



Child ADHD in Michigan

Introduction

Attention deficit hyperactivity disorder (ADHD) is the most common neurobiological disorder among children in the U.S.¹ Hyperactivity, impulsiveness, and difficulty staying focused or paying attention are common symptoms of ADHD, and may continue into adulthood. Children with ADHD will often have other co-occurring mental health conditions or learning disabilities and tend to have more school-based and health care needs than children without ADHD.

Research has established medication and behavioral therapy as the most effective treatments for ADHD.² Medication for ADHD, most commonly stimulant medications such as methylphenidate (e.g., Ritalin) or amphetamines (e.g., Adderall), and behavioral therapy, including psychotherapy or social skills training, can be prescribed alone or in combination. In the American Academy of Pediatrics' (AAP) most recent guidelines for ADHD diagnosis, evaluation, and treatment, recommendations vary by age group. Behavioral therapy is recommended first for preschool children, supplemented by ADHD medication if therapy does not improve symptoms. For older children, the AAP recommends ADHD medications with or without behavioral therapy. Combination therapy is preferred, particularly for elementary children.³

In practice, many children treated for ADHD are prescribed only ADHD medication; many fewer receive behavioral therapy.⁴ ADHD medication can reduce symptoms and behaviors, but

¹ Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management, Wolraich M, Brown L, Brown RT, DuPaul G, et al. "ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/ hyperactivity disorder in children and adolescents," *Pediatrics*, 2011, 128(5):1007–1022.

² W.E. Pelham, G.A. Fabiano, J.G. Waxmonsky et al., "Treatment Sequencing for Childhood ADHD: A Multiple-Randomization Study of Adaptive Medication and Behavioral Interventions," *Journal of Clinical Child & Adolescent Psychology*, Feb. 2016, 1-20.

³ Subcommittee on Attention-Deficit/Hyperactivity Disorder, 2011.

⁴ S.N. Visser, R.H. Bitsko, M.L. Danielson et al., "Treatment of Attention Deficit/Hyperactivity Disorder among Children with Special Health Care Needs," *The Journal of Pediatrics*. April 2015, 166(6):1423-30.

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Suggested citation: Peters, Claire; Shah, Arnav; Rontal, Robyn; Biermann, Bernard; Udow-Phillips, Marianne. *Child ADHD in Michigan*. May 2016. Center for Healthcare Research & Transformation. Ann Arbor, MI.

has side effects—such as poor appetite or difficulty sleeping— and may not be a cure-all in the long term. Behavioral therapy can improve a child’s immediate behaviors and develop skills that can carry into adulthood.⁵ Recent evidence indicates that behavioral therapy can be more effective as a first line treatment for elementary school children than starting with medication.⁶ A recent U.S. Centers for Disease Control and Prevention (CDC) report on ADHD treatment for younger children found that medication treatment was more common than psychological services.⁷

This brief examines ADHD treatment for Michigan children (aged 4 to 17), including medication and behavioral therapy, and regional variation in treatment patterns.

Key Findings

- In 2011, 8.8 percent (5.1 million) of U.S. children aged 4 to 17 were reported by parents as having an ADHD diagnosis. Approximately 6.3 percent (approximately 17,000 patients) of privately insured children in the Michigan study group had a claim related to ADHD in 2013. ADHD among children in Michigan ranged from 4.6 percent of children in the Dearborn Hospital Referral Region (HRR)⁸ to 7.3 percent in the St. Joseph and Muskegon HRRs.
- Once diagnosed with ADHD, most Michigan children were prescribed ADHD medication alone (52.5 percent), which was higher than the national rate (43.3 percent).
- The rate of ADHD medication alone to treat children with ADHD varied by region within Michigan, with Royal Oak at 44.5 percent compared to Petoskey at 67.5 percent.
- About 9.7 percent of Michigan children received behavioral therapy alone for ADHD, and 30.7 percent received both ADHD medication and behavioral therapy.
- Compared to national treatment rates, Michigan children with ADHD generally had lower rates of treatment via behavioral therapy only and higher rates of treatment through ADHD medication only across all age groups, with the exception of the youngest age group (aged 4 to 5).
- Rates of behavioral therapy among children with ADHD varied considerably by geography in Michigan. Only 4.3 percent of children diagnosed with ADHD in the Petoskey HRR received behavioral therapy alone, while 13.5 percent of children received behavioral therapy alone in the Royal Oak HRR, the highest region in the state. Lower rates of behavioral therapy may be due to challenges in accessing mental health providers in more rural regions of the state.
- Rates of ADHD treatment consisting of both medication and behavioral therapy, as generally recommended by the American Academy of Pediatrics, ranged from 18.4 percent in Petoskey to 36.1 percent in Royal Oak.

