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Clinical Topic Review 2013 - Behavioral Health Screening Among MassHealth Children and Adolescents

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Table of Contents

List of Tables

Executive Summary

This report is part of the Clinical Topic Review (CTR) series of evaluations that has been on-going for 15 years as part of the University of Massachusetts Medical School's Interdepartmental Service Agreement with the Massachusetts Executive Office of Health and Human Service. These CTR projects, conducted by the Center for Health Policy and Research (CHPR), investigate clinical issues of interest to MassHealth.

In 2008, the CTR examined the percentage of MassHealth enrollees who received behavioral health screenings at well child visits (WCVs) prior to a newly enacted screening requirement. Effective as of December 31, 2007, primary care providers were mandated to offer formal (standardized) behavioral health (BH) screening to MassHealth children and adolescents under the age of 21 years at all WCVs, using tools selected from the MassHealth menu of approved tools. This mandate was part of MassHealth's Children's Behavioral Health Initiative (CBHI) implemented in response to a 2001 Massachusetts class action law suit, *Rosie D. et al v. Patrick et al.*

The current 2013 CTR assessed the uptake of the required screening during two years (SFY 2010 and SFY 2012) following the implementation of the CBHI. We used a repeated cross-sectional design to examine change in BH screening, referrals, and treatment utilization. The 2010 and 2012 study populations each included children and adolescents under the age of 21 years who were enrolled in a MassHealth managed care organization (MCO) or the Primary Care Clinician (PCC) case management plan during the study period. Additional inclusion criteria were continuous enrollment and one or more paid claims for a WCV during the study period. The study population for each year was stratified into four age groups (6 months-2 years, 3-5 years, 6-11 years, and 12-20 years), with 500 members selected from each age group for inclusion in the analysis. This resulted in a total of 2000 MassHealth children and adolescents for each year. Two data sources were used: medical records and MassHealth claims data. Medical records were accessible for 1801 of these members (with 2332 WCVs) in 2010, and for 1840 (with 2355 WCVs) in 2012. In addition to examining differences in BH screening, referrals, and treatment utilization, multivariate logistic regression models were employed to examine associations between explanatory variables and formal screening.

Results from the 2013 evaluation suggest that the Children's Behavioral Health Initiative had a large impact on formal BH screening and treatment utilization among children and adolescents enrolled in MassHealth. Major findings include the following:

- **Behavioral health screening at WCVs is widespread, with the majority of screenings using MassHealth approved tools.**
    - In both 2010 and 2012, some type of BH screening occurred at approximately 86% and 89% of WCVs, respectively, with formal screening using MassHealth approved tools occurring at 73% and 74% of

  visits and informal screening/surveillance used at 13% and 15% of visits, respectively.
  - Screening increased substantially since the 2008 baseline, when only 4% of WCVs included a formal BH screen and 82% of WCVs included informal screening/surveillance.
- **The reported percentage of MassHealth children and adolescents who screened positive for BH conditions is consistent with reported prevalence of BH conditions among children in the US (estimated between 13% and 24%).**
  - Among WCVs that included formal screenings in 2010 and 2012, approximately 21% and 19%, respectively, had positive screening results.
  - Among those with informal screening/surveillance, the reported rate of positive screening results was 13% and 15% in 2010 and 2012, respectively.
- **The use of behavioral health screening tools in a language other than English is very low.**
  - Even though nearly 20% of each study cohort reported a language other than English as their primary language, use of a non-English version of a BH screening tool was noted in only 8% of WCVs.
  - Infrequent use of non-English screening tools was observed despite the fact that many of the formal screening tools currently approved by MassHealth are available in languages other than English.
- **Of the eight MassHealth approved BH screening tools, only three were used frequently**.
  - The most frequently used tools were:
    1) PEDS [Parents' Evaluation of Developmental Status] (46% in 2010 and 45% in 2012),
    2) PSC/Y-PSC [Pediatric Symptom Checklist] (combined 40% in 2010 and 39% in 2012); and
    3) M-CHAT [Modified Checklist for Autism in Toddlers] (12% in 2010 and 13% in 2012).
  - The tools used most frequently were simpler, one-page instruments rather than those with more complex sets of questions and scoring algorithms.
  - The results of BH screenings varied significantly by screening tool. Among the screening tools used most frequently, those denoted as positive ranged from 3% for the 2010 screens with the M-CHAT (6% in 2012) to 16% for the PEDS 2010 formal screens (12% in 2012) to a combined 24% for the 2010 PSC/Y-PSC screens (32% in 2012).
- **Some member characteristics were significantly associated with increased odds of formal BH screening after adjusting for sociodemographic characteristics and health plan membership.**

  - In both 2010 and 2012 members enrolled in a MCO had increased odds of receiving a formal BH screen compared to those enrolled a fee-for-service health plan.
  - Other demographic characteristics (Hispanic ethnicity, 3-5 year old age group) were found to be significantly associated with increased odds of formal BH screening in one of the two years, but not in both.
- **Referrals to BH services after screening were significantly higher in 2010 and 2012 than in 2008.**
  - In both 2010 and 2012, approximately 12% of WCVs included documentation of a referral to a BH service compared to less than 2% at baseline, regardless of the type of screening (i.e., formal screening, surveillance or no screening documentation).
  - Referrals following formal screening were higher than those subsequent to informal screening/surveillance. Additionally, referrals following both formal and informal BH screens were substantially higher following positive screens compared to those with negative screening results.
  - Although higher than baseline referral rates, the rates in 2010 and 2012 were significantly lower than expected based on feedback from presentations to pediatric providers.
- **Increased BH screening was associated with increased utilization of BH services.**
  - The majority of BH clinical encounters conducted during the six months following a WCV followed formal screening (72% in 2010 and 59% in 2012).
  - The percentages of BH encounters conducted in 2010 and 2012, in the six months following a WCV with formal screening, were substantially higher than at baseline (12%).
  - The percentages of BH encounters following WCVs with formal BH screening were significantly higher than BH encounters following WCVs with informal screening/ surveillance (23% in 2010 and 32% in 2012).
- **The majority of BH encounters were conducted in outpatient settings, even for children and adolescents requiring intensive services**.
  - In both 2010 and 2012, the vast majority of BH encounters were conducted in outpatient settings (nearly 100%, including Emergency Service Provider services). This represented a considerable increase in the percentage of BH encounters conducted in outpatient settings from 2008 (88%).
  - Setting did not vary depending on whether BH encounters followed formal, informal or no BH screening at the time of the WCV.

Specific areas for quality improvement activities include improving access to behavioral health screening and services among families where English is not the primary language. Not specific to quality improvement, but an area for further study includes exploring the role of the MCOs in enhancing rates of screening compared to well child visits (and subsequent screening) conducted by PCC providers. There is also a need to further explore the referral process because the chart abstractions from well child visits do not fully capture when referrals are made, the degree to which patients follow through with referrals, and the level of communication between primary care and behavioral health providers. It may also be fruitful to study behavioral health screening in relation to having a prior history of behavioral health conditions and/or already being engaged with behavioral health services, as well as to examine behavioral health service utilization beyond the initial six-month window after a screening is performed at a well child visit.

Challenges to implementing successful screening practices for nearly all preventive health measures will likely always exist at some level. Specific to behavior health screening, CBHI efforts have successfully focused on several known challenges, particularly those related to training and reimbursement. Addressing additional challenges to screening (e.g., confidence in ability to screen and in the validity of screening instruments, skills to manage behavioral health conditions effectively, identifying referral resources and treatment options for those who screen positive, and communicating effectively with families around BH conditions) in order to identify additional children and adolescents potentially at risk for behavioral health conditions should be explored further. However, equally important to identifying those who need further assessment and possibly intervention is the acknowledgement that screening fosters communication between patients/families and primary care providers around issues that might otherwise not be discussed during a well child visit – a vital first step.

The implementation of the Children's Behavioral Health Initiative has fundamentally transformed the relationship between primary care services and behavioral health services within the Commonwealth. The current study shows clearly that changes in regulation and payment have resulted in the implementation of widespread behavioral health screening in primary care practices in Massachusetts that care for children and adolescents on Medicaid.

1 Introduction

As part of the University of Massachusetts Medical School's Interdepartmental Service Agreement with the Massachusetts Executive Office of Health and Human Service, this project is part of the Clinical Topic Review (CTR) series of evaluations which has been on-going for 15 years. These CTR projects, conducted by the Center for Health Policy and Research (CHPR), have included focused studies of clinical issues of interest to MassHealth, particularly in the areas of access and quality of care. Past projects have included childhood immunizations, perinatal care, diabetes care, and preventive health care for women. The most recent project (in 2008), which examined behavioral health (BH) screening for children and adolescents, served as the baseline for the current study – CTR 2013: Behavioral Health Screening Among MassHealth Children and Adolescents.

In 2007, MassHealth identified the topic of BH screening for children and adolescents during well child visits (WCVs) in response to a 2001 Massachusetts class action law suit, *Rosie D. et al., v. Jane Swift, et al*. The suit was filed on behalf of MassHealth enrolled children under the age of 21 who had serious emotional disturbances. The Rosie D. remedy required MassHealth providers, including those contracted with MassHealth Managed Care Organizations, to offer standardized BH screening to children and adolescents at every WCV. MassHealth provided a menu of approved standardized BH screening tools that primary care providers could use for screening. The remedy was implemented December 31, 2007.

The primary goal of the current project is to *repeat* the CTR 2008 baseline study to assess the uptake of the required screening during two years (2010 and 2012) following the implementation of the statewide Children's Behavioral Health Initiative (CBHI). In addition, the current project examines BH referrals and treatment received, including use of new MassHealth home- and community-based BH services for children and adolescents. This project, which mirrors the methodology used in the CTR 2008 evaluation, provides information over and above that supplied by specific CPT codes required for billing.

One of the main values in repeating the CTR 2008 study design, which used chart reviews in addition to claims analyses, is that current billing codes do not provide any of the following information: which screening tools providers are using, documentation of referrals following screening, and the extent to which children's BH needs is related to subsequent BH service utilization. As in the 2008 study, the current study includes an extensive chart abstraction followed by a detailed analysis of MassHealth claims data, which provides for a comprehensive assessment of receipt of BH services. Children and adolescents with formal (i.e., standardized) screenings are compared with those who either were informally screened (i.e., surveillance/discussion of BH assessment, absent the use of a screening tool, noted in the chart) or not screened at all.

This project addressed the following questions:

a. What percentage of WCVs (2010/2012) includes a BH screening?

b. To what extent are providers using a standardized BH screening tool versus a non-standardized tool?

c. What types of standardized BH health screening tools are being employed?

d. What percentage of children and adolescents who received a BH screening screened positive for a BH condition?

e. Among those members who screened positive for a BH condition:

    i. What percentage was referred for additional BH assessments and diagnostic testing following a positive screen, according to the documentation in the provider's medical records? To what type of provider were those with a referral referred?

    ii. Using claims data, what types of BH services (inpatient, emergency department or outpatient) were provided within the six months following a positive screen versus a negative screen? To what extent were BH services received (i.e., encounters conducted) among those children and adolescents who were not screened at the index well child visit?

2 Background and Significance

In the United States, it is estimated that between 13% and 24% of all children have BH conditions (Kuo, Etzel, Chilton, Watson, & Gorski, 2012; Lucenko, He, Mancuso, Huber, & Felver, 2013; Merikangas et al., 2010; Perou et al., 2013; Romano-Clarke et al., 2014). These conditions become more prevalent as children grow older, and occur more frequently in boys (15% vs 8% of girls) and in low-income children (21% vs 6% of others) (U.S. Department of Health and Human Services, 2010). Over 75% of children with BH conditions do not receive the treatment they need (Kataoka, Zhang, & Wells, 2002), with children from racially/ethnically diverse backgrounds being less likely than whites to receive services (Merikangas et al., 2011; Pires et al., 2013; Stevens, Seid, Mistry, & Halfon, 2006). Lack of treatment can have significant consequences because children with BH conditions are at increased risk of suicide, dropping out of school, substance abuse, criminal behavior, and risky sexual behaviors (Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007; Lehrer, Shrier, Gortmaker, & Buka, 2006). In the United States, the cost of BH conditions among children and young adults less than 24 years old has been estimated at $247 billion dollars annually, when taking into account health care, special education, criminal justice, and decreased productivity (Perou et al., 2013).

Because evidence suggests that early intervention results in better outcomes (Belelieu, 2010; Sheldrick, Merchant, & Perrin, 2011; Shonkoff & Phillips, 2000; The National Institute of Mental Health, 2005), it is important to screen for BH conditions as early as possible. Pediatric health providers are uniquely positioned to administer BH screenings by including them as part of routine WCVs (Croghan & Brown, 2010; Keller & Sarvet, 2013; Kuhlthau et al., 2011; U. S. Government Accountability Office, 2012). However, even at other visits, the pediatric practice is an optimal environment to detect and address behavioral concerns because up to 50% of all pediatric office visits address a behavioral, psychosocial, and/or educational concern (Weitzman & Leventhal, 2006).

Behavioral health screening can occur at any pediatric visit, although formal screening typically refers to universal use of a standardized screening tool at all scheduled well child primary care visits (Romano-Clarke et al., 2014). Formal screening is not intended to be diagnostic, but is used to identify children who need further assessment or intervention.

2.1 Physician Use of Behavioral Health Screening Tools

The American Academy of Pediatrics (AAP) has long supported the importance of including BH screening as part of routine pediatric care. In 1996, the AAP published the *Diagnostic and Statistical Manual for Primary Care, Child and Adolescent Version*, which provides a framework for primary care physicians to identify and diagnose a wide range of behavioral and developmental issues. In 2010, the AAP Task Force on Mental Health recommended that pediatricians screen for BH problems as well as developmental delays, and that formal BH screening should be conducted as part of all pediatric WCVs (American Academy of Pediatrics Task Force on Mental Health, 2010; Romano-Clarke et al., 2014).

Even though recommended, BH screenings have not historically been routine and providers have been slow to adopt use of standardized screening instruments (Brown, Wissow, & Riley, 2007; Cooper, Valleley, Polaha, Begeny, & Evans, 2006; Ford, Steinberg, Pidano, Honigfeld, & Meyers, 2006; Reijneveld, Brugman, Verhulst, & Verloove-Vanhorick, 2004; Sand et al., 2005; Sices, Feudtner, McLaughlin, Drotar, & Williams, 2004; Williams, Klinepeter, Palmes, Pulley, & Meschan Foy, 2004; Wissow et al., 2013). For example, a 2003 national survey of family physicians and pediatricians found that only half used a formal BH screening tool (Sices et al., 2004). Another study (Williams et al., 2004) found that, among a random sample of 719 WCVs performed by pediatric residents, only 3% of the cases documented formal BH screening even though a psychosocial issue was discussed in 38% of these visits.

Several reasons have been cited by providers as to why screening tools aren’t utilized more often. In addition to time and insurance reimbursement, barriers include: a lack of: training; confidence in ability to screen; skills to manage behavioral and mental health conditions effectively; treatment options for those who screen positive; resources for referral; confidence in the validity of screening instruments; a fear of stigmatizing a child with a behavioral health or developmental condition; and an inability to communicate effectively with families around BH conditions (Hacker et al., 2013; Hart, Kelleher, Drotar, & Scholle, 2007; Pinto-Martin, Dunkle, Earls, Fliedner, & Landes, 2005; Sand et al., 2005; Weitzman & Leventhal, 2006; Wiefferink et al., 2006; Williams et al., 2004). These barriers have been consistently noted despite reports from pediatric providers that it's important to inquire about behavioral and developmental issues at WCVs (J. W. Miller, 2007).

