Pediatric Quality Measures Program

Safe and Judicious Use of Antipsychotic Medications in Children and Adolescents Toolkit

Agency for Healthcare Research and Quality

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Introduction

This toolkit presents a children's health care quality measure from the AHRQ-CMS Pediatric Quality Measures Program (PQMP). The measure has been developed by PQMP Centers of Excellence (COE) grantee, the National Collaborative for Innovation in Quality Measures (NCINQ), a consortium of organizations committed to advancing measurement of pediatric health care. NCINQ is led by the National Committee for Quality Assurance (NCQA) in partnership with New York University Langone Health (NYU) and Youth MOVE National (YMN).

The change ideas, resources, and examples presented in this toolkit reflect efforts by state Medicaid agencies, health plans, and practices to improve performance on the Healthcare Effectiveness Data and Information Set (HEDIS®[1]) antipsychotics measures developed by NCINQ.

This toolkit includes materials to support users in working towards improvement in the safe and judicious use of antipsychotic medications (first and second generation) in children and adolescents. Specifically, the toolkit includes:

- A collection of strategies and change ideas for health plans, practices, and providers to choose from when working towards improvement;
- Actions health plans can take to make improvements; and,
- Options that states, plans, providers, and patients and their families can apply during process improvement efforts.

The intended audiences for this toolkit are health plans, medical practices and providers.

This toolkit is organized into five (5) sections:

1. Overview
2. About the Measure
3. Key Driver Diagrams
4. Quality Improvement Strategies
5. Other Resources

The key drivers, change ideas, and resources provided are intended to serve as options that states, plans, providers, and patients and their families can apply. Process improvement teams can reference the key driver diagrams to brainstorm and implement change ideas, as well as consult *QI Best Practices for the Safe and Judicious Use of*

1 HEDIS is a registered trademark of the National Committee for Quality Assurance.

Antipsychotic in Children and Adolescents as a roadmap for improvement. For detailed information on guidelines and recommendations specific to the measures included in this toolkit, refer to *Guidelines and Recommendations for the Safe and Judicious Use of Antipsychotic Medications in Children and Adolescents*

Overview

The safe and judicious use of antipsychotic medications is a critical issue for children and youth. Antipsychotics are powerful medications indicated for treating a limited range of children's mental health problems, including schizophrenia and bipolar disorder.[1] While antipsychotic medications may serve as an effective treatment for a defined set of psychiatric disorders in children and adolescents, they are often prescribed for non-psychotic conditions, such as attention-deficit/hyperactivity disorder (ADHD), maladaptive aggression behaviors, disruptive behavior disorders, and other non-indicated conditions.[2,3,4] The use of antipsychotics in children and adolescents can increase the risk for developing serious health concerns, such as metabolic and physical health complications, which can adversely affect development.[5] Antipsychotic medications are associated with a number of negative health impacts, including weight gain and diabetes, which can have serious implications for future health outcomes.[6,7,8] Additionally, there are serious risks associated with antipsychotic medications in children, including liver toxicity, cardiac arrhythmias, extrapyramidal side effects, sedation, and somnolence.[9]

Despite known health risks, antipsychotic prescribing in children and adolescents rapidly increased in recent decades.[5,10,11,12] This increase appears to be related to off-label use of antipsychotics to treat aggression, maladaptive behaviors, and other non-indicated mental health problems. Psychosocial interventions are considered first-line treatment for children, adolescents, and their families for a variety of mental health disorders, including but not limited to bipolar disorder, maladaptive aggression, and oppositional defiant disorder, and have been proven as effective treatments. Children and adolescents without a primary indication for an antipsychotic (e.g., schizophrenia, bipolar disorder) who are not first provided a trial of psychosocial treatment may unnecessarily incur the metabolic and physical health risks associated with antipsychotic medications.[2,3,4] Psychosocial interventions are associated with better outcomes, while underuse of these therapies may lead to poorer mental and physical health outcomes.[13,14,15] In addition, given the health risks associated with the use of antipsychotics in children and adolescents, multiple and concurrent antipsychotics should be avoided unless there is a compelling rationale to the contrary.[16]

In response to reviews of guidelines and identified gaps in care, NCINQ developed three measures to assess safe and judicious antipsychotic use among children and adolescents.[16] These measures were adopted into HEDIS beginning in 2015.[17]

About the Measure

This section provides an overview of the safe and judicious use of antipsychotic medications in children and adolescents measure set, details about measure reporting, and general information on guidelines and recommendations.