⁵ S.M. Watson, C. Richels, A.P. Michalek et al., “Psychosocial Treatments for ADHD: A Systematic Appraisal of the Evidence,” *Journal of Attention Disorders*, Jan. 2015, 19(1): 3-10.

⁶ W.E. Pelham, et al., 2016.

⁷ S.N. Visser, M.L. Danielson, M.L. Wolraich, et al. “Vital Signs: National and State-Specific Patterns of Attention Deficit / Hyperactivity Disorder Treatment Among Insured Children Aged 2-5 – United States, 2008-2014,” *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report*, May 3, 2016. Vol. 65.

⁸ Hospital Referral Regions (HRRs) are regional health care markets for tertiary medical care that contain at least one hospital. HRRs are defined by the Dartmouth Atlas of Health Care by determining where patients are referred for major cardiovascular surgery and neurosurgery. For more information, see: <http://www.dartmouthatlas.org/>.

About ADHD

In 2011, 8.8 percent (5.1 million) of U.S. children aged 4 to 17 were reported by parents as having an ADHD diagnosis, up from 7.2 percent (4.1 million) in 2007, according to the National Survey of Children's Health (NSCH).⁹ Severe inattention, hyperactivity, and impulsivity are the three main behaviors of ADHD. To be diagnosed with ADHD, children must display six or more symptoms of inattention and/or hyperactivity and impulsivity more so than other children of the same age, for at least six months, to a degree that causes impairment and affects both school and home life.¹⁰ Similar to other neurobehavioral disorders, early identification, diagnosis and treatment will not cure ADHD, but will help children develop skills to reduce ADHD symptoms and successfully manage their condition. Overall, medication is the most common form of ADHD treatment (either through medication alone or in combination with behavioral therapy).¹¹

Children with ADHD experience functional impairment that can make them more susceptible than their peers to challenges in life such as unintentional injury, social problems, and academic issues.¹² Children with ADHD often have other illnesses or conditions such as learning disabilities, oppositional defiant disorder, conduct disorder, anxiety, depression, and bipolar disorder.¹³

Overall, ADHD is a costly mental health condition. The estimated costs (in 2010 dollars) of ADHD among both children and adults range from \$143 to \$266 billion annually, with most costs (\$87-\$138 billion) associated with productivity and income losses among adults. Among children with ADHD, most estimated costs are associated with health care (\$21-\$44 billion) and education (\$15-\$25 billion). Family members of people with ADHD are subjected to a substantial amount of spillover costs (\$33-\$43 billion), related to health costs and productivity losses.¹⁴

⁹ NSCH is parent-reported and includes children with all insurance types. See S.N. Visser, M.L. Danielson, R.H. Bitsko et al., "Trends in the parent-report of health care provider-diagnosed and medicated attention-deficit/hyperactivity disorder: United States, 2003–2011," *Journal of the American Academy of Child & Adolescent Psychiatry*, Jan. 2014, 53(1), 34-46.

¹⁰ American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 5th edition. Arlington, VA., American Psychiatric Association, 2013.

¹¹ S.N. Visser et al, 2014.

¹² S.N. Visser et al, 2014.

¹³ *Attention Deficit Hyperactivity Disorder* (N.p.: National Institute of Mental Health, March 2016): <http://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml> (accessed 4/14/16).

¹⁴ Costs here are defined as "incremental costs of ADHD (i.e., excess costs over and above those of individuals without ADHD)". See: J.A. Doshi, P. Hodgkinds, J. Kahle et al. "Economic impact of childhood and adult attention-deficit/hyperactivity disorder in the United States," *Journal of the American Academy of Child & Adolescent Psychiatry*, Oct. 2012, 51(10):990-1022.

Treatment for ADHD

The American Academy of Pediatrics (AAP) released updated guidelines in 2011 for best practices for the diagnosis and treatment of child and adolescent ADHD among children aged 4 to 18. The AAP recommends evidence-based parent- and/or teacher-assisted behavioral therapy first for preschool aged children (aged 4 to 5). If therapy does not sufficiently improve symptoms, the guidelines recommend prescribing medication, specifically short-acting methylphenidate (brand name: Ritalin), a psychostimulant. For older children, ADHD medication treatment either with or without behavioral therapy is recommended. Combining behavioral therapy with ADHD medication is preferred, particularly for elementary-aged children (aged 6-11).¹⁵

The AAP guidelines also recommend recognizing ADHD as a chronic condition. These children should be considered as having special health care needs, requiring additional health and other related services. This classification has implications for the care management of children with ADHD. Care providers are advised to follow the principles of the chronic care model and the medical home, such as providing quality comprehensive care for meeting all of a patient's needs in a coordinated, accessible, patient-centered fashion. The AAP's 2011 guidelines were endorsed by the American Academy of Family Physicians (AAFP) in 2012.¹⁶

¹⁵ Subcommittee on Attention-Deficit/Hyperactivity Disorder, 2011.