Over the past ten years, BH screening rates have risen in response to policy and regulatory changes that mandate use of standardized screening instruments at WCVs. For example, since 2004, Medicaid providers in North Carolina have been required to screen all children using the Ages and Stages Questionnaire (ASQ) standardized screening tool at the 6, 12, 18 or 24, 36, 48, and 60 month WCVs (Earls, Shakelford, & Hay, 2006). A 2009 report (Klein & McCarthy, 2009) indicated that the rate of screening during WCVs in North Carolina dramatically increased statewide from 15% in 2000 to 80% in 2008.

In Massachusetts, as part of the judgment in the Rosie D. lawsuit,[1] all providers who contract with Medicaid (i.e., MassHealth) are required to conduct BH screenings at each WCV using one of the MassHealth approved standardized BH screening instruments. Early evidence, from a study conducted in two pediatric practices in Massachusetts, indicates that the use of these instruments during WCVs has increased dramatically from 17% in 2008 to 54% in 2009 and 66% in the first half of 2012 (Romano-Clarke et al., 2014).

2.2 Screening Instruments

Standardized screening instruments have been shown to be more effective in the identification of developmental, behavioral, and psychosocial issues in children than are clinical assessments alone (Borowsky, Mozayeny, & Ireland, 2003; Guevara et al., 2013; Murphy et al., 1996; Sheldrick et al., 2011). One study (Schonwald, Huntington, Chan, Risko, & Bridgemohan, 2009) evaluated a quality improvement initiative that required use of the Parents' Evaluation of Developmental Status (PEDS) screening tool with all patients attending WCVs between six months and eight years of age in two urban pediatric practices. Within one year, the practice change resulted in the screening of 62% of eligible children, with statistically significant increases in the identification of both developmental and behavioral concerns. Provider feedback noted the ease and feasibility of implementation within a busy primary care setting, as well as saving time and increased ability to identify children with problems. Ease and feasibility of use in a community-based pediatric clinic was also echoed by Rydz et al. in their implementation of two formal screening tools (Rydz et al., 2006). Even though many screening instruments are validated, standardized, easy to administer, and low-cost (Richardson et al., 2010; Rydz et al., 2006; Schonwald et al., 2009), implementation of a formal screening program requires both money and staff resources.

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[1] Rosie D. et al., v. Jane Swift, et al., Civil Action No. 01-30199-MAP

Sheldrick et al. (2011) performed a systematic review of studies to compare results from clinical assessments with those from formal screening tools. Findings showed that, while screening instruments identified a larger percent of children with BH conditions, clinical assessments were less likely to yield “false positives”. However, formal screening appears to offer benefits in addition to identifying at-risk children, as these screenings have been found to foster communication between parents and their children’s health providers with the potential to improve health care delivery (Garg et al., 2007; Hacker et al., 2014; Halfon, Inkelas, Abrams, & Stevens, 2005; Schonwald et al., 2009; Wildman, Stancin, Golden, & Yerkey, 2004; Wissow et al., 2013). Halfon et al. (2005), as well as Schonwald and colleagues (2009), found that parents whose children received assessments were more likely to discuss other issues with their child’s health provider. Wildman et al. (2004) noted that a mother’s disclosure to the pediatrician concerning her child’s psychosocial functioning was one of the best predictors in identifying psychosocial problems in primary care. Enhanced systematic interviewing and screening has been recognized to increase the disclosure of these concerns. And, health attainment is maximized when these interventions are begun early in a child’s life.

2.3 Follow-Up for Positive Screening Results

A positive screening indicates the need for further assessment, which can be performed by the pediatrician or by referral to a mental health professional (Rushton, Bruckman, & Kelleher, 2002). Rushton et al. (2002) reported on management and referral practices of clinician-identified psychosocial, behavioral and mental health problems (based on a secondary data analysis of 4012 patients cared for by 385 clinicians in four practice networks). They noted that the most common management strategy for patients at the initial visit was watchful waiting/no treatment (38%), followed by primary care counseling alone (33%), primary care counseling with medication prescription (18%), and prescribing medication alone (10%); only 16% of patients were referred to a mental health clinician at the index visit. Reasons providers often cited as barriers to referral included: the ability for the clinician to manage the patient in his/her primary practice; patient refusal; insurance limitations; and lack of available resources. Recognition, assessment, and referral processes are complex in the important role providers have in managing the primary care of children with developmental, behavioral and/or mental health conditions.

While there have been successful well child screening programs, i.e., in terms of high percentages of children and adolescents screened (Earls et al., 2006; Romano-Clarke et al., 2014), there is relatively little information on the full spectrum of care being provided as part of these screening programs, i.e., the number of screenings performed specifically during WCVs accompanied by their results in terms of screening and referrals and treatment subsequent to positive screens. Rushton et al. (2002) found that less than one-half of patients referred by their pediatrician had a mental health visit in the subsequent six months, highlighting the need for practices to support families and facilitate treatment throughout the referral process. In two pediatric practices, Romano-Clarke et al. (2014) examined referrals and use of BH services among children in the

Massachusetts Medicaid program after the implementation of mandated BH screening at WCVs. Results showed that, along with increases in screening, use of BH services increased. However, the increase in service use was low in relation to the number of children for whom further assessment and/or treatment seemed warranted.

Many researchers have identified the need for pediatricians to have greater training in children's mental health issues (Hacker et al., 2013; Kolko & Perrin, 2014; Kuo et al., 2012; Sarvet et al., 2010; Trupin, 2011). Continuing education and residency programs may be needed to provide the workforce with skills to advocate and provide effective treatment for children. All children – not only those with positive screening results – will benefit from this training, as parental concerns can drive clinical assessment even if score results do not indicate a BH need (Hacker et al., 2013; Gruttadaro & Markey, 2011).

Another area for improvement involves access to mental health specialists (Cummings, Wen, & Druss, 2013; Keller & Sarvet, 2013; Sarvet et al., 2010). There is a need for more pediatric mental health providers, as well as integration of BH services into primary care settings (Hacker et al., 2013; B. F. Miller, Mendenhall, & Malik, 2009). The expansion of the medical home model of care, both statewide and nationally, provides an opportunity to enhance collaboration among behavioral health and primary care providers, as well as to better manage the referral and treatment process (Kolko & Perrin, 2014). In addition, initiatives such as the Massachusetts Child Psychiatry Access Project (MCPAP) can provide pediatricians with access to timely psychiatric and clinical consultations (Holt, 2010; Sarvet et al., 2010).

3 Methods

We used a repeated cross-sectional design to examine BH screening and referral rates and BH services utilization over the course of implementation of the statewide CBHI. As the statewide CBHI was implemented in three phases[2] [1) BH screening at WCVs and monitoring and reporting screening rates begun December 31, 2007; 2) Child and Adolescent Needs and Strengths (CANS) assessments begun November 30, 2008; and 3) implementation of six new home- and community-based services started at various times during 2009], we chose the study periods to examine screening, referral and utilization during different phases of the implementation of the CBHI. The two study periods were: State Fiscal Year (SFY) 2010 (July 1, 2009 - June 30, 2010) and SFY 2012 (July 1, 2011 - June 30, 2012).

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[2] http://www.mass.gov/eohhs/gov/commissions-and-initiatives/cbhi/

3.1 Data Sources

Two data sources were used: 1) medical record data; and 2) MassHealth eligibility, claims and encounter data. Medical record data were used to assess standardized BH screening and referral to BH services. In addition, these data provided information on the type of standardized (i.e., formal) BH screening tool used and screening results (positive or negative).

We used MassHealth eligibility, claims and encounter data to identify the study population and to assess BH services utilization. The MassHealth Medicaid Management Information System (MMIS) consists of eligibility records and paid claims for services provided to Medicaid members. The eligibility data include information on member sociodemographic characteristics such as age, gender, race, ethnicity, and primary language spoken.

3.2 Study Population

A study population was identified for each study period (SFYs 2010 and 2012) and consisted of Medicaid-eligible children under the age of 21 years as of the last day of the respective study period (i.e., June 30, 2010 or June 30, 2012) who were continuously enrolled in a MassHealth managed care organization (MCO) or the Primary Care Clinician (PCC) case management plan with no more than one gap in enrollment of up to 45 days during the study period (e.g., July 1, 2009 - June 30, 2010). In addition, children and adolescents needed to have a paid claim for a well child visit (WCV) during the study period. WCVs were identified using CPT and ICD-9-CM diagnosis codes specified in the HEDIS 2010 Technical Specifications for the Well Child Visits and Adolescent Well Child Visits measures. Table 1 indicates the number of members in the study population who met the above criteria for each study period. The stratification of age groups was determined based on a combination of typical American Academy of Pediatrics (AAP) periodicities of guidelines for WCVs and the age groups recommended for many of the MassHealth approved formal screening tools.

Table 1. Study population of MassHealth members meeting eligibility criteria for random sampling, SFY 2010 & 2012

Age group	2010 N (%)	2012 N %
6 months - 2 years	51,086 (20.2)	50,551 (18.2)
3 - 5 years	50,213 (19.9)	56,792 (20.4)
6 - 11 years	71,596 (28.3)	81,979 (29.4)
12 - 20 years	79,969 (31.6)	89,035 (32.0)

3.3 Sample Strategy

A stratified random sampling design was used to select 500 members from each of the four age groups in each study period, resulting in a total sample size of 2000 members in each of the 2010 and 2012 study periods. Sample size calculations per age group were based on HEDIS sampling guidelines (n=~411) and increased by 20% to account for the possibility of medical records not being available during the abstraction period.

The sample size of 500 members per age group was also chosen to provide a 95 percent confidence interval of 10 percentage points under an assumption of random sampling. Table 2 presents the age groups, sample sizes and the number of prescribed WCVs per year.

Table 2. Sampling strategy for selection of MassHealth members and well child visits to be abstracted, by age group, for each study year

Age Group	Number in Sample Per Year	Well Child Visits Per Year
6 months - 2 years	500	5
3 - 5 years	500	1
6 - 11 years	500	1
12 - 20 years	500	1

3.4 Chart Abstraction Tool

We used the chart abstraction tool developed for the Clinical Topic Review project conducted in 2008 (See Appendix A). We added two questions to the tool based on additional information requested by EOHHS. We observed, at the beginning of the current chart abstraction period, that some visits billed as WCVs in the claims data were actually not WCVs according to medical records. In order to identify visits that were not WCVs (a criterion for inclusion), a question was added to identify when this criterion was not met. Also, EOHHS was interested in the use of non-English standardized BH screening tools so this question was added to the abstraction tool.

The chart abstraction tool was used to collect sociodemographic data such as age, gender, race, ethnicity, and primary language spoken at home. In addition, there was also a question about whether or not an interpreter was used during the WCV and, as previously mentioned, a question about the use of a non-English standardized BH screening tool. Pertaining to the primary study questions, the tool enabled collection of data on:

- Use of standardized BH tools as identified by MassHealth;
- Differential use of MassHealth approved screening tools used by providers;
- Use of non-MassHealth approved formal BH screening tools or documentation of provider surveillance (i.e., informal screening) of BH conditions;
- Results of screenings by any of the methods described above;
- Documentation of follow-up activities conducted by the provider (e.g., advice or counseling provided to the patient during the visit, referral to a mental health provider or facility, parent or patient refusal or deferral of BH screening services); and
- Facility or provider to whom a referral was made.

As noted in the 2008 Clinical Topic Review final report, the tool was developed in consultation with several practicing physicians including a pediatrician, a family physician, and a developmental/behavioral pediatric specialist (Savageau et al., 2009).

3.5 Pilot Test of Chart Abstraction Tool

A pilot test of our chart abstraction tool was conducted in one primary care pediatric practice in central Massachusetts. As the adoption of electronic medical records (EMRs) has increased dramatically since the 2008 project, we selected a practice for the pilot test which used primarily an EMR system so that we could examine the extent to which BH screening information is stored in such systems. Fifty (50) medical records of MassHealth-insured patients were abstracted by the project research associate. Charts were selected to represent the four age groups of interest. The data variables were abstracted from the medical record onto hardcopy paper forms for subsequent review by the project research associate and principal investigator.

Details from the pilot test were used to identify the location and extent of information stored in an EMR system as it pertains to sociodemographic and BH screening data. This information was included in the chart abstraction training manual to facilitate efficient abstraction. In addition, results from the abstraction were discussed with the practice's medical director in order to provide information on the practice's BH screening rates.

3.6 Chart Abstraction

CHPR issued a Request for Response (RFR) to procure chart abstraction services for the medical record review. Through the RFR, CHPR sought a medical record review vendor that had extensive experience in performing cost effective chart abstraction, along with resources and experience to:

a) provide and maintain an automated data collection and data entry application based on the CBHI Abstraction Tool (Appendix A);
b) provide and maintain a secure centralized electronic database for all CBHI chart abstraction data;
c) create and implement a quality assurance plan for quality control purposes; and
d) provide CHPR with access to a secure, web-based application for all data abstracted.

Three companies submitted responses for consideration. CHPR chose New York County Health Services Review Organization (NYCHSRO) to conduct the medical record review because of their experience performing chart abstraction, technical expertise, and satellite location in Massachusetts. NYCHSRO was contracted to collect sociodemographic and BH screening information on MassHealth members selected into the study sample. Data were collected using medical record review by abstractors licensed in nursing with a minimum of three years of chart abstraction experience.

Once CHPR identified the sample of children and adolescents and performed some data cleaning, a data file was sent to NYCHSRO that contained member names, ID numbers, WCV dates, and provider names, addresses and phone number (when available). NYCHSRO subsequently developed a protocol for standardizing the provider names and addresses as supplied to them. The latter was particularly important since providers sometimes practice at different sites for the same health care organization or are part of a large group practice. To reduce the number of contacts to practices and improve the efficiency of the abstraction process, whenever possible providers were rolled up to the umbrella organization. This was accomplished using provider addresses and phone numbers (when available) and phone confirmation with practices when necessary. This was an iterative process as additional information from provider practices was received.

NYCHSRO matched MassHealth members for the two sample years to determine which records required onsite abstractions and which were to be abstracted remotely (medical records mailed or securely faxed by practices to NYCHSRO). If a provider had five or more medical records to be abstracted, an onsite visit was scheduled. When fewer than five medical records were to be abstracted, the medical record abstraction occurred remotely at NYCHSRO. The two settings for abstraction will be referred to later in this report as type of abstraction.

The protocol to schedule medical record abstractions included at least three completed attempts to contact providers by NYCHSRO staff via letters and telephone calls. Provider practices initially were contacted by letter to schedule onsite visits or to arrange for the medical records to be mailed or faxed to NYCHSRO. The vast majority of follow-up contacts occurred by telephone. All attempts to contact providers were documented and tracked electronically.

NYCHSRO, in collaboration with CHPR, developed a training manual for nurse abstractors. After the abstractors were trained, they had to pass Gold Standard Testing before they began chart abstraction. In addition, chart abstractors had to attain an inter-rater reliability (IRR) score of 95% or higher prior to formal data collection. In order to insure quality control and consistency throughout the data collection process, NYCHSRO conducted IRR testing and quality over-reads. Additional IRR testing was performed one and three months after chart abstraction began. Quality over-reads were conducted on 25% of the medical records abstracted during the first month of data collection. Quality over-reads were subsequently completed on 10% of the medical records reviewed until the end of data collection period. If there was disagreement between the over-read review and the original review, the over-read review data was saved to the final data file. The over-read review processes were maintained for each of the chart reviewers. Weekly meetings between CHPR and NYCHSRO provided another step in evaluating the quality of data collection.