TARGET MEASURES

NCINQ, led by NCQA, developed a set of quality measures to assess the safe and judicious use of antipsychotic medications in children and adolescents. The measures were designed to encourage vigilant prescribing and developed using a multi-stakeholder consensus process, which included advisory panels, testing, and public comment. The measures were tested using data from 17 Medicaid managed care plans in a large, mid-Atlantic state, as well as data from 73 commercial plans nationwide. Consistent with previous research findings, testing results demonstrated gaps in care, particularly for the receipt of first-line psychosocial care and metabolic monitoring. The measures are presented in Table 1 and were adopted into the HEDIS Health Plan Measures Set in 2014 (for first-year reporting in 2015).[17] The measure descriptions below are from HEDIS 2020. Updated specifications are published annually in *HEDIS Volume 2: Technical Specifications for Health Plans* which can be found at http://store.ncqa.org/index.php/.

Table 1. HEDIS Safe and Judicious Use of Antipsychotic Medications in Children and Adolescents Measure Set

Measure Name	Description	Details
Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics	Percentage of children and adolescents with a new prescription for an antipsychotic medication and documentation of psychosocial care as first-line treatment.	**Denominator:** Age 1-17 with a new prescription for an antipsychotic. **Numerator:** Received psychosocial care 90 days prior to or within 30 days after starting an antipsychotic. **Exclusions:** Diagnoses for which there is a Food and Drug Administration-indicated use of antipsychotics.
Metabolic Monitoring for Children and Adolescents on Antipsychotics	Percentage of children and adolescents with ongoing antipsychotic use who received annual metabolic testing.	**Denominator:** Age 1-17 with at least two prescriptions for antipsychotics within a year. **Numerator:** Received the following during the measurement year: • Glucose test. • Cholesterol test. • Both a glucose and cholesterol test.

Measure Name	Description	Details
Use of Multiple Concurrent Antipsychotics in Children and Adolescents	Percentage of children and adolescents on two or more concurrent antipsychotic medications *(lower rate indicates better performance)*.	**Denominator:** Age 1-17 with at least 90 days of antipsychotic use. **Numerator:** On two or more concurrent antipsychotic medications for at least 90 consecutive days during the year.

All three quality measures were incorporated into the Medicaid Child Core Set for voluntary state reporting during the time frames indicated below.

- The *Use of Multiple Concurrent Antipsychotics in Children and Adolescents* measure was included in the 2016 through 2019 Medicaid Child Core Set. This measure was subsequently removed from the 2020 Medicaid Child Core Set (see the section below for information on the retirement of this measure).
- The *Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics* measure was first added to the 2018 Medicaid Child Core Set and currently remains in the core set.
- The *Metabolic Monitoring for Children and Adolescents on Antipsychotics* measure was added to the 2020 Medicaid Child Core Set.

MEASURE REPORTING

Since 2015, the Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics and the Metabolic Monitoring for Children and Adolescents on Antipsychotics measures have been reported annually to NCQA for HEDIS reporting. As previously noted, these measures are also currently reported for the Medicaid Child Core Set. The measures are calculated using administrative claims and pharmacy data. For reference, the most recent HEDIS measure specifications are available in the NCQA Store at http://store.ncqa.org/.