¹⁶ L. Hauk, "AAP Releases Guideline on Diagnosis, Evaluation, and Treatment of ADHD," *American Family Physician*, Jan. 2013, 87(1):61-62.

ADHD in Michigan

Children with Services for ADHD

In 2013, approximately 6.3 percent (approximately 17,000 patients) of children aged 4 to 17 living in Michigan had a claim related to ADHD. Nationally, 8.8 percent of children aged 4 to 17 had ADHD in 2011.¹⁷ ADHD among children in Michigan ranged from 4.6 percent in the Dearborn Hospital Referral Region (HRR) to 7.3 percent in the St. Joseph and Muskegon HRRs.^{18,19} Seven in 10 children with ADHD were boys. One in four children with ADHD also had a co-occurring mental health disorder (25.2 percent), such as depression or anxiety.²⁰ More than half the children with services for their ADHD were older (57.5 percent aged 12-17).

Medication Is Most Common Treatment for ADHD

Clinical guidelines recommend combining medication and behavioral therapy as the preferred treatment for most children.²¹ Once diagnosed with ADHD, most children were prescribed ADHD medication alone (52.5 percent), which was higher than the national rate (43.3 percent).^{22,23} Treatment of ADHD with prescription medication alone varied by region, from 44.5 percent in the Royal Oak HRR to 67.5 percent in the Petoskey HRR. One in three children with ADHD (30.7 percent) received both ADHD medication and behavioral therapy, including individual, group or family psychotherapy.²⁴ This rate matched the national parent-reported rates for combined treatments (30.7 percent). By contrast, only 9.7 percent of children with ADHD received behavioral therapy only, which is slightly lower than the national rate (13.3 percent). Children with ADHD who had a claim for another mental health diagnosis were more likely to receive behavioral therapy than children who had ADHD alone.

Regional Variation in Treatment across Michigan

In Michigan, about 3 in 10 children with ADHD received both ADHD medication and behavioral therapy in 2013 (30.7 percent). There was substantial variation in combined medication and behavioral therapy treatment by region, ranging from 18.4 percent in the Petoskey HRR to 36.1 percent in the Royal Oak HRR. (Figure 1)

¹⁷ S.N. Visser et al., 2014.

¹⁸ Hospital Referral Regions (HRRs) are regional health care markets for tertiary medical care that contain at least one hospital. HRRs are defined by the Dartmouth Atlas of Health Care by determining where patients are referred for major cardiovascular surgery and neurosurgery. For more information, please see:

<http://www.dartmouthatlas.org/>.

¹⁹ There are 15 hospital referral regions (HRRs) that are primarily located in Michigan.

²⁰ Mental health disorders included in this statistic were anxiety, bipolar disorder, depression, schizophrenia, and substance use disorder.

²¹ Subcommittee on Attention-Deficit/Hyperactivity Disorder. 2011.