The two chart abstractors hired and trained by NYCHSRO to review medical records documented results of their WCV reviews in an electronic version of the abstraction tool. All relevant supporting documents were scanned for subsequent use and available for

CHPR review via a secure online data portal. Also, the chart abstractors documented all instances where a provider could not furnish the requested medical record and noted the reasons for missing records using a list of standardized categories. This documentation was sent to CHPR along with a number of additional weekly reports with status updates. In addition to the provider issues report, other weekly reports included: 1) member issues report; 2) record procurement (visit based) report by provider; 3) abstraction completion (visit based) report by week; 4) dashboard indicating provider and member attrition and replacement (member based); 5) dashboard (visit based) indicating cumulative medical record procurement and abstraction completed (total and by type of abstraction); 6) member abstraction report (total and by type of abstraction); 7) provider contact report; 8) member name and sociodemographic discrepancy report; 9) quality over-read report; and 10) IRR scoring report.

A computerized medical record data collection instrument that mirrored the chart abstraction tool was developed by NYCHSRO. All charts were abstracted using a secured laptop, and data were captured in accordance with the project's specifications (i.e., whenever possible, the tool contained data checks to prevent abstractors from entering conflicting or invalid data). NYCHSRO was responsible for developing and conducting all testing of the computerized data collection system to ensure it was operational, accurate and secure.

3.7 Behavioral Health Claims Data

Chart abstraction data were supplemented by MassHealth MMIS claims data to provide information on members who received BH services within six months of the WCV regardless of screening result (positive or negative). The BH services identified by MassHealth for the 2008 baseline BH utilization analysis were included in the current analysis. In addition, CHPR worked closely with MassHealth and the EOHHS CBHI's Acting Director to identify the new home- and community-based services implemented in 2009. These services included: intensive care coordination; family support and training; mobile crisis intervention; therapeutic mentoring; in-home behavioral services; and in-home therapy. A comprehensive list of BH service codes was compiled including CPT, HCPCS, revenue and ICD-9-CM diagnosis codes. Only primary diagnosis codes were used. Codes were also abstracted to identify the setting in which the BH encounters were conducted (i.e., inpatient, emergency department, outpatient, and emergency services program). Paid claims from July 1, 2009 to December 31, 2012 were extracted to account for the six-month follow-up period. Claims related to labs, radiology, or pharmacy were excluded. The MassHealth member ID number was used to link chart abstraction data to claims data.

3.8 Outcomes Measures

Listed in Table 3 are the outcome measures examined in this study. The measures included: 1) formal screening rate for BH conditions; 2) positive screening rate for BH conditions; 3) referral rate for BH services; and 4) utilization of BH services.

Table 3. Outcome measures and affiliated data sources

Measure	Description	Source
Formal screening rate	The percent of well child visits for children and adolescents with a standardized behavioral health screening. Standardized behavioral health tools are those approved by MassHealth.	Medical record data
Positive screening rate	The percent of well child visits for which a positive screen for behavioral health conditions resulted from a formal screening.	Medical record data
Referral rate	The percent of well child visits where a positive screen from a formal screening resulted in a referral for behavioral health services.	Medical record data
Behavioral health utilization		
Formal screening	The percent of well child visits with a screen (positive or negative) from formal screening where the child subsequently received treatment within six months of the screen.	Medical record and MassHealth claims data
Informal screening/surveillance	The percent of well child visits with a screen (positive or negative) from informal screening where the child subsequently received treatment within six months of the screen.	Medical record and MassHealth claims data

As indicated in Table 3, formal screening refers to the use of standardized BH screening tools approved by MassHealth. The names and information pertaining to the MassHealth approved tools (approved during SFYs 2010 and 2012) are included in Appendix B.

In addition, we report (in Findings below) BH screenings which were recorded using formal screening tools not currently approved by MassHealth (e.g., the DDS [Denver Developmental Screening], HEADDS [**H**ome & environment, **E**ducation & employment, **A**ctivities, **D**rugs, **S**exuality, and **S**uicide/depression], and the CBCL [Child Behavior Checklist]). Also included in this outcome measure were ‘formal’ screening tools that were not validated (e.g., Vanderbilt ADHD Diagnostic Rating Scale). Lastly, we recorded informal BH screening which included provider surveillance (e.g., general observations about BH noted in the child’s medical records). The percent of WCVs for which a positive screen for a BH condition resulted from an informal screening was reported.

We also examined the type of BH services received within six months of the screen. The service type was based on the setting in which the BH service was received (i.e., where the BH encounter was conducted). The four types of services were identified using MassHealth claims data: 1) inpatient; 2) emergency department (ED); 3) outpatient; and 4) Emergency Service Providers (ESP). ESP provides necessary BH services in the community including crisis assessment, intervention and stabilization.

Formal screening and screening results had to be documented in the medical record in order for the screening to be classified as having been administered. Documentation included a paper or scanned copy of the completed formal tool or notes that a formal tool was used. The name of the tool had to be included in the documentation. Blank tools in the medical record did not count without documentation that the tool was administered, scored, and interpreted (e.g., positive, negative). Undated tools did not count unless there was evidence that the tool was completed during the visit that corresponded to the visit date provided.

Documentation of informal screening and screening results had to be documented in the medical record as well. However, the requirements for documentation (as noted on the chart abstraction tool) varied depending on whether a non-MassHealth approved tool or more informal screening/surveillance was used.

Each BH tool and referral type had an open-ended response variable for responses that could not be coded to closed-ended variables by the chart abstractors. Post-coding was subsequently performed independently by at least two members of the research team. Differences in post-coding were discussed until joint agreement was achieved. This consensus included, where necessary, bringing in the consultation of a pediatrician for clinical clarification of the open-ended text.

3.9 Explanatory Variables

Explanatory variables for the bivariate and multivariate analyses of formal BH screening included age, gender, race, ethnicity, primary language spoken at home, and MassHealth plan type. All sociodemographic variables were obtained from medical records except for MassHealth plan type which was derived from MassHealth enrollment data. However, our chart abstractions revealed substantial missing data for race, ethnicity and primary language. For these three variables, we supplemented missing data from the medical records using MassHealth enrollment data when available. For race and ethnicity, we also imputed missing values based on the majority characteristics of our study population (for subsequent sensitivity analyses as described below).

Age was based on the four age strata used for sampling: 1) 6 months to 2 years; 2) 3 to 5 years; 3) 6 to 11 years; and 4) 12 to 20 years. Gender was a dichotomous variable (male/female). Race was classified based on MassHealth categories including white, black or African American, Asian or Pacific Islander, American Indian or Alaskan American and other race. Race was collapsed into a binary variable with white and non-white as the two categories for subsequent analyses. Ethnicity was categorized as a binary variable measuring if the member was Hispanic or not. Primary language was originally collected as English, Spanish and other but was also collapsed into a dichotomous variable with English and non-English as the two categories. Lastly, plan type was classified as a binary variable based on MassHealth members being covered by one of two types of health plans: 1) a managed care organization (MCO); or 2) the Primary Care Clinician (PCC) case management plan.

3.10 Data Analysis

For each study period, medical record data were used to assess the percent of WCVs for children and adolescents that included screenings for BH conditions. The assessment also included the percent of visits for which the child screened positive for these conditions, the percent of those visits where a positive screen subsequently resulted in a referral for BH services (as documented in the medical record) and the percent of those visits with a screen (positive or negative) where the child or adolescent subsequently received treatment within six months of the screen. In addition, the frequency and percent of use for each formal screening tool was computed as well as the percent of children and adolescents who screened positive with each tool. Also, the frequency of each non-MassHealth approved screening tool used and the percent with positive results for each of these tools was computed. These analyses were performed at the visit level to correlate with the expectations of the Rosie D remedy's implementation; i.e., that all WCVs include formal BH screening using a MassHealth approved screening tool.

Frequency and percentile distributions were computed for sociodemographic characteristics based on the categorical nature of the data elements. Some analyses were stratified by age group. Chi-square tests assessing the relationship between sociodemographic characteristics and formal screening were also performed. Univariate and unadjusted bivariate analysis involving sociodemographic characteristics were performed at the member level.

Multivariable logistic regression models for each study period were developed to examine associations between sociodemographic characteristics and formal screening. The multivariate models were initially developed based on variables significant at $p=0.20$ level in the bivariate analysis. Next, we constructed models that were adjusted for the other sociodemographic characteristics. There was significant missing data for race and ethnicity so we developed a third set of models in order to perform a sensitivity analysis to evaluate the potential bias resulting from the missing data. The approach entailed constructing dummy variables for the missing data and (in independent analyses) to imputing missing values based on the majority characteristics of the study population (e.g., white for race and non-Hispanic for ethnicity). The multivariate models were then re-run with the dummy variables and imputed values (as independent models). Statistical significance was evaluated at the ≤0.05 level. All analyses were performed using SAS version 9.3.

The CBHI project was reviewed and approved by the University of Massachusetts Medical School Institutional Review Board.

4 Findings

Of the original 4000 MassHealth members randomly selected to have their 2010 or 2012 WCVs abstracted (i.e., 2000 members independently sampled in each of the two fiscal years), our external vendor (NYCHSRO) was able to secure 3801 (of 4000) medical records for a 95.0% chart retrieval rate. It was expected that some charts would be unavailable for review despite repeated attempts to locate them (e.g., lost records, records moved to another provider's office, etc.).

While we sampled the 2000 records per study cohort (2010 and 2012) stratified by age group so that we had an equal number of MassHealth members per strata, the number of WCVs to be abstracted differed by age group. There were more visits to be reviewed in the 6 months – 2 year age group than in the other strata reflecting the recommended periodicity of health maintenance visits in those children two years of age and younger. Thus, it was not surprising that over 40% of the total visits reflected those in the youngest age group while the other strata reflected children and adolescents for whom the recommended frequency of well care visits is annual.

The 4000 MassHealth members sampled incurred a total of 5214 WCVs. NYCHSRO successfully reviewed 4967 of those visits for an abstraction rate of 95.3%. We were highly satisfied with the exemplary 'chart chasing' that the vendor did for this project. The high mobility of this patient population, coupled with multiple provider locations, resulted in significant time required and expended to locate patients and their 2010 and/or 2012 medical records.

Of the 3801 MassHealth members whose records were secured, chart abstractions exclusion criteria were implemented. A total of 160 medical records and 280 WCVs were excluded from analysis because the chart abstraction revealed that the visit was not a WCV and/or the visit was outside of a +/- 2-day window of the visit date as supplied by MassHealth. The 2010 dataset represented 1801 MassHealth members and 2332 WCVs, while the 2012 dataset represented 1840 MassHealth members and 2355 WCVs (Table 4). Follow-up meetings with NYCHSRO revealed no pattern of practice location nor practice size correlating with the need to exclude the charts/visits as outlined above.

Table 4. Original sample pulled for chart abstraction by age group, plus number of member's medical records and well child visits abstracted, SFY 2010 & 2012

	Children sampled (N=2000 per year)		Members' charts abstracted		Well child visits abstracted	
	2010	2012	2010	2012	2010	2012
Age group	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
6 months - 2 years	500 (25.0)	500 (25.0)	469 (26.0)	467 (25.4)	1000 (42.9)	982 (41.7)
3 - 5 years	500 (25.0)	500 (25.0)	453 (25.2)	460 (25.0)	453 (19.4)	460 (19.5)
6 - 11 years	500 (25.0)	500 (25.0)	449 (24.9)	456 (24.8)	449 (19.3)	456 (19.4)
12 - 20 years	500 (25.0)	500 (25.0)	430 (23.9)	457 (24.8)	430 (18.4)	457 (19.4)

4.1 Chart Abstraction Format

As described in the Methods section, the abstraction of WCVs was done through one of two means: onsite (using paper-based records, electronic medical records (EMRs) or a combination of both record types) or via remote access to the visit information (i.e., through secured faxed or mailed copies used for subsequent review at the vendor's central office). Table 5 reflects the distribution of charts reviewed based on their format for 2010 and 2012, plus historical data from our CTR 2008 baseline study. As this table shows, there was substantial growth in EMR-only records from 20% to 82% over the five-year time span with a concomitant decrease in the number of medical records which were paper-based only (decreasing from 34.3% to 11.1%).

Table 5. Patient chart access for the total number of well child visits reviewed, SFY 2007, 2010 & 2012

			Well Child Visits			
	2007[1] (N=1355)		2010 (N=2332)		2012 (N=2355)	
Type of Access	N	(%)	N	(%)	N	(%)
EMR only	265	(19.5)	1742	(74.7)	1924	(81.7)
Paper only	465	(34.3)	366	(15.7)	262	(11.1)
Partial EMR	105	(7.8)	196	(8.4)	153	(6.5)
Remote review (fax)[1]	520	(38.4)	28	(1.2)	16	(0.7)

[1] In our 2008 baseline study (using SFY2007 data), data was not available to determine if faxed medical records were from paper-based versus electronic medical records. We were able to determine this for nearly all 2010 and 2012 abstractions, though over 30% of those records *were* faxed to the chart abstraction vendor and reviewed remotely (i.e., at their facility).

4.2 Sociodemographic Characteristics

Table 6 presents the sociodemographic characteristics of the MassHealth members whose charts were abstracted. Our sampling strategy as described above resulted in equal distributions of members by age group. The study populations were also equally divided by gender (52.0% male in 2010; 51.1% male in 2012). However, the population was approximately 60% white (57.9% in 2010; 59.5% in 2012), nearly 40% Hispanic (41.6% in 2010; 41.9% in 2012); and more than three-quarters primarily English speaking (82.2% in 2010; 81.4% in 2012). Although nearly 20% of MassHealth members were identified as being non-English speaking, the use of interpreters for the WCVs abstracted was infrequently recorded in the medical records (4.2% in 2010; 4.1% in 2012). Finally, MassHealth members were more likely to be covered in one of the Managed Care Organization (MCO) plans compared to the Primary Care Clinician (PCC) case management plan which uses a fee-for-service reimbursement model under MassHealth (70.2% in 2010; 63.7% in 2012).

Table 6. Sociodemographic characteristics of MassHealth members, SFY 2010 & 2012

	MassHealth Members	
Characteristics	**2010 (N=1801)[1] N (%)**	**2012 (N=1840)[1] N (%)**
Age group		
6 months - 2 years	469 (26.0)	467 (25.4)
3 - 5 years	453 (25.2)	460 (25.0)
6 - 11 years	449 (24.9)	456 (24.8)
12 - 20 years	430 (23.9)	457 (24.8)
Gender		
Male	937 (52.0)	941 (51.1)
Female	864 (48.0)	899 (48.9)
Race		
White	825 (57.9)	872 (59.5)
Non-White	599 (42.1)	594 (40.5)
Ethnicity		
Hispanic	494 (41.6)	522 (41.9)
Non-Hispanic	694 (58.4)	725 (58.1)
Primary language		
English	1481 (82.2)	1498 (81.4)
Spanish	169 (9.4)	212 (11.5)
Other[2]	141 (7.8)	117 (6.4)
Unknown	10 (0.6)	13 (0.7)
Interpreter used at time of visit		
Yes	76 (4.2)	76 (4.1)
No	1724 (95.8)	1763 (95.9)
Interpreter language		
Spanish	22 (68.8)	28 (71.8)
Other[3]	10 (31.2)	11 (28.2)
Plan type		
Managed Care Organization (MCO)	1264 (70.2)	1172 (63.7)
Primary Care Clinician case management plan (PCC)	537 (29.8)	668 (36.3)

(Footnotes are on the following page)

[1] N's for individual demographic variables may not total to the number of members whose records were abstracted in each of the 2 cohort years because of sporadic missing data. However, missing data was far more prevalent for member race and ethnicity (as described in the Methods).