RETIREMENT OF THE USE OF MULTIPLE CONCURRENT ANTIPSYCHOTICS IN CHILDREN AND ADOLESCENTS MEASURE FOR HEALTH PLANS

The *Use of Multiple Concurrent Antipsychotics in Children and Adolescents* measure, which targeted medication overuse by tracking youth on two or more antipsychotics concurrently for an extended period of time, was retired from HEDIS and the Medicaid Child Core Set in 2020. Since the inclusion of this measure in HEDIS in 2015, health plan performance rates improved. With this improvement, rates of youth on multiple concurrent antipsychotics became consistently low with minimal plan-to-plan variation. Consequently,

the utility of this measure in making plan comparisons diminished over time. These changes reflected progress but also pointed to the need to retire the measure (NCQA Blog available at https://blog.ncqa.org/measure-updates-antipsychotics-children-adolescents/). While this measure is no longer used in reporting programs, it remains important for plans to continue to track antipsychotic prescribing and to maintain efforts to discourage use of these powerful medications unless necessary. Given this continued importance, this toolkit presents change ideas for this measure, shares tested strategies and outlines lessons learned.

GUIDELINES FOR THE SAFE AND JUDICIOUS USE OF ANTIPSYCHOTIC MEDICATIONS IN CHILDREN AND ADOLESCENTS

Summary-level guidelines and recommendations on the safe and judicious use of antipsychotic medications in children and adolescents are provided below. For detailed information on specific guidelines or recommendations, refer to the section on *Guidelines and Recommendations for the Safe and Judicious Use of Antipsychotic Medications in Children and Adolescents*.

RECOMMENDATIONS SUPPORTING USE OF PSYCHOSOCIAL INTERVENTIONS

Seven guidelines address psychosocial services in the context of antipsychotic prescribing for children.[16] These guidelines recommend the use of psychotherapy as first-line treatment for children and adolescents diagnosed with a variety of conditions, including bipolar disorder, maladaptive aggression, and oppositional defiant disorder. The recommended type and duration of the psychotherapy intervention for first-line treatment varies by condition. The American Academy of Child & Adolescent Psychiatry (AACAP) also recommends psychotherapy as first-line treatment when using atypical antipsychotics.[18]

RECOMMENDATIONS FOR METABOLIC SCREENING AND MONITORING

Eight guidelines refer to glucose and lipid screening for children prescribed antipsychotics. These guidelines address metabolic screening for children and adolescents who are prescribed antipsychotics, with consensus that baseline and ongoing metabolic monitoring is a standard of care for this population. The specificity of recommendations for ongoing metabolic monitoring varies, with some guidelines recommending “appropriate” monitoring and others offering varying levels of detail about specific tests and follow-up intervals.[16] The AACAP practice parameters endorse American Psychiatric Association (APA)/American Diabetes Association (ADA) recommendations for laboratory monitoring, including a fasting glucose and fasting lipid profile at baseline, three months, and 12 months. The Canadian Alliance for Monitoring Effectiveness and Safety of Antipsychotics in Children (CAMESA) calls for more frequent monitoring in youth—at baseline, three months, six months, 12 months, and additional monitoring of fasting insulin.

RECOMMENDATIONS FOR AVOIDING MULTIPLE AND CONCURRENT ANTIPSYCHOTIC USE

Four guidelines address the concurrent use of two or more antipsychotics in children as a practice to be avoided.[16] These guidelines express concern regarding the prescription of multiple and concurrent antipsychotics, with agreement that it should be generally avoided for initial or endpoint treatment for children and adolescents unless there is a clear rationale, after which a clinical review is recommended before prescribing, especially for children in foster care.

Key Driver Diagrams

This section describes key drivers for improving target measure performance for the safe and judicious use of antipsychotic medications in children and adolescents. Following the key driver diagrams, additional information for each change idea and actionable pathways that support improvement are presented. In addition, summaries of measure-specific improvement strategies implemented by health plans, associated performance results, and identified facilitators and barriers to goal realization are provided.