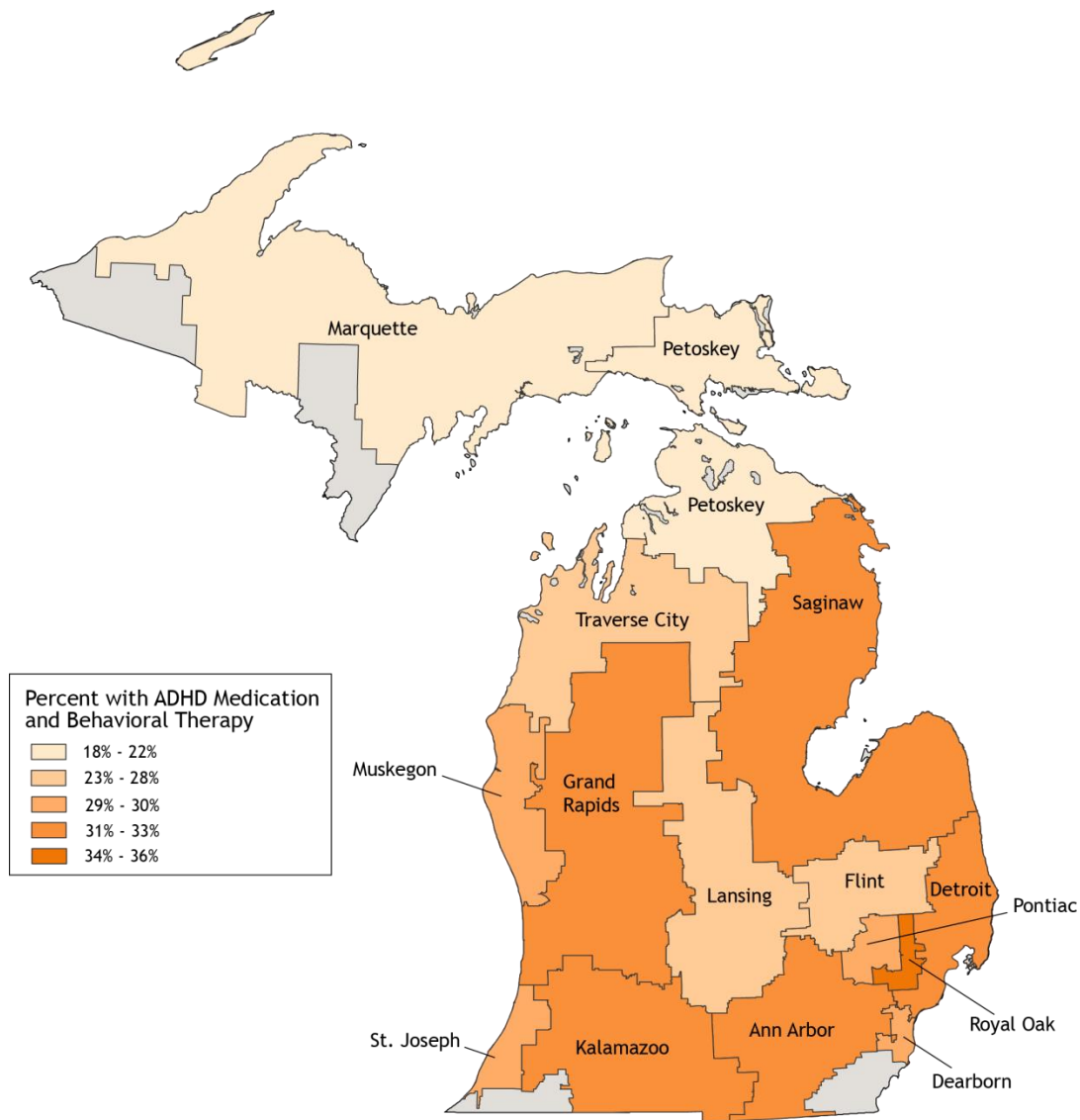
²² For a detailed table of prescribed ADHD medication rates by HRR, refer to Appendix Figure A-1.

²³ S.N. Visser et al., 2015.

²⁴ Behavioral therapy was defined as outpatient claims for psychological treatment services.

FIGURE:1

Rates of Combined ADHD Medication and Behavioral Therapy among Children with BCBSM coverage with ADHD, by Hospital Referral Regions in Michigan, 2013²⁵



SOURCE: CHRT analysis of Centers for Medicare & Medicaid Services National Provider Identification Registry, County Health Rankings. Robert Wood Johnson Foundation.

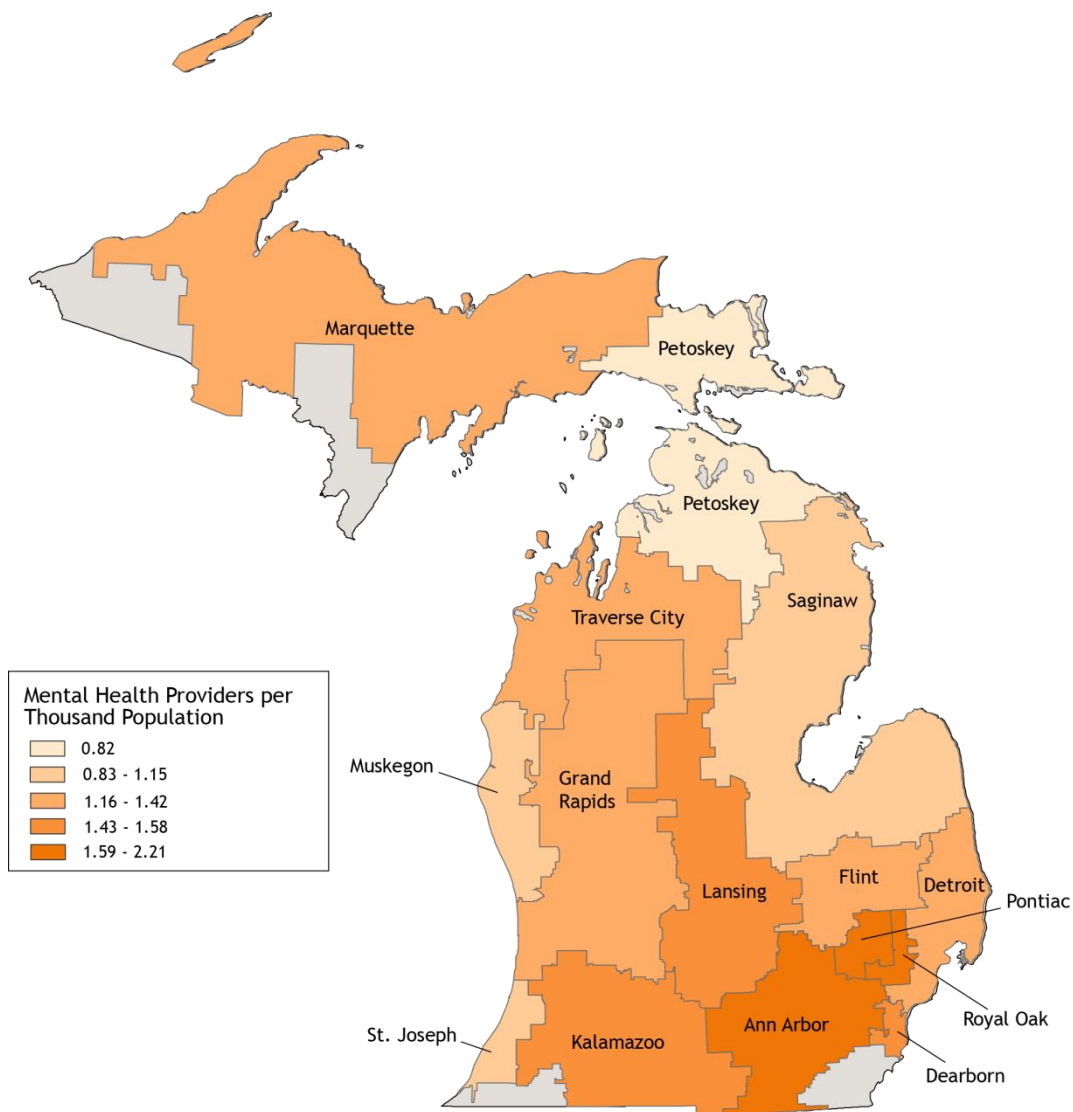
Areas of the state with more mental health providers generally had higher rates of behavioral therapy and ADHD medication. For example, Royal Oak HRR (with the highest rate of behavioral therapy and ADHD medication) had the second highest proportion of mental health providers to the population (2.07 per 1,000 residents). Most hospital referral regions that had behavioral therapy rates below the state average also had a low provider to population ratios. The Petoskey HRR (with the lowest rate of