[2] Other (Primary Language): In 2010, primary language included a total of 17 different languages including, for example: Arabic, Farsi, Somalia, Portuguese, Bengali, Tigrinya, and Urdu. In 2012, there were 21 different languages noted in the medical record, including, for example: Vietnamese, Chinese, Hindi, Albanian, Nepali, Polish and Turkish.

[3] Other (Interpreter Language): In 2010, only 32 of the 76 encounters with an interpreter had the actual interpreted language recorded in the medical record; languages included Lao, Portuguese, Russian, Vietnamese and Cantonese. In 2012, only 39 of the 76 encounters had the interpreted language specified in the medical record; languages included: Portuguese, Kurdish, Arabic and Vietnamese.

4.3 Behavioral Health Screening

Unlike the sociodemographic characteristics of the two study samples which were presented at the member level (so as not to over-represent the characteristics of the children and adolescents whose medical records were reviewed), the vast majority of the screening data and follow-up BH service utilization is presented at the visit level. As can be seen in Table 7, nearly three-quarters of all WCVs abstracted had evidence of formal BH screening recorded in the medical record (73.0% in 2010; 73.9% in 2012). These percentages are significantly higher than the 4.0% of visits with formal screening in the 2008 baseline study (using SFY2007 data). As Table 7 also shows, the nearly three-quarters of WCVs with a formal screening using one of the eight currently approved MassHealth screening tools were supplemented by additional 'formal' screens using tools not on the MassHealth listing (i.e., an additional 97 visits, beyond the 1703, had a formal screen completed in 2010; an additional 85 visits, beyond the 1741, had a formal screen completed in 2012).

Among those visits without formal screening, one-half of them had notes in the medical record indicative of informal screening/surveillance (13.3% in 2010; 14.8% in 2012). The remaining visits had no documentation of BH screening (13.7% in 2010; 11.3% in 2012). The percentage of visits with informal screening/surveillance was significantly lower in 2010 and 2012 compared to our baseline study where the rate was 81.8%.

As noted above in the Methods section, the Rosie D remedy requires primary care providers of children 0 - 20 years of age to offer to perform formal screening for BH conditions. Thus, this allows parents and other caregivers to refuse screening at the time of the WCV. Refusals were noted only in a minimal number of instances (1.1% in 2010; 0.6% in 2012; Table 7).

Table 7. Behavioral health screening at well child visits and screening results as documented in the medical record, SFY 2010 & 2010

	Well Child Visits	
Type of screening	2010 (N=2332)[1] N (%)	2012 (N=2355)[1] N (%)
MassHealth approved tool[2,3]	1703 (73.0)	1741 (73.9)
Positive	230 (21.2)	216 (19.3)
Negative	856 (78.8)	902 (80.7)
Informal surveillance[3]	310 (13.3)	348 (14.8)
Positive	83 (29.4)	107 (33.3)
Negative	199 (70.6)	214 (66.7)
Other formal tool[4]	97	85
Positive	n/a	n/a
Negative	n/a	n/a
No screening or surveillance	319 (13.7)	266 (11.3)
Refused screening	25 (1.1)	13 (0.6)

[1] The total number of well child visits is categorized by the number of formal screens, informal screens, or visits with no screening/surveillance. The number of formal screens with non-MassHealth approved tools and the number of visits where screening was refused are not counted in this total.

[2] Of the 8 MassHealth approved screening tools

[3] Nearly one-third of medical records with evidence of behavioral screening (formal or informal) were absent documentation of the results of those screens. Only 1086 of 1703 formal screens had documentation of screening results in the medical record for SFY2010; 1118 of 1741 formal screens in SFY2012 had documentation of screening results in the medical record. 282 of 310 informal screens in SFY2010 had documentation of screening results, while 321 informal screens of 348 had screening results documented in SFY2012.

[4] Non-MassHealth approved formal tools used (see Table 8); there was inconsistent/incomplete documentation in the medical record regarding the results of these screenings, so 'positive' and 'negative' notations are not indicated in the table.

The results of the formal screening are also noted in Table 7. Similar to the reported prevalence of BH conditions in children in the literature, positive screens were documented in 21.2% of the visits abstracted in 2010 (among those with formal screening) and among 19.3% of the 2012 abstracted visits (compared to 7.4% of the visits in the baseline study where formal screening occurred). Of the 1703 formal screens documented in the 2010 medical records (among those visits where a screen occurred using one of the MassHealth approved tools), only 1086 had results recorded (positive or negative) (63.8%). Similarly, of the 1741 formal screens among the 2012 abstractions, only 1118 had results indicated in the medical record (64.2%; Table 7). This lack of documentation was significantly more prevalent in the baseline study where only one-third (32.4%) of the medical records had documentation of screening results.

4.4 Standardized Tools Used for Behavioral Health Screening

The Methods section describes the current list of standardized screening tools approved by MassHealth for BH screening (also detailed in Appendix B). Of the eight screening tools currently approved by MassHealth, only three of them were used with any substantive frequency. As can be seen on Table 8, the most frequently used tool was the PEDS (46.3% in 2010; 44.6% in 2012), followed by the PSC/Y-PSC (combined 39.7% in 2010; combined 38.6% in 2012) and the M-CHAT (12.2% in 2010; 12.9% in 2012). The use of the other 5 approved screening tools ranged from 0% (e.g., BITSEA and SDQ) to 4.2% (CRAFFT) in 2010 with similar values seen in 2012 (Table 8). In addition to the MassHealth list of approved tools, providers also used (in a limited capacity) a variety of other formal screening tools, the most prevalent of which was the HEADSS, a common tool used in adolescent health maintenance visits.

The results of the BH screenings also varied significantly by tool (Table 8). Among the screening tools used more prevalently, those denoted as positive ranged from 3.3% for the 2010 screens with the M-CHAT (5.7% in 2012) to 15.8% for the PEDS 2010 formal screens (11.5% in 2012) to a combined 24.3% for the 2010 PSC/Y-PSC screens (32.1% in 2012).

As described in the Methods section, many of the formal screening tools currently approved by MassHealth are available in languages other than English. However, despite the fact that the medical records indicated nearly 20% of each study cohort listed a language other than English as their primary language, the use of tools in a language other than English was fairly uncommon (8.0% in 2010; 7.9% in 2012).

Table 8. Use of formal behavioral health screening tools, and frequency of positive results, SFY 2010 & 2012

	Well Child Visits			
	2010		2012	
	Tool Used N (%)	Positive Results N (%)[1]	Tool Used N (%)	Positive Results N (%)[1]
MassHealth Approved Screening Tools[2]	N=1703		N=1741	
ASQ	53 (3.1)	3 (5.7)	77 (4.4)	3 (3.9)
BITSEA	0	N/A	0	N/A
CRAFFT	72 (4.2)	4 (5.6)	78 (4.4)	4 (5.1)
M-CHAT	211 (12.2)	7 (3.3)	228 (12.9)	13 (5.7)
PEDS	789 (46.3)	125 (15.8)	776 (44.6)	89 (11.5)
PHQ-9	16 (0.9)	1 (6.2)	18 (1.0)	3 (16.7)
PSC	552 (31.9)	85 (15.4)	526 (29.8)	81 (15.4)
Y-PSC	135 (7.8)	12 (8.9)	156 (8.8)	26 (16.7)
SDQ	0	N/A	2 (0.1)	0

(continues)

Table 8. Use of formal behavioral health screening tools, and frequency of positive results, SFY 2010 & 2012 (continued)

	Well Child Visits			
	2010		2012	
	Tool Used N (%)	Positive Results N (%)[1]	Tool Used N (%)	Positive Results N (%)[1]
Non-English version of tool used	137 (8.0)	N/A	138 (7.9)	N/A
Other Formal Screening Tools[3]	N=97		N=85	
CBCL	5 (5.2)	1 (20.0)	2 (2.3)	0
HEADSS	70 (72.2)	11 (15.7)	65 (76.5)	14 (21.5)
DDS	6 (6.2)	0 (0)	5 (5.9)	0 (0)
Other (NICHQ/ Vanderbilt)	16 (16.5)	1 (6.2)	13 (15.3)	1 (7.7)

[1] Percent based on times the tool was used

[2] See Appendix B for detailed tool information

[3] Other Formal Behavioral Health Screening Tools (Non-MassHealth approved): CBCL - Child Behavior Checklist; HEADSS – Home/environment, Education/employment, Activities, Drugs, Sexuality, and Suicide/depression; DDS - Denver Developmental Screening; NICHQ/Vanderbilt - National Institute for Children's Health Quality Vanderbilt Assessment Scale

4.5 Referrals to Service Providers

Referrals to a variety of service organizations and individual providers were captured in our chart abstractions with significant detail. Overall, in both 2010 and 2012, referrals were made following a WCV for approximately one in ten well child visits (12.0% in 2010 [281 of 2332 visits]; 12.5% in 2012 [294 of 2355 visits]) regardless of type of screening, result of screening or site/specialist to whom the MassHealth member was referred.

Referrals to healthcare facilities (e.g., community mental health centers, substance abuse counseling/treatment facilities, and managed care BH contracting agencies) as well as individual mental health providers (e.g., psychiatrists, psychologists and social workers) and medical professionals (e.g., hearing or vision specialists, behavioral/ developmental pediatricians, and speech/physical/occupational therapists) are outlined in Table 9. Nearly two-thirds of referrals were to medical professionals (64.8% in 2010; 60.9% in 2012) with very few referrals made to healthcare facilities (4.9% in 2010; 6.8% in 2012). In nearly one in ten referrals, the medical record did not document to whom the BH referral was made.

Table 9. Behavioral health referrals following well child visits as documented in the medical record, SFY 2010 & 2012

	Number of Referrals[1]	
	2010 (N=281)	2012 (N=294)
Total Number of Referrals	**N (% of WCVs)**	**N (% of WCVs)**
Based on number of WCVs	281 (12.0; 2332 WCVs)	294 (12.5; 2355 WCVs)
Referral Characteristics	**N (% of total referrals)**	**N (% of total referrals)**
Site of referrals:		
Health care facilities[2]	14 (4.9)	20 (6.8)
Mental health professionals[3]	56 (19.9)	68 (23.1)
Medical professionals[4]	182 (64.8)	179 (60.9)
Unknown (referral site not noted in medical record)	29 (10.3)	27 (9.2)
	N (% of screens)	**N (% of screens)**
Referrals following a formal screening[5]	162 (9.5; 1703 screens)	143 (8.2; 1741 screens)
Following a positive screen	34 (14.8; 230 screens)	24 (11.1; 216 screens)
Following a negative screen	70 (8.2; 856 screens)	63 (7.0; 902 screens)
Referrals following an informal screening/surveillance[6]	27 (8.7; 310 screens)	51 (14.7; 348 screens)
Following a positive screen	15 (18.1; 83 screens)	34 (31.8; 107 screens)
Following a negative screen	9 (4.5; 199 screens)	14 (6.5; 214 screens)

[1] In 2010, 281 out of 2332 well child visits (12.0%) included referrals to behavioral health service providers. In 2012, 294 out of 2355 well child visits (12.5%) included referrals.

[2] Health care facilities included, for example: community mental health centers, emergency service providers, and substance abuse counseling centers. An additional 16 visits had referrals noted to 'other' facilities, collective of both 2010 and 2012 cohort years.

[3] Mental health professionals included, for example: psychiatrists, psychologists, social workers, school counselors, family therapists, and substance abuse counselors. An additional 48 visits had referrals noted to 'other' mental health professionals, collective of both 2010 and 2012 cohort years.

[4] Medical professionals included, for example: behavioral/developmental pediatricians, adolescent medicine specialists, surgical specialists, physical therapists, occupational therapists, learning disability specialists, speech and language specialists, and hearing and/or vision specialists. An additional 2 visits had referrals noted to 'other' medical professionals, collective of both 2010 and 2012 cohort years.

[5] As noted in Table 7 (footnote 3), not all screens (formal or informal) had subsequent information documented in the medical record as to the screening result: positive or negative. The number (and percent) of referrals following a positive or negative screen is based on the number of WCVs with screens for which the screening result was known (i.e., SFY2010: 162 of 1703, 34 of 230, and 70 of 856; SFY12: 143 of 1741, 24 of 216, and 63 of 902); see Table 7.

[6] Detailed in footnote 5 above, the counts and calculations of referrals following an informal screen and the resultant positive or negative assessment was based only on the screens for which results were documented in the medical record (i.e., SFY2010: 27 of 310, 15 of 83, and 9 of 199; SFY2012: 51 of 348, 34 of 107, and 14 of 214): see Table 7.

When formal screening was conducted at the WCV, referral rates were 9.5% in 2010 and slightly less at 8.2% in 2012. These rates varied depending on whether the formal screen was scored as positive (14.8% in 2010 and 11.1% in 2012) or negative (lower rates at 8.2% in 2010 and 7.0% in 2012). These rates were significantly higher than those observed in our CTR 2008 baseline study. For example, the rate of referrals following a positive formal screen was only 1.3% (compared to the 14.8% as noted above).

Table 9 also shows that referrals made following informal screening/surveillance were significantly fewer than those made following a formal screen. As seen with formal screens, however, referrals were significantly higher if the screen was recorded in the medical record as positive versus negative. A total of 27 additional referrals were reported in 2010 following a WCV with informal screening (15 of those referrals were made following an informal/positive screen, while 9 of the referrals were made following an informal/ negative screen).[3] In 2012, 51 additional referrals were noted in the medical record for similar visits/screens (34 of informal screens were documented as positive while 14 of the informal screens were documented as negative).[3] As noted previously, the number of referrals following a positive and negative screen does not add up to the total number of screens as not all formal or informal screens had results documented in the medical record.

4.6 Bivariate Analysis – Factors Related to Type of Patient Being Screened

To examine possible disparities in BH screening, we conducted a number of bivariate analyses assessing the effect of age, gender, race, ethnicity, primary language, and plan type on formal screening. So as not to over-count sociodemographic characteristics of MassHealth members, we used member level data for these analyses. For members in the 6 month – 2 year age group, the most recent visit was used in the analysis when multiple WCVs had been abstracted.

Table 10 presents the results of these bivariate analyses. For 2010, Hispanic children and adolescents were more likely to be screened than non-Hispanic children and adolescents (79.6% vs 73.3%; X^2=6.09, p=.01). MassHealth members covered by one of the managed care organizations (MCOs) were also more likely to be screened compared to those insured through the PCC (Primary Care Clinician) case management plan (77.2% vs 67.8%; X^2=17.60, p<.0001).

