, (3), 241–254. Available: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3085924/pdf/nihms267280.pdf

Gauthier, P., & B. TenHoor (2011). Maximizing Systems for A Change: Informing the Design of Statewide Substance use Disorders Service Systems for Optimal Performance in the Era of Healthcare Reforms Prepared by State Associations of Addiction Services (SAAS) and Advocates for Human Potential, Inc., (AHP) Healthcare Solutions. Available: http://www.saasnet.org/PDF/SAAS_System_Design_Report_Revised_10.31.pdf

Hermann, R.C., Chan, J., Provost, S.W., & W.T. Chiu, (2006). Statistical Benchmarks for Process Measures of Quality of Care for Mental and Substance Use Disorders. Psychiatric Services, 57, (10) 1461-1467. Available: http://www.cqaimh.org/Hermann_statistical%20benchmarks_2006.pdf

Hermann, R.C., Leff, H.S., & G. Lagodmos (2002). Selecting Process Measures for Quality Improvement in Mental Healthcare. Available: http://www.cqaimh.org/toolkit.website.pdf

Hermann, R.C., & R.H. Palmer (2002). Common Ground: A Framework for Selecting Core Quality Measures for Mental Health and Substance Abuse Care. Psychiatric Services, 53, (3) 281-287. Available: http://www.cqaimh.org/PDF%20Copy%20of%20Framework%20Paper/Framework%20Paper%20PDF.pdf

Musgrave, J. (2012, February 6). Medicaid asks for funding for substance-abuse treatment www.kentucky.com, http://www.kentucky.com/2012/02/06/2058381/medicaid-asks-for-additional-funding.html

New Jersey Department of Human Services (2010). Report of the New Jersey Co-Occurring Mental Illness and Substance Use Disorders Task Force Available: http://www.state.nj.us/humanservices/das/boards/codtf/FINAL%20COD%20Task%20Force%20Report%209%2022%2010%20_2_.pdf

**New York State Office of Alcoholism and Substance Abuse Services (OASAS) (2012). Statewide Comprehensive Plan 2012-2016

_____ (2006a). Best Practices Implementation Study Final Report. Division of Systems/Program Performance and Analysis, Bureau of Evaluation and Practice Improvement. Available http://www.oasas.ny.gov/hps/evaluation/documents/BestPractices_Final.pdf

_____(2006b). Treatment Outcome Study. Available: http://www.oasas.ny.gov/hps/evaluation/documents/TOS_Prelim_2-06.pdf

Purrington, K., Gauthier, A., Patel, S., & C. Miller (2011). On the Road to Better Value: State Roles in Promoting Accountable Care Organizations Available: http://www.commonwealthfund.org/~/media/Files/Publications/Fund%20Report/2011/Feb/On%20the%20Road%20to%20Better%20Value/1479_Purington_on_the_road_to_better_value_ACOs_FINAL.pdf

Substance Abuse and Mental Health Services Administration (SAMHSA) (2007). SAMHSA Data Strategy FY 2007 - FY2011, Rockville, MD, Substance Abuse and Mental Health Services Administration.

**Thomas, C.P., Garnick, D.W., Horgan, C.M., McCorry, F., Gmyrek, A., Chalk, M., Gastfriend, D.R., Rinaldo, S.G., Albright, J., Capoccia, V.A., Harris, A.H.S., Harwood, H.J., Greenberg, P., Mark, T.L., Un, H., Oros, M., Stringer, M., & J. Thatcher (2011). Advancing Performance Measures for Use of Medications In Substance Abuse Treatment. Journal of Substance Abuse Treatment, 40, 35-43.

Vaillant, G.E. (1995). The Natural History of Alcoholism Revisited. Cambridge: Harvard University Press.

_____(1988). What Can A Long-Term Follow-up Teach Us About Relapse and Prevention of Relapse in Addiction. British Journal of Addiction, 83, 1147-1157. Available http://www.csam-asam.org/sites/default/files/pdf/misc/Vaillant_Long_Term_Follow_Up_Article.pdf

** Selected references where copies are not available online, will be provided to bSAS under separate cover