²⁵ While most children with an ADHD claim in 2013 are captured by the state's 15 HRRs, 2.7 percent were located in HRRs primarily located in neighboring states and were excluded from Figures 1 and 2.

combined behavioral therapy and ADHD medication) had the lowest mental health providers per 1,000 residents in the state (0.82). Lower rates of behavioral therapy may indicate challenges to accessing mental health providers in more rural regions of the state. (Figure 2)

FIGURE:2

Estimated mental health provider to population ratio (per 1,000 residents), by Hospital Referral Regions in Michigan, 2013²⁶



SOURCE: CHRT analysis of Centers for Medicare & Medicaid Services National Provider Identification Registry, County Health Rankings. Robert Wood Johnson Foundation.

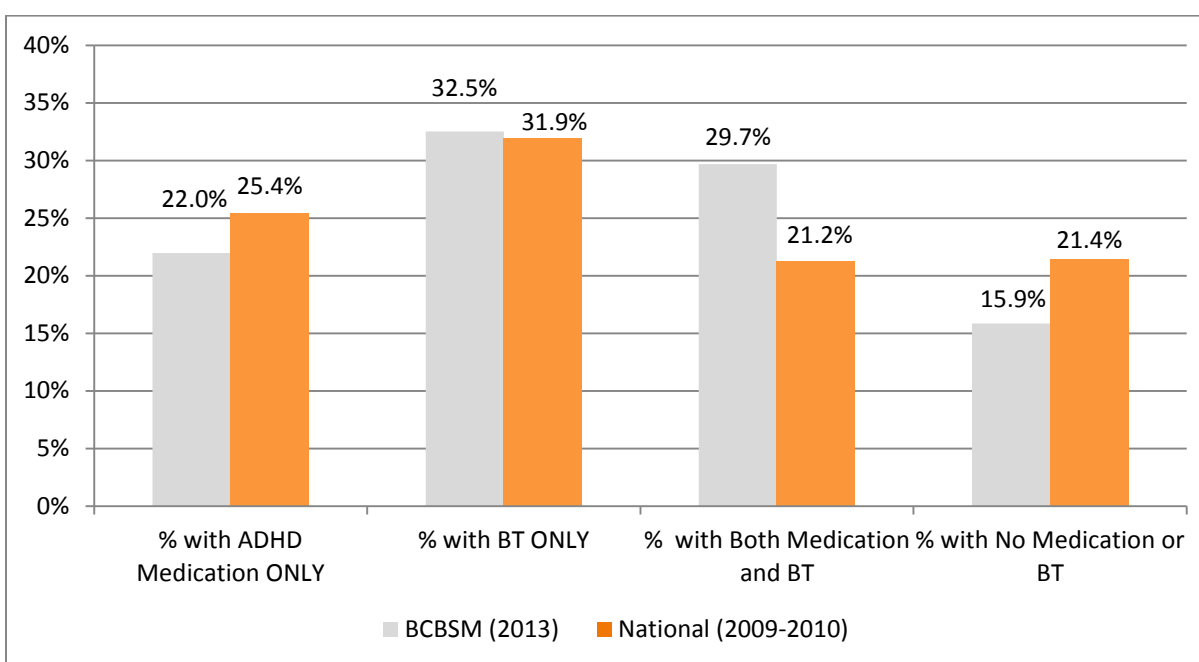
²⁶ Robert Wood Johnson Foundation County Health Rankings. *Mental health providers, Michigan*. (N.p.: 2014): <http://www.countyhealthrankings.org/app/michigan/2014/measure/factors/62/description?sort=sc-2> (access 4/14/2016).