In 2012, the only sociodemographic characteristic significantly related to screening was age group. Children in the 3 to 5 year and 6 to 11 year age groups were statistically significantly more likely to be screened than those in the youngest (infant/toddler) or oldest (adolescent) age groups (6 mo - 2yrs: 73.2%; 3 - 5yrs: 79.6%; 6 - 11 yrs: 78.3%;

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[3] As detailed in Table 9 footnotes, the counts and calculations of referrals following an informal screen and the resultant positive or negative assessment was based only on the screens for which results were documented in the medical record (i.e., SFY2010: 27 of 310, 15 of 83, and 9 of 199; SFY2012: 51 of 348, 34 of 107, and 14 of 214); see Table 9.

12 - 20 yrs: 70.9%; X^2=12.56, p<.01). Similar to the 2010 cohort, those children and adolescents insured by one of MassHealth's MCOs were also more likely to be screened compared to children and adolescents enrolled in the PCC plan (78.7% vs 69.9%; X^2=17.64, p<.0001).

Table 10. Behavioral health screenings completed at well child visits associated with sociodemographic characteristics of MassHealth members, SFY 2010 & 2012

	MassHealth Members							
	2010 (N=1801[1])				2012 (N=1840[1])			
Characteristic	**Screened N (%)**	**Not Screened N (%)**	**X^2**	**p value**	**Screened N (%)**	**Not Screened N (%)**	**X^2**	**p value**
All members[2]	1340 (74.4)	461 (25.6)			1389 (75.5)	451 (24.5)		
Age group			0.39	0.94			**12.56**	**<0.01**
6 mo - 2 yrs	348 (74.2)	121 (25.8)			342 (73.2)	125 (26.8)		
3 - 5 yrs	338 (74.6)	115 (25.4)			366 (79.6)	94 (20.4)		
6 - 11 yrs	338 (75.3)	111 (24.7)			357 (78.3)	99 (21.7)		
12 - 20 yrs	316 (73.5)	114 (26.5)			324 (70.9)	133 (29.1)		
Gender			0.91	0.34			0.13	0.72
Male	706 (75.4)	231 (24.7)			707 (75.1)	234 (24.9)		
Female	634 (73.4)	230 (26.6)			682 (75.9)	217 (24.1)		
Race			0.47	0.50			2.36	0.12
White	615 (74.6)	210 (25.5)			643 (73.7)	229 (26.3)		
Non-White	456 (76.1)	143 (23.9)			459 (77.3)	135 (22.7)		
Ethnicity			**6.09**	**0.01**			0.00	0.99
Hispanic	393 (79.6)	101 (20.5)			407 (78.0)	115 (22.0)		
Non-Hispanic	509 (73.3)	185 (26.7)			565 (77.9)	160 (22.1)		
Primary Language			1.00	0.32			0.03	0.87
English	1109 (74.9)	372 (25.1)			1132 (75.6)	366 (24.4)		
Non-English	231 (72.2)	89 (27.8)			257 (75.2)	85 (24.9)		
Plan Type[3]			**17.60**	**<0.0001**			**17.64**	**<0.0001**
MCO	976 (77.2)	288 (22.8)			922 (78.7)	250 (21.3)		
PCC	364 (67.8)	173 (32.2)			467 (69.9)	201 (30.1)		

[1] N's for individual demographic variables may not total to the number of members whose records were abstracted in each of the two cohort years because of sporadic missing data. However, missing data was far more prevalent for member race and ethnicity (as described in the Methods).

[2] For members 6 months – 2 years who had multiple visits abstracted during the fiscal year, we used the most recent visit and whether screening occurred at that time so as not to duplicate member sociodemographic characteristics in calculating the test statistic.

[3] MCO = Managed care organization; PCC = Primary Care Clinician case management plan

4.7 Multivariate Analysis

The result of the logistic regression analyses are presented in Table 11. We collectively assessed the impact of the sociodemographic characteristics of MassHealth members on formal screening. As described in detail in the Methods, these analyses were conducted in several ways to account for significant missing value counts within member race and ethnicity.

In 2010, Hispanic children and adolescents were significantly more likely to be screened than non-Hispanic members (OR: 1.48; 95% CI: 1.10 – 1.98). Similarly, children and adolescents whose primary language was English were also more likely to be screened (OR: 1.34; 95% CI: 1.00 – 1.81) as were those MassHealth members enrolled in one of the managed care plans (OR: 1.57; 95% CI: 1.25 – 1.97). These results did not change appreciably when comparing initial findings to the two sensitivity analyses.

Table 11 also shows findings from the 2012 study cohort. Ethnicity and primary language were no longer statistically significant in predicting whether a MassHealth member was formally screened or not. However, those children in the 3 to 5 year age group were significantly more likely to be screened than infants/toddlers (OR: 1.40; 95% CI: 1.03 – 1.90). This finding was not observed, however, in the school-aged or adolescent age groups. MassHealth members enrolled in one of the managed care plans continued to show increased formal screening compared to those enrolled in the PCC (fee-for-service) plan (OR: 1.56; 95% CI: 1.25 – 1.95). Again, these results did not change in any measurable way when comparing initial analyses to the sensitivity analyses adjusting for missing values in key sociodemographic variables.

Table 11. Logistic regression analysis of factors related to standardized behavioral health screening among MassHealth members,[1] SFY 2010 & 2012

Factors	**2010** **OR[2] (95% CI)**	**2012** **OR[2] (95% CI)**
Age group		
6 months - 2 years (referent)	1.00	1.00
3 - 5 years	1.01 (0.75 – 1.36)	**1.40 (1.03 – 1.90)**
6 - 11 years	1.09 (0.81 – 1.47)	1.32 (0.97 – 1.79)
12 - 20 years	1.04 (0.77 – 1.41)	0.89 (0.67 – 1.20)
Ethnicity		
Hispanic	**1.48 (1.10 – 1.98)**	0.91 (0.68 – 1.23)
Non-Hispanic (referent)	1.00	1.00
Primary Language		
English	1.34 (1.00 – 1.81)	1.21 (0.89 – 1.63)
Non-English (referent)	1.00	1.00
Plan type[3]		
MCO	**1.57 (1.25 – 1.97)**	**1.56 (1.25 – 1.95)**
PCC (referent)	1.00	1.00

[1] For members 6 months – 2 years who had multiple visits abstracted during the fiscal year, we used the most recent visit and whether screening occurred at that time so as not to duplicate member sociodemographic characteristics in calculating the test statistic.

[2] Adjusted for gender and race; also adjusted for missing values in race and ethnicity using dummy variables created from missing value counts which were significant in both demographic variables.

[3] MCO = Managed care organization; PCC = Primary Care Clinician case management plan

Bold = significant at p<.05

4.8 Behavioral Health Utilization of Services

The use of BH services in 2010 and 2012 significantly increased from our baseline study in 2008. In addition, the vast majority of services used (services described as encounters conducted) in the six months following the WCV, regardless of whether formal BH screening occurred or not, were provided in the outpatient setting (including those encounters provided by Emergency Service Providers (ESP services) (Tables 12 and 13).

In 2010, a total of 3669 BH encounters were recorded in the MassHealth claims database, representing 506 children and adolescents. This averaged to 7.2 BH encounters per member over the six-month period following the index WCV. The majority of these encounters (72.2%; 383 children and adolescents) followed formal BH screening having occurred at the time of the WCV, though there were encounters conducted following informal screening/surveillance (22.7%; 83 children and adolescents) as well as encounters conducted in the absence of any formal or informal screening (5.1%; 40 children and adolescents) (Table 12). A similar pattern was observed for 2012 though the overall number of encounters significantly increased by over 60%. The total number of encounters conducted in the six months following the WCV was 6067. This represented an average of 10.7 visits (per member) for the 567 children and adolescents with BH encounters. More than one-half of these encounters (59.0%; 404 children and adolescents; significantly lower than in 2010) were provided following a formal BH screen. One-third of the encounters (32.1%; 125 children and adolescents; significantly higher than in 2010) were subsequent to an informal screening/surveillance and a small fraction of the encounters (8.9%; 38 children and adolescents) were conducted absent any formal or informal BH screening (Table 13).

Among those children and adolescents who had a formal BH screening conducted at their WCV, 43.4% of the BH encounters received in 2010 followed a positive screen while over one-half (56.6%) of the encounters followed a negative screen. A similar pattern was seen in 2012 where 37.9% of the BH encounters followed a positive screen using a formal assessment tool, while significantly more of the encounters (62.1%) followed a negative screen when assessed with a formal tool (and results of screening documented in the chart).

In contrast, among children and adolescent who had informal screening/surveillance at their WCV, more than three-quarters (86.6%) of the encounters conducted in 2010 followed a positive screen while only 13.4% of the encounters followed a negative screen (Table 12). A similar pattern was observed in 2012 (i.e., most of the received BH encounters provided [90.2%] followed a positive screen and 9.8% followed a negative screen; Table 13).

Nearly all encounters in both study years were provided in the outpatient setting: 99.8% in 2010 (including Emergency Service Provider services) and 99.7% in 2012. These percentages did not vary in any meaningful way dependent on whether the encounters followed formal, informal or no BH screening at the time of the WCV. Nor did the percentages of outpatient delivery site vary dependent on whether the encounters followed positive or negative screening results using formal or informal screening practices (Tables 12 and 13).

Baseline study data collected in our 2008 evaluation was quite different in comparison to recent years when screening requirements, provider training, and additional home- and community-based services were implemented. Among those with formal screens, 11.8% received BH encounters and 87.5% were provided in the outpatient setting. Among those with positive results amid formal screens, 40.0% received BH encounters, all of which were in the outpatient setting. Among those informally screened, 20.1% received BH encounters with 87.9% of the encounters provided in the outpatient setting. Lastly, among those with informal screens and positive results, 65.9% received BH encounters, nearly all of which (92.6%) were provided in the outpatient setting.

Table 12. Behavioral health service utilization six months after well child visit and site of service, by screening type and screening outcome – SFY 2010

			Behavioral health service utilization[1]		Location of behavioral health encounters received			
	Members[2]	Well-child Visits[3]	Behavioral health encounters received	Members with encounters[6]	Inpatient[7]	ED[7]	Outpatient[7]	ESP[7]
Screening	**N**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Type of screening								
Formal/standardized	1361	1703 (73.0)[4]	2648 (72.2)[5]	383 (28.1)	2 (0.08)	6 (0.2)	2597 (98.1)	43 (1.6)
Informal/surveillance	275	310 (13.3)[4]	832 (22.7)[5]	83 (30.2)	0 (0.0)	0 (0.0)	829 (99.6)	3 (0.4)
No screening	270	319 (13.7)[4]	189 (5.1)[5]	40 (14.8)	0 (0.0)	1 (0.5)	188 (99.5)	0 (0.0)
Total	1906	2332 (100.0)	3669 (100.0)	506 (26.5)	2 (0.05)	7 (0.2)	3614 (98.5)	46 (1.3)
Formal/standardized								
Positive screens[8]	199	230 (21.2)[9]	656 (43.4)[11]	61 (30.7)	0 (0.0)	3 (0.5)	637 (97.1)	16 (2.4)
Negative screens[8]	692	856 (78.8)[9]	856 (56.6)[11]	172 (24.9)	1 (0.1)	1 (0.1)	844 (98.6)	10 (1.2)
Informal/surveillance								
Positive screens[8]	82	83 (29.4)[10]	719 (86.6)[12]	55 (67.1)	0 (0.0)	0 (0.0)	719 (100.0)	0 (0.0)
Negative screens[8]	169	199 (70.6)[10]	111 (13.4)[12]	26 (15.4)	0 (0.0)	0 (0.0)	108 (97.3)	3 (2.7)

[1] MassHealth claims data were used to identify behavioral health encounters.

[2] Member count is a unique count per row; members may be included in more than one row.

[3] For visits where both formal and informal screening occurred, the results only reflect the formal screening.

[4] Percentages based on the total number of well child visits.

[5] Percentages based on the total number of behavioral health encounters.

[6] Percentages based on the number of members screened in the respective row.

[7] Percentages based on the total number of behavioral health encounters in the respective row.

[8] As noted in Tables 7 and 9, not all screens had results (positive or negative) documented in the medical record. Percentages are based only on those screens with recorded results.

[9] Percentages based on well child visits with a formal screening <u>and</u> a positive or negative result.

[10] Percentages based on well child visits with an informal screening <u>and</u> a positive or negative result.

[11] Percentages based on behavioral health encounters conducted subsequent to a formal screening with a positive or negative result.

[12] Percentages based on behavioral health encounters conducted subsequent to an informal screening with a positive or negative result.

Table 13. Behavioral health service utilization six months after well child visit and site of service, by screening type and screening outcome – SFY 2012

			Behavioral health service utilization[1]		Location of behavioral health encounters received			
	Members[2]	Well-child Visits[3]	Behavioral health encounters received	Members with encounters[6]	Inpatient[7]	ED[7]	Outpatient[7]	ESP[7]
Screening	**N**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Type of screening								
Formal/standardized	1413	1741 (73.9)[4]	3578 (59.0)[5]	404 (28.6)	1 (0.03)	8 (0.2)	3553 (99.3)	16 (0.4)
Informal/surveillance	301	348 (14.8)[4]	1948 (32.1)[5]	125 (41.5)	1 (0.05)	6 (0.3)	1914 (98.3)	27 (1.4)
No screening	217	266 (11.3)[4]	541 (8.9)[5]	38 (17.5)	0 (0.0)	0 (0.0)	540 (99.8)	1 (0.2)
Total	1931	2355 (100.0)	6067 (100.0)	567 (29.4)	2 (0.03)	14 (0.2)	6007 (99.0)	44 (0.7)
Formal/standardized								
Positive screens[8]	195	216 (19.3)[9]	812 (37.9)[11]	85 (43.6)	0 (0.0)	3 (0.4)	801 (98.6)	8 (1.0)
Negative screens[8]	737	902 (80.7)[9]	1330 (62.1)[11]	179 (24.3)	1 (0.08)	2 (0.2)	1321 (99.3)	6 (0.5)
Informal/surveillance								
Positive screens[8]	105	107 (33.3)[10]	1502 (90.2)[12]	75 (71.4)	0 (0.0)	4 (0.3)	1477 (98.3)	21 (1.4)
Negative screens[8]	174	214 (66.7)[10]	163 (9.8)[12]	39 (22.4)	1 (0.6)	1 (0.6)	155 (95.1)	6 (3.7)

[1] MassHealth claims data were used to identify behavioral health encounters.

[2] Member count is a unique count per row; members may be included in more than one row.

[3] For visits where both formal and informal screening occurred, the results only reflect the formal screening.

[4] Percentages based on the total number of well child visits.

[5] Percentages based on the total number of behavioral health encounters.

[6] Percentages based on the total number of behavioral health encounters in the respective row.

[7] As noted in Tables 7 and 9, not all screens had results (positive or negative) documented in the medical record. Percentages are based only on those screens with recorded results.

[8] Percentages based on well child visits with a formal screening and a positive or negative result.

[9] Percentages based on well child visits with an informal screening and a positive or negative result.

[10] Percentages based on behavioral health encounters conducted subsequent to a formal screening with a positive or negative result.

[11] Percentages based on behavioral health encounters conducted subsequent to an informal screening with a positive or negative result.