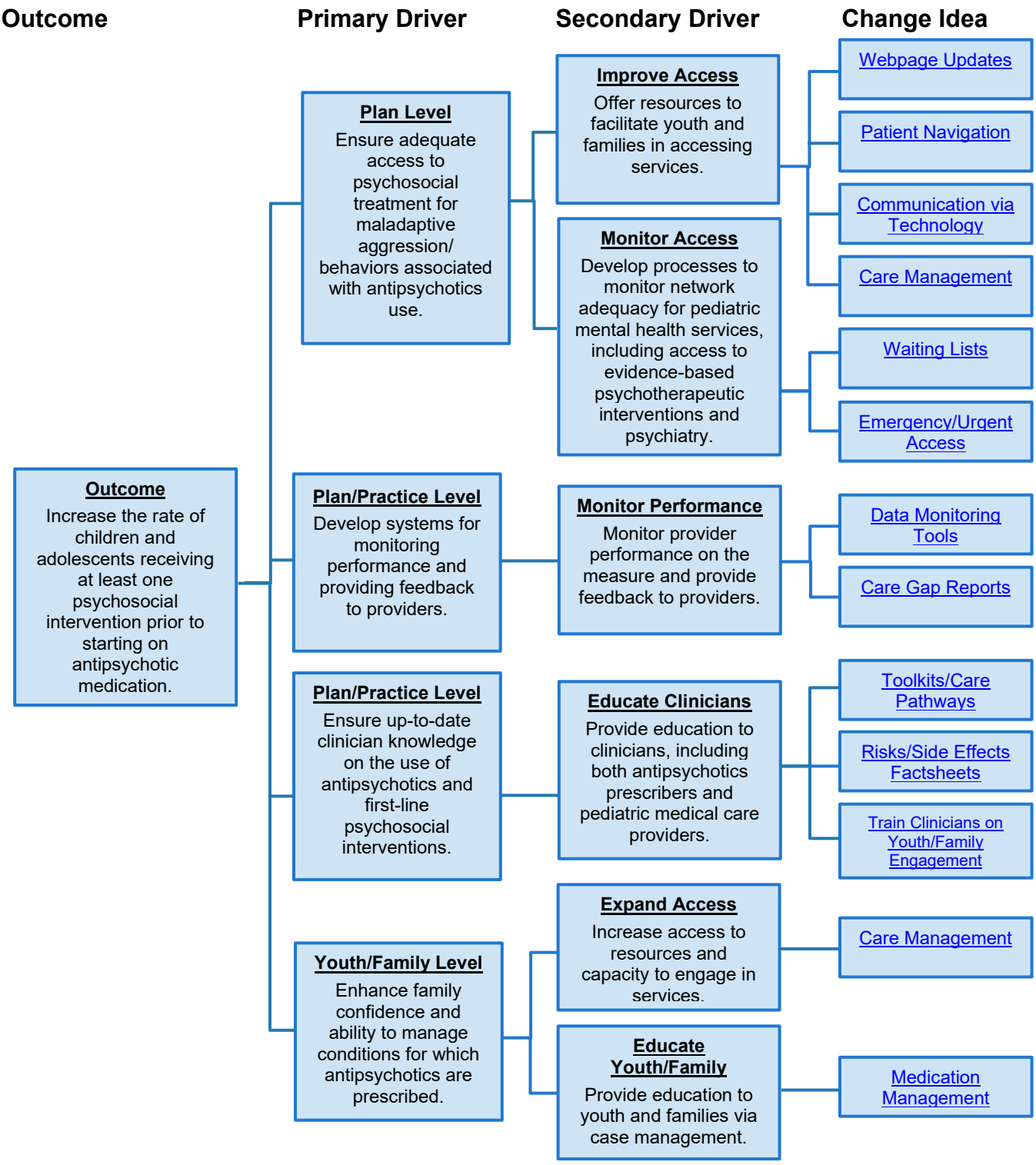
KEY DRIVER DIAGRAMS FOR TARGET MEASURES

For each measure, a high-level hierarchal matrix diagram is presented that provides a visual representation of the desired outcome, primary drivers, secondary drivers, and associated change ideas. These key driver diagrams support the selection and implementation of change ideas for Plan-Do-Study-Act (PDSA) cycles (Institute for Healthcare Improvement (IHI) available at http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx) and can be used as a roadmap to plan a QI project.