Rates of Behavioral Therapy Compared to Medication By Age

While treatment guidelines generally recommend prescribing both ADHD medication and behavioral therapy, specific guidelines vary by age. In practice, Michigan children with ADHD generally had lower rates of treatment via behavioral therapy only and higher rates of treatment through ADHD medication only compared to national rates, with the exception of the youngest age group (aged 4 to 5). For children aged 4 to 5, the American Academy of Pediatrics recommends prescribing behavioral therapy as the first line of treatment, and if symptoms do not improve, prescribing ADHD medication. In Michigan, 32.5 percent of younger children (aged 4 to 5) received behavioral therapy alone for their ADHD, which was similar to the national average (31.9 percent). About 22.0 percent of these children received ADHD medication alone and 29.7 percent received both behavioral therapy and ADHD medication. (Figure 3)

FIGURE:3

Rates of ADHD Medication and Behavioral Therapy (BT), Children aged 4-5, Michigan and U.S.²⁷



SOURCES: CHRT analysis of BCBSM claims data.
S.N., Visser et al., 2015.

For school-aged children (aged 6 to 11), the AAP recommends ADHD medication or behavioral therapy, but preferably both. Among Michigan children aged 6 to 11 with ADHD, most received ADHD medication alone (50.9 percent), which was higher than the national average (42.5 percent). Less than a third of those children received both ADHD medication and behavioral therapy (31.1 percent), which was lower than the national average (34.7 percent). While medication treatment only is consistent with guidelines for school-aged children, it may not be the optimal treatment for many children and combined treatment with medication and behavioral therapy is preferred.²⁸

²⁷ The comparison data reports the percent of children who had ADHD medication in the past week in the 2015 Visser study, while the BCBSM analysis reports medication in the past year.

²⁸ Refer to Appendix Figure A-3.

Finally, AAP guidelines state that adolescents should receive ADHD medication or behavioral therapy, and a combination of both treatments is preferred. Most adolescents with ADHD (aged 12-17) were prescribed ADHD medication alone (54.5 percent), compared to 45.3 percent nationally, and 30.5 percent received a combination of ADHD medication and behavioral therapy, slightly higher than the national rate of 27.9 percent.²⁹

Barriers to ADHD Treatment

Treatment guidelines recommend both behavioral therapy and ADHD medication; however, in practice, there are challenges to treating children, particularly for behavioral therapy. One major barrier is the shortage of mental health providers. In the U.S., certain regions are federally designated as mental health provider shortage areas (MH HPSAs), based on criteria such as if an area has a population of 30,000 or more residents per one psychiatrist.³⁰ In 2014, there were 191 MH HPSAs in Michigan (representing 4.8 percent of MH HPSAs in the US), particularly in rural regions, and those providers have been able to meet the needs of only 41.4 percent of the population.^{31,32} Variation in treatment patterns for children with BCBSM coverage with ADHD, particularly behavioral therapy, may indicate challenges to accessing mental health providers in certain regions of the state.

Primary care providers (PCPs) can and do play a crucial role in providing a treatment plan for children with ADHD, however they often lack the time or resources to provide behavioral therapy on an ongoing basis. While PCPs have limited time with each patient, they are increasingly treating children with emotional and behavioral disorders. Recent research finds that among children with mental health conditions, one-third (34.8 percent) who had outpatient care saw their PCP only (no psychiatrist), and those with ADHD were more likely to see their PCP only (41.8 percent).³³ Furthermore, behavioral therapy requires a higher level of parental engagement, which for some families may be difficult to sustain. Studies have found that children with ADHD who see their PCP for ADHD treatment are more likely to be prescribed stimulant medication than children with ADHD who go to a psychiatrist or mental health specialty clinic.³⁴ ADHD medications may provide a more immediate improvement in a child's behaviors and functioning, but have some potential adverse side effects and may not be as effective as a combination treatment of medication and behavioral therapy.