5 Discussion

Based on our current evaluation, when compared to the baseline study data collected in 2008 (SFY2007), it appears that Massachusetts child health providers in SFY2010 and SFY2012 routinely screened a majority of children and adolescents for BH conditions as part of well child care. Screening with the use of formal tools occurred in nearly three-quarters of WCVs for children and adolescents between six months of age and 20 years compared to 4% in SFY2007. In addition to screening using formal tools, an additional 13-15% of visits included informal screening by virtue of chart notes recording BH clinical assessments during the WCV. This combined screening/assessment of nearly 90% compares to the nearly 90% in SFY2007, though in the baseline study, over 80% of screens were informal surveillance/assessments rather than those seen in most recent years using formal screening tools. These numbers also compare well to a recent study by Romano-Clarke et al. (2014) where 73-91% of well visits conducted in two Massachusetts primary care practices (83% average over three years) had evidence of BH assessments. However, these investigators' definition of assessment was 'any combination' of formal and informal screening even though the Rosie D remedy mandates the use of MassHealth approved formal screening tools. Several of these investigators also reported interim screening results from FY2009 of 46% (Hacker et al., 2014) demonstrating positive change over time from our baseline study in 2008 through SFY2012.

As described in the Background section, pediatricians are seemingly aware of the need to screen children for BH conditions as recommended by many expert panels, including the American Academy of Pediatrics (American Academy of Pediatrics Task Force on Mental Health, 2010). However, several studies noted that these screenings have not typically been routine and providers have seldom used standardized screening instruments (Wissow et al., 2013). When formal tools and screening protocols have been introduced in individual practices, however, investigators have recorded significant increases in BH screening – improvements from 10-20% at baseline to 60-80% have been noted after full implementation of these protocols (Klein & McCarthy, 2009; Schonwald et al., 2009). Our current study complements these findings while demonstrating high levels of screening on a statewide perspective. Through the implementation of a medical record review protocol, our current evaluation also demonstrates the successes that Massachusetts primary care providers have attained in formal BH screening as an important marker of the quality of well child care.

Attaining 100% screening compliance at every WCV is not likely to occur. Barriers to screening have existed for decades (time, reimbursement, training, confidence and skills, availability of validated tools, availability of referral resources, etc.) (Hacker et al., 2013). CBHI efforts have focused on several of these barriers, particularly those related to time and reimbursement. Prior to the screening implementation date set by the Court, MassHealth had little more than a month to train providers and practices in the use of the approved screening tools, identification of resources for screening, interpreting screening results, and implementing screening protocols in practice. Therefore, MassHealth continued to provide training opportunities (with free CMEs) throughout the following year. Additionally, MassHealth implemented reimbursement protocols for conducting screening assessments if the patient encounter form contained the required CPT codes for the use of a screening tool at the WCV and recorded the result of the screening.

Time and reimbursement are not the only barriers to screening at present. Providers report anecdotally that they are reluctant to screen children and adolescents with known BH conditions and/or children and adolescents who are already receiving BH services. PCPs often note that, despite reimbursement for screening at each WCV, time is too valuable during a WCV to formally assess BH issues in children and adolescents with known conditions who they have been monitoring over time. Were one to restrict screening to those without known BH diagnoses, the reported BH screening rates seen in this study (nearly 75%) would likely increase.

In addition, children and adolescents may not be accompanied by their primary caregiver at the time of the WCV so a formal screening may not occur. While advances in the EMR may someday make it easy for a caregiver to complete a screener remotely, the technology currently available in most practices may not be sufficiently facile for remote screening. As this data has been shared with audiences of providers and researchers, most seem impressed with the current rates of screening, noting that further improvements will require additional changes in both clinical practice and in measurement.

It was of interest to note the frequency with which each of the MassHealth approved tools was used. When offered a choice of BH screening assessment tools, PCPs clearly chose to use the simpler, one-page instruments with much more frequency than those that have more complex sets of questions and scoring algorithms. It’s likely easier to implement in a busy primary care pediatric practice protocols using tools that are simpler for parents and caregivers to self-administer as well as those that are non-proprietary. Thus, the increased use of the PEDS and the PSC/PSC-Y assessment tools was not surprising. And, the increased nationwide attention given to early identification of autism in young children confirms the frequency with which the M-CHAT was also implemented.

The rationale for other investigators using select screening tools is likely similar to our beliefs of why specific tools are more likely to have been used in 2010 and 2012 here in Massachusetts. Equally consistent is the rationale for screening itself – not only to identify children and adolescents at risk for BH conditions, but to foster communication between patients/families and PCPs around issues that might otherwise not be discussed during a WCV. Many patients/families are more concerned with the biomedical approach to routine health maintenance visits rather than using limited time to discuss psychosocial issues. Schonwald and colleagues (2009) not only noted success in their screening initiatives, but they also observed that using formal tools saved time during the visit as it provided an “organized structure for discussing parent concerns and identified concerns ahead of time, rather than at the end of the visit”. Garg et al. (2007) also demonstrated both feasibility and effectiveness of addressing psychosocial problems during WCVs (particularly among low-income children and their families); they concluded that “screening and provider training may lead to greater discussion of topics and contact of community family support resources by parents”. Finally, the more recent study by Hacker et al. (2013), a qualitative study assessing provider attitudes and rationale for BH screening, noted that “screening acts as an important prompt to stimulate discussion of behavioral health problems.”

Few providers used screening tools in non-English languages (i.e., 7-8%) despite the availability of formal screening tools in other languages (Appendix B). Nearly 20% of the sample in this evaluation were noted to have a primary language other than English, implying missed opportunities for additional (or perhaps more accurate) screening among those families with limited English proficiency. Fewer than 5% of the WCVs noted interpreter use at the time of the visit (whether formally-trained interpreters, a practice-based bilingual provider or staff member, or a family member). It is likely that language remains a substantial barrier to both screening and treatment of BH conditions in children and adolescents who are members of MassHealth. Future efforts at quality improvement should focus on the elimination of this disparity in access.

While we were unable to assess the specifics regarding the use of BH screening tools in non-English languages because the documented prevalence was very low, we did assess the potential disparities in screening by assessing occurrence of formal screening by MassHealth member’s age, gender, race, ethnicity and primary language. As noted in the Results, very few demographic differences were observed in who was screened and who was not in both study years – both at the bivariate and multivariate levels. Formal screens, and the lack thereof, do not seem to be targeting specific sub-populations within the MassHealth membership of children and adolescents even though the prevalence of BH issues appears, from the literature, to be higher in general among low-income populations compared to non-poor children and families (U.S. Department of Health and Human Services, 2010).

The baseline study in 2008 captured data not only on the prevalence of BH screening, but also on screening results and subsequent referrals prior to the CBHI MassHealth requirement of mandated PCP screening. Given the same assessments conducted with two more recent years of data and the observed significant increases in formal screening, one might expect that the prevalence of positive findings (and subsequent referrals) would concomitantly have increased. At baseline, the prevalence of positive results among those formally screened was approximately 7%. However, this rate is potentially underestimated as over two-thirds (67%) of visits where a formal screening occurred, had no documentation in the medical records as to the result of those screens. Among those visits with an informal screening (i.e., clinical assessment/surveillance), the positive screening rate was double at 14% (though 81% of those screens had no results documented in the medical record). The significant increase in BH screening seen in our current study showed 21% of formal screenings with a positive finding in 2010 and 19% with a similar, positive finding in 2012 – both of these assessments more in-line with the literature indicating prevalence rates of BH conditions in children and adolescents to be in the 13%-24% range (Kuo et al., 2012; Romano-Clark et al., 2014). As was outlined in the Results section above, however, a positive screen was sometimes not indicative of a child's use of BH services – as described in more detail below. Visits with informal screens as well as those with no screening had observed BH service use.

One might imagine that if the 'non-documented' screening results in our study (approximately one-third of screens) had results (positive or negative) noted in the charts, the true population rates of children and adolescents with BH conditions needing follow-up might, in fact, be significantly higher than what we found in this medical record abstraction. It is unknown from reviewing the literature whether other investigators found similar high rates of undocumented screening results. It is also important to note that these results are based on the review of WCVs alone. One could easily imagine that if screenings were conducted at any/all visits with children and adolescents (especially at times when parents or schools might be raising a specific concern about their child/ student), the rates of identification of BH conditions would be even higher.

Screening is the first step in the process of early detection of any condition. In the course of this chart abstraction, documentation of referrals to subsequent BH assessments and services were significantly higher compared to the baseline study's results of less than 2%. The current evaluation found overall referral rates for both years in the 12% range. While higher than what baseline data revealed, these rates were still significantly lower than what was anticipated given anecdotal commentary from providers at several venues where preliminary results of our study were presented. Among those formally screened, the overall referral rates were in the 8%-10% range. Specifically among those who had a positive result following formal screening, the rates ranged from 11%-15%.

It is clear that many referrals are likely happening outside of the WCV. For example, referrals may be made by the PCP at the time of a 'sick visit' or follow-up visit in response to a potential problem having been identified by the family or child's school. Some referrals may have resulted from a formal screening, but not made until a follow-up visit while the PCP monitored the child or adolescent over time. It's also possible that parents and caregivers may self-refer to services and thus a formal referral from the PCP is not necessary for MassHealth to pay for subsequent BH services. Additionally, the provider may suggest a referral for a child or adolescent which the parent or caregiver is not accepting of until a later visit; thus, the referral ultimately may be documented to have occurred outside of the WCV. Lastly, even if screening positive, providers may not refer children and adolescents to services if they are already engaged with a BH provider.

Screening may not improve the rate of referrals due to barriers faced by both providers and families (e.g., a limited number of openings at referral sites, prior experiences with waiting lists for appointments and little or no provider-to-provider communication regarding the results of referrals, no provider requirement to document referrals to BH services, family schedules, transportation to non-primary care sites, prerequisite intake visits prior to services being provided, parental resistance, etc.). Thus, failure to use a referral to BH services is an issue that providers need to address within their office practice protocols and with families just as they address adherence with medication and other treatment recommendations.

The medical record may not be a good source of information regarding referral for BH services within MassHealth as no PCP referral is required to access these services. Families and schools often initiate contact with the BH facility/provider; pediatricians and family physicians may not know that the referral has occurred. It is also possible (as noted above) that referrals are made after a subsequent visit to the PCP. Since we only captured screenings and follow-up referrals directly related to WCVs, the results presented herein may underestimate the true number of BH services that were accessed by children and adolescents who were screened.

Despite the lack of referrals noted in this retrospective chart review, it appears that many children and adolescents accessed BH services in the six months following a WCV. The chart abstraction process itself, however, makes it difficult to know the extent to which children and adolescents have truly been screened, treated, and/or referred by the PCP for additional services. The literature does suggest (Brent, 2004) that the partnering of families with their multiple providers, especially when families themselves are raising concerns about behavioral issues, increases the identification of children and adolescents with potentially significant problems.

MassHealth administrative data showed that post-visit BH encounters were conducted in the six months following the WCV with a formal screen in approximately two-thirds of visits during SFY2010 (72%) and SFY2012 (59%). BH encounters were also received (i.e., conducted), as described in the Results section above, among those informally screened (ranging from 23%-32%) as well as among those with no documentation of any BH screening (ranging from 5%-9%). Nearly all (99%) of these post-visit BH encounters were delivered in the output setting. This was a significant increase from the 88% of well child visits having follow-up BH encounters conducted in the ambulatory setting at the time of the baseline study. The observed delivery of services seen among those visits absent a formal screening suggests that Massachusetts' child health providers are attending to the BH needs of their patients regardless of formal assessments.

While documentation of BH conditions at the WCV was associated with increased utilization of BH services, the type of services accessed is markedly different in 2010 and 2012 when compared to the baseline study conducted in 2008 (with SFY2007 data). New home- and community-based services were implemented throughout Massachusetts as part of the statewide Children's Behavioral Health Initiative. The use of emergency and inpatient BH services is now much less common. It is possible that children and adolescents are being referred earlier, allowing outpatient interventions that preempt the need for inpatient and/or emergency services. These data suggest that BH services can be delivered in the outpatient setting for the vast majority of children and adolescents. Further study is needed to determine the precise role that formal BH screenings played in changing the pattern of BH service utilization among Massachusetts children and adolescents on Medicaid.

While studies such as these may have potential limitations, there are a number of strengths of the study that support our findings. The attention to the detailed data abstraction process; the random selection of MassHealth members; the sample sizes of members whose charts were abstracted; and the comparative nature of our results vis-à-vis other published studies provide an indication that these findings demonstrate at least the minimal prevalence of screenings, positive screening results, and post-visit BH services being provided. The initiation of universal screening for BH conditions initiated by the Commonwealth’s CBHI affords a unique opportunity to examine the impact of universal BH screening on the utilization of services at a statewide level. What remains to be further investigated is whether screenings and referrals to specialty care result in earlier intervention and improved health outcomes among MassHealth children and adolescents at risk for BH conditions. The literature has long suggested that low-income children are more apt to have behavioral and mental health needs (among a number of adverse health outcomes) and should be regularly screened in the primary care setting (Garg et al., 2007; Hacker et al., 2014; Lucenko 2013; Pires 2013).

5.1 Limitations

As with any study, there are a number of limitations that may have affected the data collected and its interpretation. While it is important to use multiple sources of data, where possible, to supplement one another with potentially missing information and/or to verify data, each source that was used in this study was subject to its own limitations (i.e., possible information bias). Medical record data is only as accurate and complete as the person(s) charting the information. We observed significant missing data in the area of patient demographics (particularly race, ethnicity and primary language). While anecdotal information consistently told us that providers are well aware of their patients’ demographics, the actual recording of this information is often dependent on whether or not the practice needs to report this data (e.g., a federally-qualified health center would need to provide this information on at least an annual basis to certification/funding sources). Recording patient demographics is also dependent on whether a practice is using a paper-based or an electronic medical record (EMR). Many of these demographic fields are populated in an EMR at the time of patient enrollment in a practice and not routinely updated (e.g., change in primary language); thus, the data collected through a medical record review may be outdated (or the practice may have been in transition from a paper-based system to an EMR and information misplaced during this process). Since reimbursement for screenings was available to practices, it is unlikely that many assessments occurred without being noted in the chart; however, it is possible that these screens are under-reported or not captured in our chart review if the evidence of the screen was not fully documented in the medical record.

A second possible limitation is that the medical record abstraction process was potentially limited as multiple reviewers were utilized to abstract records. The process required careful attention to inter-rater reliability. As noted in the Methods section, the vendor conducted training sessions that included specific attention being paid to inter-rater reliability of 95% or greater among all of the nurse abstractors; nevertheless, there may be some potential validity issues in a limited number of instances. The abstraction process requires not only careful training of the abstractors, but also that safeguards be put in place for accurate data entry. Even with proper protocols in place, errors are known to occur. Stringently-applied strategies like automated skip patterns in the data entry application hopefully addressed some of these potential quality control issues.

A third possible limitation is that claims data were also missing a significant percentage of demographic data (in our efforts to supplement medical record demographics with administrative data). This data, while updated routinely within MassHealth for clinical services provided, is also collected at the time of enrollment and may not be updated on a routine basis as are individual encounter claims for services. While we conducted some sensitivity analyses with our bivariate and multivariate runs, we are unsure if those with missing demographic information more often represent minority or majority population characteristics.

While claims data are subject to internal review by MassHealth prior to providers/ practices being paid for services, a fourth possible limitation is that we chose to only look at paid WCV claims. Unpaid claims may have been re-submitted at a later point in time (after some corrective action, for example) and we did not want to double count a particular visit. However, this means that we may have missed a claim that was ultimately paid within the study’s two fiscal years. While possible, this potential undercounting of the sample from which we randomly selected MassHealth members for chart review was likely to have been small.