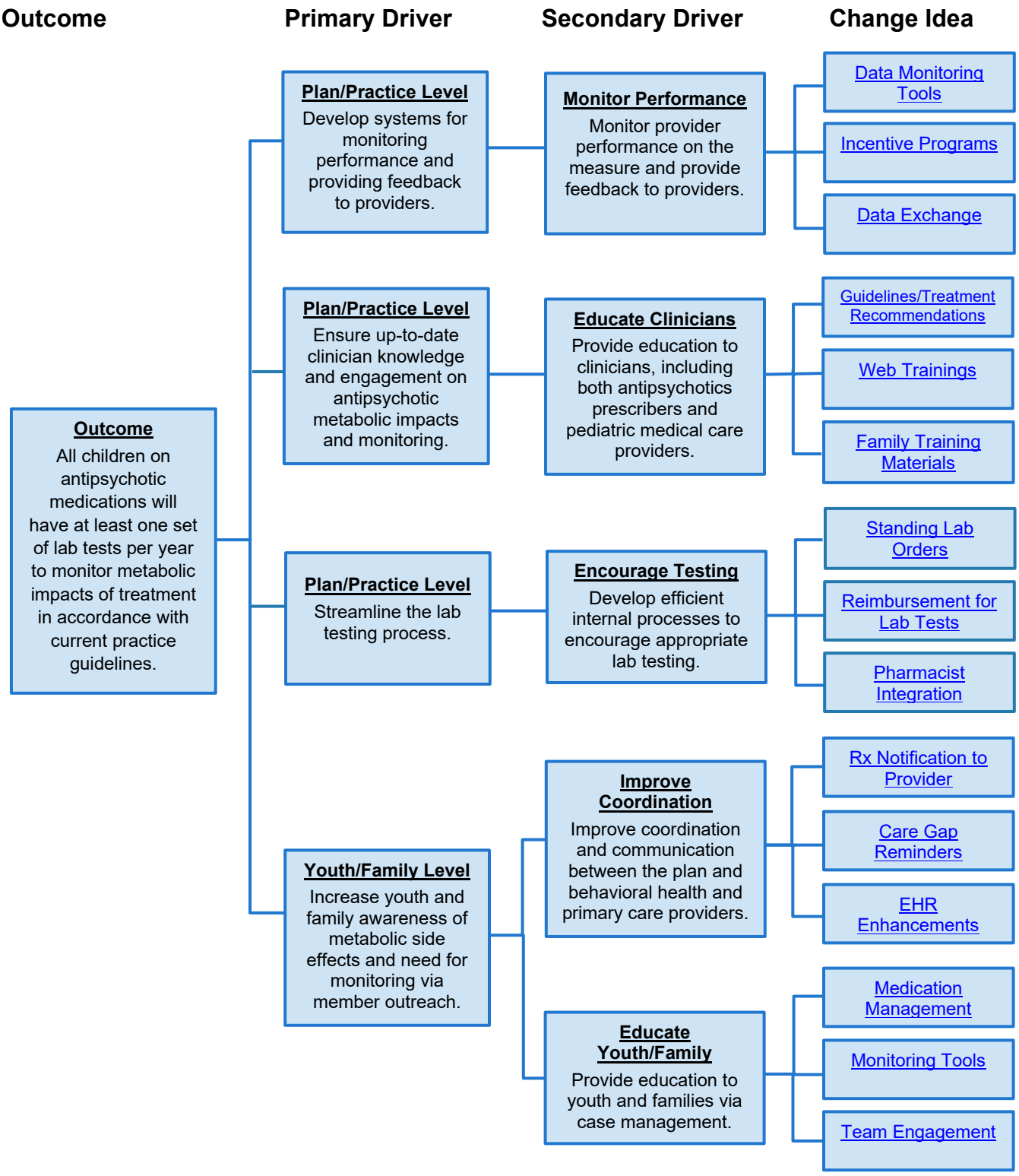
For example, once the measure of focus is selected, evaluate each primary driver to see what may be most impactful on the aim of the QI work. Once a primary driver of interest is chosen, review the more specific secondary drivers to determine which one(s) best support achievement of the desired outcome. As the direction of the QI work becomes more focused, consider the provided actionable change ideas and associated resources and tools. When clicked, the link for each change idea presented in the key driver diagrams below directs to the relevant change idea details and resources in Table 2.