²⁹ Refer to Appendix Figure A-3.

³⁰ Health Resources and Services Administration, *Guidelines for Mental Health HPSA Designation*. <http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/mentalhealthhpsaguidelines.html> (accessed 4/15/2016).

³¹ Kaiser Family Foundation, *Mental Health Care Health Professional Shortage Areas (HPSAs)*. (N.p.: April 2014): <http://kff.org/other/state-indicator/mental-health-care-health-professional-shortage-areas-hpsas/> (accessed 4/14/16).

³² The percent of need met is calculated by dividing the number of psychiatrists available to serve the population of the area, group, or facility by the number of psychiatrists that would be necessary to eliminate the mental health HPSA based on a ratio of 30,000 to 1 (20,000 to 1 where high needs are indicated).

³³ L.E. Anderson, M.L. Chen, J.M. Perrin et al., "Outpatient Visits and Medication Prescribing for US Children with Mental Health Conditions," *Journal of Pediatrics*, Aug. 2015, 136(5):e1178-e1185.

³⁴ L.E. Anderson et al., 2015 and B.T. Zima, R. Bussing, L. Tang. "Quality of Care for Childhood Attention Deficit/Hyperactivity Disorder in a Managed Care Medicaid Program," *Journal of the American Academy of Child & Adolescent Psychiatry*, Dec. 2010, 49(12):1225-123811.

Opportunities to Address ADHD and Mental Health Treatment

While the challenge of mental health providers is considerable, there are opportunities to improve mental health treatment for children with ADHD. Advances in care delivery models and increasing the role of non-psychiatrist behavioral health providers can alleviate the shortage of psychiatrists and provide better support to PCPs who play a central role in diagnosing and treating children with ADHD.

Telehealth, and teleconsultation in particular, is an alternative delivery model for PCPs to determine appropriate treatments for patients with limited access to mental health providers. Through this model, PCPs, many of whom practice in rural areas, consult with psychiatrists by phone or videoconferencing to assist with psychiatric evaluations and treatment plans, including referrals for behavioral therapy. These consultations increase primary care providers' access to psychiatric expertise for their patients. Recent research has demonstrated the effectiveness of a telehealth service model for ADHD patients in areas with limited access to mental health services.³⁵ Telehealth programs are developing quickly across the U.S.; however, despite this growth, billing for these services is uncommon in Michigan.³⁶ One barrier to PCPs using telehealth is finding ways to integrate the service into their regular work flow.³⁷ There is a need for more research to support this approach in order to elevate telehealth as a model for delivering mental health services to address the mental health provider shortage.

Another opportunity to improve treatment for children with ADHD is by integrating support services in the primary care setting, which is a key element to health care reform under the Affordable Care Act. As more patients gain insurance through coverage expansion and seek mental health services, there is an even greater need for models of care that support PCPs with their mental health patients. One approach is through a collaborative care model, in which PCPs, mental health providers, care managers, and other providers work together to diagnose, develop a treatment plan, refer, and manage a child's mental health condition. This model offers an approach to improve a patient's access to mental health care and monitoring of a patient's progress via the primary care setting. This model often focuses on consultative services to develop mental health care treatment plans for primary care providers, particularly for less severe mental health conditions, enabling treatment for more patients than could be seen by psychiatrists alone.³⁸

³⁵ K. Myers, A.V. Stoep, C. Zhou et al., "Effectiveness of a Telehealth Service Delivery Model for Treating Attention-Deficit/Hyperactivity Disorder: A Community-Based Randomized Controlled Trial," *Journal of the American Academy of Child & Adolescent Psychiatry*, April 2015, 54(4):263-274.

³⁶ Communication with Tom Simmer, BCBSM.

³⁷ Communication with Michigan Child Collaborative Care Program (MC3) program manager, Anne Kramer.

³⁸ O. Aupont, L. Doerfler, D.F. Connor et al., "A Collaborative Care Model to Improve Access to Pediatric Mental Health Services," *Administration and Policy in Mental Health and Mental Health Services Research*, July 2013, 40(4):264-273.

Conclusion

As a result of the Affordable Care Act, hundreds of thousands of Michigan residents have gained health coverage, including mental health services. However, there are considerable challenges to delivering optimal mental health treatment to children and adults, such as limited access to mental health providers and a need for more care delivery support in the primary care setting. In Michigan, most children with ADHD received medication alone and less than a third of children received both medication and behavioral therapy, the preferred treatment, particularly for younger children. Primary care providers can and do play a substantial role in diagnosing and treating child ADHD and will continue to in the future. Policies that support the integration of mental health services in the primary care setting and expand the role of non-psychiatrists can address barriers to care and improve a child's outcomes into adulthood.