The MassHealth claims data available to us was already subject to significant internal (i.e., MassHealth) review. However, a fifth possible limitation is that there were instances where we reviewed medical records (based on a WCV claim within a certain date range) and found that the visit recorded in the chart was not a WCV and/or the date of the visit was not that which was identified through the claims database. It’s unknown whether these were inaccuracies on the part of the practice (in completing an encounter form submitted for payment) or on the part of MassHealth in data entry/management. Given the random sampling strategy, it’s unlikely that we would have identified a sample whose inaccuracy differs from the population as a whole. The nature of any misclassifications of this data, in these instances, is likely to be non-differential and would typically underestimate the impact of the results.

The literature suggests that one of the benefits of implementing a formal screening program using standardized screening tools is to avoid the clinical interpretation that often occurs in practice, especially among providers who may not have been trained in BH screening within a primary care environment or may not be confident in the use of screening tools. Our observations of positive results among those children and adolescents informally screened (i.e., absent a standardized tool) and/or the referral to specialty services and assessments outside of a formal screen or a positive result suggests that primary care providers may still be using some level of clinical assessment in interpreting screening or surveillance activities and/or in their subsequent decision-making with children/families about the results of these assessment leading to referrals. While the results between 2010 and 2012 were fairly consistent and significantly higher than in 2008 when little formal screening occurred (though significant informal surveillance was noted in the medical record), this suggests a possible limitation in that any clinical interpretations made and subsequently noted in the medical record would have the potential to either under- or over-estimate the true result of screening and/or the need for a referral.

The number of referrals made subsequent to the WCV was much lower than anticipated (and as compared to a recent study by Romano-Clark et al. (2014)). As detailed above, there are many scenarios where a provider may make a referral at the time of the WCV, may make a referral outside of the WCV, may not recommend a referral though a parent/family chooses to go that route, may not recommend a referral immediately after a WCV but does so at a later point in time after some ‘watchful waiting’ has occurred, etc. For many reasons, we believe that referrals to BH services are likely to be under-reported.

Finally, ‘chasing charts’ may be harder for those children who are the most mobile (including those in homeless situations and/or foster care). Families covered by MassHealth may be moving between providers and practices as a result of poverty and other social vulnerabilities. However, as noted above in the Results section, the chart abstraction vendor was able to locate 95% of the medical records randomly selected (a clear strength of this evaluation); thus, the potential for selection bias is likely small. Given this small potential for bias, coupled with the potential for missing some screens and/or referrals by only abstracting WCVs, it may be that our results underestimate the extent to which children and adolescents have been screened for BH conditions, documented to have positive screens, referred for services, and treated for these conditions.

6 Recommendations

Based on the detailed findings reported above, there are a number of recommendations CHPR has with regard to moving forward. There has been a tremendous amount of information learned in conducting the medical record review and supplementing screening information with referrals and utilization of BH services. The ability of practices to incorporate screenings at a rate of 75% as well as identifying which tools are used most often and how/when referrals are made in relation to screenings and their results, should all be helpful to MassHealth in future children’s behavioral health initiatives. However, with any evaluation of this type, the results often raise questions that are outside of the initial scope of the project and/or suggest new lines of study that explore the longitudinal work of the statewide CBHI. As noted above, the evidence for screening protocols often lays in future outcomes such as improvements in morbidity and mortality rates which then support the initial resources needed for screening.

With the exception of a recommendation to conduct some qualitative work to understand more directly from providers why screens occur or not, why particular screening tools are used, why tools are less likely to be used in non-English languages, and how decision-making occurs regarding referrals to BH services absent a formal screening and/or a positive finding at the time of a WCV, the vast majority of our recommendations would not require any significant resource needs in data collection. The majority of the questions below could be answered predominantly with additional data analysis resources. These recommendations include:

- Studying further the potential disparities in screening as well as in the referral process and utilization of services.
- Extending the initial six-month window for BH services utilization following screening at WCVs. Given potential challenges to the timing of referrals following a WCV and the scheduling of subsequent visits with a BH specialist, six months may be an insufficient window in which to assess BH service utilization following screening. It may be more fruitful to assess service utilization at one year and/or the continuity of services within two years of the initial screening.
- Much of the literature suggests that those children and adolescents with a prior history of BH conditions are more/less likely to be screened (i.e., more because they're a population at risk; less because they're already well known to the provider who may not determine a need to continue to screen but monitors in other ways). It would be particularly useful to study prior BH diagnoses and treatments in light of our screening findings, referrals and continued utilization post-screening. Looking longitudinally from prior utilization pre-screening to subsequent utilization post-screening may be very insightful.
- The baseline study and this current study ruled out looking at the child's previous BH diagnosis and utilization of services since the studies were assessing screening practices at all WCVs (regardless of what clinical data was already known about the child). However, we know from many anecdotal reports that this is key information in screening children and adolescents, in the interpretation of the screening result, in referral practices, and in the acuity of getting a patient into service and in what setting. This would be key information to assist MassHealth in assessing all of the new CBHI services implemented, especially in the home- and community-based settings. How prior diagnoses and treatments predict screening and subsequent utilization of these new services would be key information.
- Studying pharmacy data may help to determine whether screening and the early identification of children and adolescents with BH conditions leads to more appropriate use of medications. There are a number of documented concerns about the overuse of atypical anti-psychotic medications among children. Would

increased screening practices leading to referrals and BH services utilization early on reduce the use of these medications? Would the use of anti-psychotic medications possibly be more likely to increase in a more typical/appropriate manner?

- Studying the correlation between what is seen in the charts regarding positive versus negative screens and what is seen in MassHealth billing data given the encounter form claims codes that are used not only to identify screening but to then identify the screen as positive or negative. Since a number of people are using those MassHealth codes to determine positive or negative screens and the subsequent use of BH services, it may be important to note if the charts are also indicating these at-risk children and adolescents the way encounter forms are being completed.
- This immediate recommendation above also lends itself to studying longitudinally the actual score of the screener (i.e., this data has already been captured from our medical record abstractions) versus chart notes about a positive or negative screen versus billing data. To what extent a provider notes the child to have ‘passed’ or ‘failed’ a screen is often confounded by what the provider already knows about the child and his/her medical history, what services the child may already be getting, etc. The path of these three ‘markers’ of screening results would be important to document if one ultimately is relying on billing data to identify at-risk children and adolescents.
- There are a number of analytic techniques that could be explored to conduct a longitudinal analysis with our three cohort years of data (SFYs 2007, 2010 and 2012). This would provide further predictive abilities for the utilization of future services, including pharmacy, as well as provider- (or setting-specific) based services. Understanding typical trajectories of MassHealth children and adolescents through BH and pharmacy services would be key to planning future services.
- Lastly, studying high cost utilizers of BH services and factors affecting their outcomes might allow for improved targeting of quality improvement initiatives and inter-agency engagement.

All of these bulleted recommendations could be done with existing data. Qualitatively, there remain a number of questions in understanding why some practices are more successful than others in implementing screening and referral protocols and the challenges that exist to both of these process activities. Coupling this qualitative data with our further understanding of which children and adolescents are at highest risk would assist in developing interventions to improve services to children and adolescents and ultimately BH outcomes. Hearing from front-line primary care providers, especially in light of the new primary care payment reform (PCPR) efforts, would be valuable for future planning of an outcomes assessment.

7 Conclusion

The implementation of the Children's Behavioral Health Initiative has fundamentally transformed the relationship between primary care services and behavioral health services within the Commonwealth. The current study shows clearly that:

- Changes in regulation and payment have resulted in the implementation of widespread behavioral health screening in primary care practices in Massachusetts that care for children and adolescents on Medicaid.
- PCPs preferentially choose simpler screening tools that identify children and adolescents at risk over complex tools with greater diagnostic specificity for general screening.
- Increased behavioral health screening is associated with increased utilization of behavioral health services, primarily in the outpatient setting, although the relationship between screening at the time of a well child visit and service utilization is complex.
- Children requiring intensive behavioral health services can receive most of those services in the outpatient setting.
- One of the findings that suggests additional follow-up includes exploring the role of the Managed Care Organizations in enhancing rates of screening.
- A specific area for quality improvement activity should focus on improving access to behavioral health screening and services among families where English is not the primary language.

In addition, it would be interesting to assess the impact of the changes in behavioral health services in the public sector on the care received by children insured in the private sector. While commercial insurance plans now cover behavioral health screening in well child visits, they do not cover the extensive range of outpatient services support through the Children's Behavioral Health Initiative, which may result in higher rates of use of emergency room and inpatient behavioral health services.

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Appendix A CBHI/CTR 2013 Model Abstraction Tool

Measurement Period: 7/1/09 – 6/30/10 and 7/1/11 – 6/30/12

Topic	Data Collection Item	Instructions	Variable Name	Field type
Medical Record Format	1) For on-site reviews only, indicate the format of the member's medical record: 1-Paper 2-Electronic medical record (all components) 3-Partial electronic medical record (some components are electronic and some are paper) 4-Not applicable (remote review completed)	If the site provides you with a print-out of an electronic medical record, please check 2 or 3, as appropriate.	MRFORMAT	Drop Down Box (closed-ended)
Demo-graphic Information	2) Indicate child's gender: 1-Male 2-Female 9-Not documented		GENDER	Drop Down Box (closed-ended)
	3) Is the child's date of birth documented in the chart? 1-Yes 0-No (Skip to Q5)		DOBDOC	Drop Down Box (closed-ended)
	4) Enter child's date of birth.	If partial date, enter as much information as available.	DOBDATE	Date (mm/dd/yyyy)
	5) What is the member's race? (Check all that apply) • White • Black or African American • Asian or Pacific Islander	If member is of more than one race, check those that apply and/or use the 'other' comment box to indicate a race not listed.	RACEWHITE RACEBLACK RACEASIAN	Checkboxes (true/false)

Topic	Data Collection Item	Instructions	Variable Name	Field type
	• American Indian or Alaskan American • Other (specify)→_________ • Not documented		RACEAMINDALASKNAT RACEOTHER RACEOTHERSPE (when specified) RACENODOC	Open text for "other" field
	6) Is the member of Hispanic or Latino ethnicity? 1-Yes 0-No 9-Not documented		ETHNICITY	Drop Down Box (closed-ended)
	7) What is the primary language spoken in the member's home? 1-English 2-Spanish 3-Other (specify) →_________ 9-Not documented	Indicate only the member's primary language. If more than one language is indicated in the record and it is not clear which is the primary language, use the 'other' comment box to list all languages spoken in the home.	PRIMLANG PRIMLANGOTHER (when specified)	Drop Down box (closed-ended) Open text for "Other" field
	8) Is there any documentation in the chart that an interpreter was used for <u>any</u> office visit including sick visit on or between 7/1/09-6/30/10 (also 7/1/11–6/30/12)? 1-Yes 0-No (Skip to Q10)	.	INTERPRETER	Drop Down Box (closed-ended)
	9) Indicate the language the interpreter used: 1-Spanish 2-Other (specify) → _________ 9-Not documented		INTERPLANG INTERPLANGOTHER (when specified)	Drop Down Box (closed-ended) Open text for "Other" field
Visits for Review		Chart Abstractors: Identify the medical record documentation that		

Topic	Data Collection Item	Instructions	Variable Name	Field type
		corresponds with the following well-child visit date(s). Date(s) occurs on or between 7/1/09-6/30/10 (also 7/1/11–6/30/12). PROGRAMMER: Populate a table or list with the visit date(s) provided by CHPR in the import file for each member. Dates occur as noted above. For members' ages 6 months to 35 months, the maximum number of well-child visits in one year is 5 and children ages 3-20 will have only one well-child visit per year.		
Behavioral Health Screening, Referral and Treatment	10) Was documentation of a visit found within 2 days +/- of the visit date noted above? 1-Yes 0-No (Skip to next visit date; if only one visit date exists, chart abstraction stops)	If documentation of visit date is <u>not found</u>, abstractor should inform CHPR in weekly reports	DOCVISIT	Drop Down Box (closed-ended)
	10A) Was the record found for the visit date a well-child visit? 1-Yes 0-No (Skip to next visit date; if only one visit date exists, chart abstraction stops)	New variable added to denote visits that were not well-child visits.	WELLVISIT	Drop Down Box (closed-ended)
	11) Is there documentation of any <u>formal</u> BH screening tool being used at this visit? 1-Yes 0-No	To count as a <u>formal</u> tool, the documentation must clearly indicate the title or acronym of the tool. See your manual for examples of the formal standardized tools. If it appears that some questions have	DOCFBHST	Drop Down Box (closed-ended)

Topic	Data Collection Item	Instructions	Variable Name	Field type
		been taken from formal tools and incorporated into a new but unnamed tool, then indicate "Yes" in question 11Q and describe the "other formal tool" in the comment box for 11Qi. Documentation can include a copy of the completed formal tool or notes that a formal tool was used. Blank tools in the record do not count without documentation that the tool was administered, scored, interpreted (e.g., positive, negative, at-risk) and results/ recommendations were made or not. Undated tools do not count unless there is evidence that the tool was completed during the visit that corresponds to the visit date provided. Do not use documentation in tool to score the instrument. <u>Do not interpret</u> score, ranking or other notes in the tool or in the visit notes. Accept only clear documentation of a result that was entered into the chart by a provider (e.g., positive, +, negative, -, at risk, etc.). If tool is completed but there is no clear documentation of a result entered by a provider, choose result "not documented." Indicate if a tool was used, but not		

Topic	Data Collection Item	Instructions	Variable Name	Field type
		completed or without a final score.		
	11A) Was the ASQ: SE (Ages and Stages Questionnaire: Socio-Emotional) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11B)		ASQUSE	Drop Down Box (closed-ended)
	11Ai) Indicate which age group tool was used: 1-6 month questionnaire 2-12 month questionnaire 3-18 month questionnaire 4-24 month questionnaire 5-30 month questionnaire 6-36 month questionnaire 7-48 month questionnaire 8-60 month questionnaire		ASQagegroup	Drop Down Box (closed-ended)
	11Aii) Indicate Total Score (0-495)		ASQscore	Open-ended numeric field
	11Aiii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk		ASQresult	Drop Down Box (closed-ended)
	5-Other (specify)→ ________ 9-Not documented		ASQresultoth	Open text for “Other” field

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11B) Was the BITSEA (Brief Infant-Toddler Social and Emotional Assessment) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11C)		BITSEAUSE	Drop Down Box (closed-ended)
	11Bi) Indicate Problem Total Score (0-62)		BITSEAProbScore	Open-ended numeric field
	11Bii) Indicate Competence Total Score (0-22)		BITSEACompScore	Open-ended numeric field
	11Bii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk		BITSEAResult	Drop Down Box (closed- ended)
	5-Other (specify)→ ________ 9-Not documented		BITSEAOth	Open text for “Other” field
	11C) Was the Child Behavior Checklist (ages 1 ½ to 5) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11D)		CBChecklistFiveUSE	Drop Down Box (closed-ended)
	11Ci) Indicate Total Problems Raw Score (0-200)		CBChecklistFiveRawScore	Open-ended numeric field
	11Cii) Indicate Total Problems T Score (28-100)		CBChecklistFiveTScore	Open-ended numeric field
				Drop Down Box