Given the NCINQ learning collaborative focused primarily on performance improvement at the health plan level, the key driver diagrams and change ideas presented below largely reflect QI initiatives through the lens of health plans. However, given the complex, dynamic, and integrated nature of health delivery systems, many of the change ideas may also be applicable at the clinician or patient (e.g., youth and family) level.

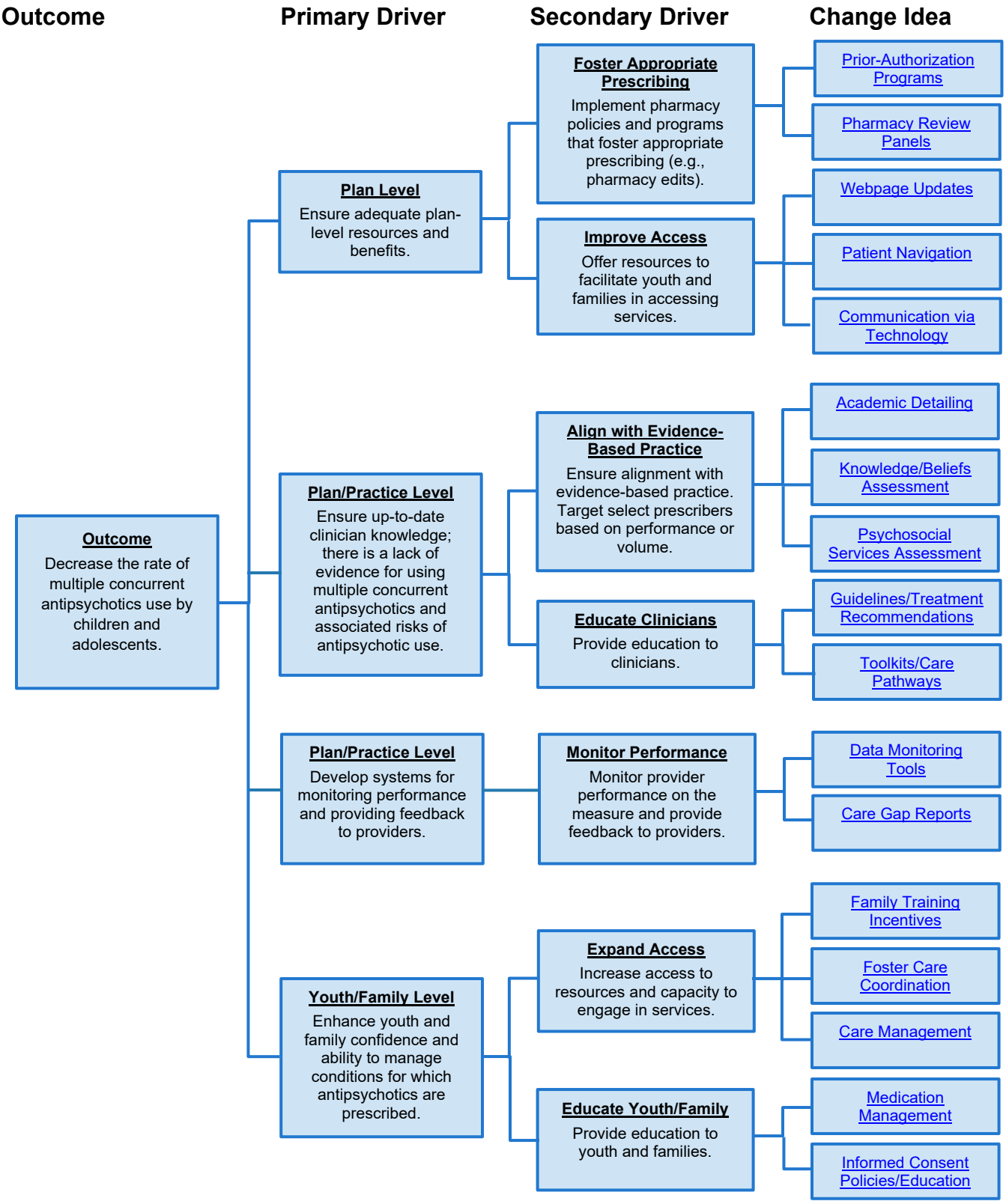
Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics Measure