Methods

This study examined treatment patterns for privately insured children who received clinical care for ADHD in Michigan, using health care claims data from BCBSM. The study population includes children aged 4 to 17 in 2013, who were continuously enrolled for the full calendar year with medical and pharmacy coverage and had a primary or secondary diagnosis of ADHD on one or more claims during the calendar year. Children were identified as having medication treatment for ADHD if they had a pharmacy claims for ADHD medication, using the medication list from the Healthcare Effectiveness Data and Information Set (HEDIS) definition for the measure Follow-Up Care for Children Prescribed ADHD Medication (ADD). Children were identified as having behavioral therapy for ADHD if they had outpatient claims for psychological treatment services.

Findings from this study are provided at the state level as well as hospital referral region (HRR).³⁹ Because some purchasers have mental health carve-outs (health plan programs that contract directly with behavioral health organizations and separately from the remaining health care benefit package), some health care claims related to mental health services that are not captured in this study population. Children who received behavioral therapy through self-pay or school-based treatment were not identified in this study population.

For the mental health provider-to-population ratios (Figure 2), the number of mental health providers by HRR were determined by taking the counts of mental health providers by county (from Robert Wood Johnson Foundation's County Health Rankings), and multiplying that number by the percentage of zip codes in the county that fell within each HRR (using the ZCTA allocation factor from the University of Missouri) and then summing the amounts for each HRR. We calculated the population of each HRR using county-level population data from the RWJF County Health Rankings and the same ZCTA allocation factor. We then calculated the number of mental health providers per 1,000 residents for each HRR. For more information about the University of Missouri geographic correspondence data, please see <http://mcdc.missouri.edu/websas/geocorr12.html>.

³⁹ Hospital Referral Regions (HRRs) are regional health care markets for tertiary medical care that contain at least one hospital. HRRs are defined by the Dartmouth Atlas of Health Care by determining where patients are referred for major cardiovascular surgery and neurosurgery. For more information, please see: <http://www.dartmouthatlas.org/>.

Appendix

FIGURE:A-1

Percent of BCBM Children (aged 4-17) Who Had a Claim Related to ADHD, Michigan and by Hospital Referral Region (HRR), 2013

HRR	Percent of Children with BCBSM coverage with ADHD, 2013
Ann Arbor	6.3%
Dearborn	4.6%
Detroit	6.6%
Flint	5.6%
Grand Rapids	6.9%
Kalamazoo	6.7%
Lansing	6.6%
Marquette	5.6%
Muskegon	7.3%
Petoskey	6.3%
Pontiac	6.6%
Royal Oak	5.6%
Saginaw	5.9%
St. Joseph	7.3%
Traverse City	7.1%
State	6.3%

FIGURE:A-2

Treatment for children with BCBSM coverage with ADHD (aged 4-17), Michigan and by Hospital Referral Region (HRR), 2013

HRR	% with ADHD Medication ONLY	% with Behavioral Therapy ONLY	% with Both Medication and BT	% with No Medication or BT
Ann Arbor	51.1%	10.4%	31.7%	6.8%
Dearborn	53.0%	11.2%	30.2%	5.7%
Detroit	53.8%	7.1%	31.6%	7.5%
Flint	54.4%	10.3%	28.4%	6.9%
Grand Rapids	51.3%	10.7%	32.3%	5.7%
Kalamazoo	50.8%	10.4%	32.2%	6.6%
Lansing	54.2%	10.5%	26.1%	9.1%
Marquette	60.3%	7.3%	22.3%	10.1%
Muskegon	55.7%	9.4%	29.8%	5.1%
Petoskey	67.5%	4.3%	18.4%	9.8%
Pontiac	54.3%	8.7%	30.1%	6.9%
Royal Oak	44.5%	13.5%	36.1%	5.9%
Saginaw	50.4%	9.4%	33.1%	7.2%
St. Joseph	52.2%	9.8%	30.4%	7.6%
Traverse City	55.7%	8.0%	27.5%	8.8%
State of Michigan	52.5%	9.7%	30.7%	7.0%

FIGURE:A-3

Rates of ADHD Medication and Behavioral Therapy (BT), by Age Group, Michigan and US

Age Group	BCBSM Population, 2013				National Comparison, 2009-2010			
	% with ADHD Medication ONLY	% with BT ONLY	% with Both Medication and BT	% with No Medication or BT	% with ADHD Medication ONLY	% with BT ONLY	% with Both Medication and BT	% with No Medication or BT
Ages 4-5	22.0%	32.5%	29.7%	15.9%	25.4%	31.9%	21.2%	21.4%
Ages 6-11	50.9%	11.1%	31.1%	6.9%	42.5%	12.8%	34.7%	10.1%
Ages 12-17	54.5%	8.1%	30.5%	6.9%	45.3%	12.5%	27.9%	14.3%
Overall	52.5%	9.7%	30.7%	7.0%	43.3%	13.3%	30.7%	12.7%