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11Ciii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		CBChecklistFiveResult CBChecklistFiveResultOth	(closed- ended) Open text for “Other” field
	11D) Was the Child Behavior Checklist (ages 6-18) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11E)		CBChecklistEighteenUSE	Drop Down Box (closed-ended)
	11Di) Indicate Total Problems Raw Score (0-240)		CBChecklistEighteenRawScore	Open-ended numeric field
	11Dii) Indicate Total Problems T Score 24-100)		CBChecklistEighteenTScore	Open-ended numeric field
	11Diii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		CBChecklistEighteenResult CBChecklistEighteenResultOth	Drop Down Box (closed- ended) Open text for “Other” field
	11E) Was the CRAFFT (Substance/ Alcohol Use - Car, Relax, Alone, Forget, Friends Trouble) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11F)		CRAFFTUSE	Drop Down Box (closed-ended)

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11Ei) How many items were answered "yes" (0-6)?		CRAFFTNumYes	Open-ended numeric field
	11Eii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		CRAFFTResult CRAFFTResultOth	Drop Down Box (closed- ended) Open text for "Other" field
	11F) Was the DDS (Denver Developmental Screening) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11G)		DDSUSE	Drop Down Box (Closed-ended)
	11Fi) How many items with a "caution" (1-125)?		DDSFCaution	Open-ended numeric field
	11Fii) How many items with a "delay" (1-125)?		DDSFDelay	Open-ended numeric field
	11Fiii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		DDSFResult DDSFResultOth	Drop Down Box (closed- ended) Open text for "Other" field

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11G) Was the HEADSS (Home, Education, Activities, Drugs, Suicide/Depression, Sexuality) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11H)		HEADSSUSE	Drop Down Box (closed-ended)
	11Gi) Indicate result of screening: 1-Positive 2-Negative 3-At Risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		HEADSSResult HEADSSResultOth	Drop Down Box (closed- ended) Open text for “Other” field
	11H) Was the M-CHAT (Modified Checklist for Autism in Toddlers) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to 11I)		MCHATUSE	Drop Down Box (closed-ended)
	11Hi) How many items failed (0-23)?	Failed = answering ‘yes’ to items 11,18, 20, 22 <u>OR</u> answering ‘no’ to items 1-10, 12-17,19, 21, 23	MCHATFailed	Open-ended numeric field
	11Hii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		MCHATResult MCHATResultOth	Drop Down Box (closed- ended) Open text for “Other” field

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11I) Was the PEDS (Parents' Evaluation of Developmental Status) Response Form used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11J)		PEDSRESPONSEUSE	Drop Down Box (closed-ended)
	11Ii) Indicate result of screening: 1-Positive (Refer) 2-Negative (Pass) 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		PEDSRESPONSEResult	Drop Down Box (closed-ended)
			PEDSRESPONSEResultOth	Open text for "Other" field
	11J) Was the PEDS (Parents' Evaluation of Developmental Status) Developmental Milestones (PEDS: DM) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11K)		PEDSUSE	Drop Down Box (closed-ended)
	11Ji) Indicate number of shaded boxes checked (0-7)		PEDSShaded	Open-ended numeric field
	11Jii) Indicate number of unshaded boxes checked (0-6)		PEDSUnshaded	Open-ended numeric field
	11Jiii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk		PEDSResult	Drop Down Box (closed- ended) Open text for

Topic	Data Collection Item	Instructions	Variable Name	Field type
	4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		PEDSResultOth	“Other” field
	11K) Was the PHQ-9 (Patient Health Questionnaire) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11L)		PHQ9USE	Drop Down Box (closed-ended)
	11Ki) Indicate the number of shaded boxes checked “More than half the days” or “Nearly every day” (0-9)		PHQ9OverHalf	Open-ended numeric field
	11Kii) Was Question 9 checked “Several Days”, “More than half the days”, or “Nearly every day”? 1-Yes 0-No		PHQ9Several	Drop Down Box (closed- ended)
	11Kiii) Indicate Total Score (0-27)		PHQ9TotScore	Open-ended numeric field
	11Kiv) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk		PHQ9Result	Drop Down Box (closed- ended)
	5-Other (specify)→ ________ 9-Not documented	“Other” screening result might include “none”, mild depression”, “moderate depression”, “moderately severe depression”, or “severe depression”.	PHQ9ResultOth	Open text for “Other” field

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11L) Was the Pediatric Symptom Checklist (PSC) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11M)		PSCUSE	Drop Down Box (closed- ended)
	11Li) Indicate the score (1-70)		PSCScore	Open-ended numeric field
	11Lii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		PSCResult PSCResultOth	Drop Down Box (closed- ended) Open text for “Other” field
	11M) Was the Pediatric Symptom Checklist-Youth Report tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11N)		PSCYouthReportUSE	Drop Down Box (closed- ended)
	11Mi) Indicate Total Score (0-70)		PSCYouthReportScore	Open-ended numeric field
	11Mii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk		PSCYouthReportResult	Drop Down Box (closed- ended) Open text for

Topic	Data Collection Item	Instructions	Variable Name	Field type
	4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		PSCYouthReportResultOth	“Other” field
	11N) Was the Strengths and Difficulties Questionnaire (SDQ) - Parent/Guardian (3-4 years of age) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11O) 11Ni) Indicate Total Difficulties Score (0-40) 11Nii) Indicate Impact Score (0-10) 11Niii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented	“Other” screening result might include “normal”, “borderline”, or “abnormal”.	SDQ3_4USE SDQ3_4TotScore SDQ3_4ImpactScore SDQ3_4Result SDQ3_4ResultOth	Drop Down Box (closed- ended) Open-ended numeric field Open-ended numeric field Drop Down Box (closed- ended) Open text for “Other” field
	11O) Was the Strengths and Difficulties Questionnaire (SDQ) - Parent/Guardian (4-10 years of age) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11P)		SDQ4_10USE	Drop Down Box (closed- ended) Open-ended

Topic	Data Collection Item	Instructions	Variable Name	Field type
	11Oi) Indicate Total Difficulties Score (0-40)		SDQ4_10TotScore	numeric field
	11Oii) Indicate Impact Score (0-10)		SDQ4-10ImpactScore	Open-ended numeric field
	11Oiii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk		SDQ4_10Result	Drop Down Box (closed- ended)
	5-Other (specify)→ __________ 9-Not documented	“Other” screening result might include “normal”, “borderline”, or “abnormal”.	SDQ4_10ResultOth	Open text for “Other” field
	11P) Was the Strengths and Difficulties Questionnaire (SDQ)-Self-Reported (11-17 years of age) tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q11Q)		SDQ11_17USE	Drop Down Box (closed- ended)
	11Pi) Indicate Total Difficulties Score (0-40)		SDQ11_17TotScore	Open-ended numeric field
	11Pii) Indicate Impact Score (0-10)		SDQ11-17ImpactScore	Open-ended numeric field
	11Piii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk		SDQ11_17Result	Drop Down Box (closed- ended)
	5-Other (specify)→ _________ 9-Not documented	“Other” screening result might include “normal”, “borderline”, or	SDQ11_17ResultOth	Open text for “Other” field

Topic	Data Collection Item	Instructions	Variable Name	Field type
		"abnormal".		
	11Q) Was some "Other" formal tool used? 1-Used 2-Used-Incomplete 3-Used-Not scored 0-Not used (Skip to Q12) 11Qi) Indicate name of other formal tool 11Qii) Indicate result of screening: 1-Positive 2-Negative 3-At risk/high risk 4-Not at risk/low risk 5-Other (specify)→ ________ 9-Not documented		OtherToolUSE OtherToolDescribe OtherToolResult OtherToolResultOth	Drop Down Box (closed- ended) Open-ended Drop Down Box (closed- ended) Open text for "Other" field
	12) Is there documentation indicating informal behavioral health or developmental screening or surveillance at this visit? 1-Yes 0-No (Skip to Q13) 12A) Indicate the result from the first type of informal BH screening or surveillance: 1-Positive 2-Negative 3-At risk/high Risk 4-Not at risk/low Risk 5-Other (specify)→ ________ 9-Not documented	Evidence of informal screening may be found in well-visit form, flow sheet, visit notes or nurse notes. Examples of written notation include "no mental health problem" or "no behavioral health problem". Some well-visit forms may have areas for behavioral health screening to be checked off. Accept only clear documentation of a result that was entered into the chart by a provider (e.g., positive, +, negative, -, at risk, etc.).	NODOCSCREENTOOL SCREENRESULT SCREENOTHERRESULT	Drop Down Box (closed- ended) Drop Down Box (closed- ended) Open text for "Other" field Open text

Topic	Data Collection Item	Instructions	Variable Name	Field type
	12B) Describe the first type of informal BH screening or surveillance→ ________________ 12C) Is there documentation indicating a second type of <u>informal</u> behavioral health or developmental screening or surveillance at this visit? 1-Yes 0-No (Skip to Q13) 12D) Indicate the result from the second type of informal BH screening or surveillance: 1-Positive 2-Negative 3-At risk/high Risk 4-Not at risk/low Risk 5-Other (specify)→ ________ 9-Not documented 12E) Describe the second type of informal BH screening or surveillance→ ______________________		OTHSCREENDESCRIBE NODOCSCREENTOOL2 SCREENRESULT2 SCREENOTHERRESULT2 OTHSCREENDESCRIBE2	Drop Down Box (closed- ended) Drop Down Box (closed- ended) Open text for “Other” field Open text
	13) Was any of the following documented at this visit date)? 13A) Advice or counseling by PCP 1-Yes 0-No		VISITDOCPCPADVICE	Drop Down Box (closed- ended)

Topic	Data Collection Item	Instructions	Variable Name	Field type
	13C) Parent or patient refusal or deferral of behavioral health screening services 1-Yes 0-No 13D) Other (specify)→ ________ 1-Yes 0-No	Q13B and Q14 were duplicate questions. Q13B was deleted.	VISITDOCREFUSAL VISITDOCOTHER VISITDOCOTHERSPEC	Drop Down Box (closed-ended) Drop Down Box (closed-ended) Open text for “Other” field
	14) Did the PCP make a referral to a behavioral health or developmental specialist or facility at this visit? 1-Yes 0-No (Stop chart abstraction for this visit)		VISITDOCPCPREFERRAL	Drop Down Box (closed-ended)
	15) Was the type of provider/facility indicated? 1-Yes 0-No (Stop chart abstraction for this visit)		REFDOCUNKNOWN	Drop Down Box (closed ended)
	16) Indicate the type of facility/ provider for which a referral was made (<u>Check all that apply</u>). 16A) Health Care Facilities • Community mental health center or licensed mental health agency • Emergency Service Provider	If the referral is made to a facility or to Behavioral Health Services in a managed care plan (i.e., not to individual provider), then indicate the type of facility under ‘Health Care Facilities’ (Q16A). If it is not clear what the type of facility to which the patient was referred, chose ‘other facility not listed’ and	HealthCareFacMENTALHEALTH	Checkboxes (true/false)

Topic	Data Collection Item	Instructions	Variable Name	Field type
	(ESP) • Substance abuse counseling agency • Other substance abuse treatment facility • Managed care organization’s BH services contractor • Other facility not listed (specify)→ ____________	provide detail in the comments box.	HealthCareFacESP HealthCareFacSUBABUSECOUNSEL HealthCareFacOTHERSUBABUSE HealthCareFacMCOBH HealthCareFacOTHER HealthCareFacOTHERSPEC	Open text for “Other” field
	16B) Mental Health Professionals • Psychiatric nurse • Psychiatrist • Massachusetts Child Psychiatry Access Project (MCPAP) • Psychologist • School counselor (may also be documented as ‘adjustment counselor’) • Licensed Independent Clinical Social Worker • Licensed Certified Social Worker • Licensed Social Worker • Social worker (type not defined) • Marriage and family counselor • Substance abuse counselor • Other mental health professional (specify)→_____	If the referral is made to an individual provider, indicate that provider’s type under ‘Mental Health Professionals’ (Q16B) or ‘Medical Professionals’ (Q16C). If the type of provider is not listed, chose ‘other’ and provide detail in the comment box.	MentalHealthPSYCHNURSE MentalHealthPSYCHIATRIST MentalHealthMCPAP MentalHealthPSYCHOLOGIST MentalHealthSCHOOLCOUNS MentalHealthLICSW MentalHealthCERTIFIEDSOCIALWKR MentalHealthLICSOCIALWRK MentalHealthOTHERSOCIALWKR MentalHealthMARRIAGECOUNS	Checkboxes (true/false) Open text for “Other” field
	16C) Medical Professionals			Checkboxes

Topic	Data Collection Item	Instructions	Variable Name	Field type
	• Adolescent medicine • Behavioral/developmental pediatrics • Hearing specialist (audiologist) • Vision specialist • Learning disabilities specialist • Neurologist • Medical specialist (include otolaryngologist here) • Occupational therapist • Physical therapist • Speech/language specialist (speech pathologist) • Surgical specialist • DPH/Early Intervention • Other medical professional (specify)→ ____________		MentalHealthSUBABUSECOUNS MentalHealthOTHER MentalHealthOTHERSPEC MedicalProfADOLESCENTMED MedicalProfBEHAVIORALPEDS MedicalProfAUDIOLOGIST MedicalProfVISION MedicalProfLD MedicalProfNEUROLOGIST MedicalProfMEDSPEC MedicalProfOCCUPTHERAPIST MedicalProfPHYSTHERAPIST MedicalProfSPEECHPATH MedicalProfSURGICALSPEC MedicalProfDPHEI MedicalProfOTHER MedicalProfOTHERSPEC	(true/false) Open text for "Other" field

Appendix B MassHealth Approved Screening Tools

The following table shows the MassHealth-approved standardized behavioral health screening tools for children under the age of 21.

Screening Tool	Full Name	Age Group	Available Language	Filled out by	Cost	Link
ASQ:SE	Ages and Stages Questionnaires: Social-Emotional	6 thru 60 months	English Spanish	Parent	Yes. Refer to website for details.	www.brookespublishing.com/asq
BITSEA	Brief Infant - Toddler Social and Emotional Assessment	12 to 36 months	English Spanish	Parent	Yes. Refer to website for details.	http://www.pearsonclinical.com/psychology/products/100000150/brief-infant-toddler-social-emotional-assessment-bitsea.html
CRAFFT	Car, Relax, Alone, Forget, Friends, Trouble; (Screening for substance abuse)	14 to 21 years	English Spanish Portuguese	Youth	No	http://www.ceasar-boston.org/CRAFFT/
M-CHAT	Modified Checklist for Autism in Toddlers	16 to 30 months	English Chinese Japanese Spanish Turkish	Parent	No	www2.gsu.edu/~psydlr

(continued)

Screening Tool	Full Name	Age Group	Available Language	Filled out by	Cost	Link
PEDS	Parents' Evaluation of Developmental Status	Birth to 8 years	English Spanish Vietnamese	Parent	Yes. Refer to website for details.	www.pedstest.com
PHQ-9	Patient Health Questionnaire-9; (Screening for depression)	13+ years	Available in over 40 languages	Youth	No	http://www.integration.samhsa.gov/images/res/PHQ%20-%20Questions.pdf
PSC	Pediatric Symptom Checklist	4 to 16 years	English Japanese Spanish	Parent	No	www.massgeneral.org/psychiatry/services/psc_home.aspx
PSC-Y	Pediatric Symptom Checklist – Youth Report	11 to 18 + years	English Japanese Spanish	Youth	No	www.massgeneral.org/psychiatry/services/psc_home.aspx
SDQ	Strengths and Difficulties Questionnaire Self-rated SDQ	3 thru 16 years 11 thru 16 years	English Spanish German Italian Swedish Finnish Danish	Parent Youth	No No	www.sdqinfo.org www.sdqinfo.org

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