Metabolic Monitoring for Children and Adolescents on Antipsychotics Measure



Use of Multiple Concurrent Antipsychotics in Children and Adolescents Measure



Quality Improvement Strategies

CHANGE IDEAS TO IMPROVE TARGET MEASURE PERFORMANCE

Table 2 below provides change idea details, resources, and tools associated with the secondary drivers presented above in the key driver diagrams. These change ideas provide actionable pathways to support QI activities aimed at improving target measure performance in the safe and judicious use of antipsychotic medications in children and adolescents. The table is organized at the level of implementation (e.g., plan, plan/practice, youth/family) indicated in the key driver diagrams and then grouped by secondary driver.

Table 2. Change Ideas to Improve Target Measure Performance

Change Idea	Details and Resources	Secondary Driver
Plan Level		
Webpage Updates	Update webpages to reflect network changes.	Offer resources to facilitate youth and families in accessing services.
Patient Navigation	Provide navigation resources to improve access and linkage. • Achieve My Plan Plus (AMP+): Developing the Young Adult Peer Support Workforce (Pathways RTC, 2019). This site includes modules on how to have youth-driven conversations.	
Improve Communication via Technology	Facilitate communication with youth through new technology. • Technology and the Future of Mental Health Treatment (National Institute of Mental Health, 2017). • Promoting Young Adult Mental Health through Electronic and Mobile Technologies (National Association of State Mental Health Program Directors, 2016). • Telebehavioral Health Training and Technical Assistance Series (Center for Integrated Health Solutions & Substance Abuse and Mental Health Services Administration (SAMHSA), 2013). Includes six sessions and offers providers and clinics the tools and resources necessary to identify and implement a telebehavioral health program.	
Care Management	Use care managers to help ensure access to psychosocial care. Allocate health plan staff to facilitate connecting youth and families to available resources (e.g., in-network providers with availability.) • Massachusetts Child Psychiatry Access Program (MCPAP). Provides access to psychiatric consultation and facilitates referrals for youth behavioral health care. Available for all children and families through primary care providers, regardless of insurance. • Project TEACH. Provides access to psychiatric consultation and referrals for pediatric primary care providers.	

Change Idea	Details and Resources	Secondary Driver
Monitor Access and Waiting Lists	• Use mystery shoppers or other methods to assess sufficiency of networks and time to next available visit. – Journal Article: How Long do Adolescents Wait for Psychiatry Appointments? (Community Mental Health, 2015).[19] – Journal Article: Access to Care for Youth in a State Mental Health System: A Simulated Patient Approach (Journal of the American Academy of Child and Adolescent Psychiatry, 2016).[20] – Journal Article: Parent Burden in Accessing Outpatient Psychiatric Services for Adolescent Depression in a Large State System (Psychiatric Services, 2017).[21] • Evaluate process for provider identification and referral. – Ensuring Access to Quality Behavioral Health Care: Health Plan Examples (America's Health Insurance Plans, 2016). • Evaluate process for timely referrals by primary care providers and psychiatrists, and visits to psychosocial treatment providers. – Pennsylvania: Telephonic Psychiatric Consultation Services Program (TiPS)	Develop processes to monitor network adequacy for pediatric mental health services, including access to evidence-based psychotherapeutic interventions and psychiatry.
Monitor Urgent/ Emergency Access	Assess access to urgent and emergency mental health services for children and adolescents, especially for higher risk individuals. • Best Practice Toolkit: National Guidelines for Behavioral Health Crisis Care (SAMHSA, 2020, p42-50). Includes information on how to assess the adequacy of system capacity, use a crisis resource need calculator, implement system evaluation tools, and monitor system and provider performance.	
Prior-Authorization Programs	Adopt prior-authorization programs. • Implementing a State-Level Quality Improvement Collaborative: A Resource Guide from the Medicaid Network for Evidence-based Treatment (MEDNET) (Agency for Healthcare Research and Quality (AHRQ), 2014). • Maine: "Hard edits" on preferred drug lists (PDL) stopped antipsychotics prescribing with exception of a prior authorization. • Texas: "Hard edits" on prescribing antipsychotics require clinicians to answer a set of questions before prescribing.	Implement pharmacy policies and programs that foster appropriate prescribing (e.g., pharmacy edits).
Pharmacy Review Panels	Use pharmacy review panels to determine appropriateness of prescribed medications. • Antipsychotic Peer Review Program (Maryland Department of Health and Mental Hygiene, 2013). • Wyoming's Experience with Child Psychotropic Medications and Consultation Services (Seattle Children's, University of Washington, and Wyoming Department of Health, 2015).	

Change Idea	Details and Resources	Secondary Driver
Plan/Practice Level		
Guidelines/ Treatment Recommendations	Use persuasive educational materials on current guidelines and treatment recommendations to educate clinicians, including resources for monitoring metabolic side effects. • See Other Resources section for details on current guidelines and recommendations. **Antipsychotics Prescribing in Children:** • Strategies to Promote Best Practice in Antipsychotic Prescribing for Children and Adolescents (SAMHSA, 2019). This guidance can be referred to by prescribing clinicians, service providers, and youth and family. • Practice Parameter for the Use of Atypical Antipsychotic Medications in Children and Adolescents (American Academy of Child and Adolescent Psychiatry (AACAP), 2011). • Psychotropic Medication Utilization Parameters for Children and Youth in Foster Care (Texas Department of Family and Protective Services, 2016). • CMS Factsheet: Atypical Antipsychotic Medications: Use in Pediatric Youths (DHHS, CMS, 2015). **Metabolic Monitoring:** • Journal Article: Evidence-Based Recommendations for Monitoring Safety of Second Generation Antipsychotics in Children and Youth (Journal of the Canadian Academy of Child and Adolescent Psychiatry, 2011).[22] • Journal Article: Recommendations for Lab Monitoring of Atypical Antipsychotics (Current Psychiatry, 2013).[23] • Minimum Laboratory Monitoring for Psychotropic Medications (Cenpatico Integrated Care, 2015, Updated 2019).	Provide education to clinicians, including both antipsychotics prescribers and pediatric medical care providers.

Change Idea	Details and Resources	Secondary Driver
Toolkits/Care Pathways	Use toolkits and care pathways to clearly guide clinician action in-line with practice guidelines and treatment recommendations, including youth without a primary indication for antipsychotics. **General Mental Health:** • Systems-Based Practice: Family-Driven, Youth-Guided Care (AACAP, 2009). • Toolkit: Mental Health Practices in Child Welfare (Florida's Center for Child Welfare, 2009). • Helping Foster and Adoptive Families Cope with Trauma (American Academy of Pediatrics, 2015). **Specific to Antipsychotics Prescribing:** • Prescribing Guidelines for Psychotropic Medications (Minds Matter, 2018). • Webinar: Critical Curriculum on Psychotropic Medications (Critical Think Rx, 2009). • Adverse Effect Comparator Table for Atypical Antipsychotics (Minds Matter, 2018). • Drug Contraindications and Interaction Tables (Minds Matter, 2018).	Provide education to clinicians, including both antipsychotics prescribers and pediatric medical care providers.
Risks/Side Effects Factsheets	Use factsheets to educate clinicians on risks and side effects of treatment with antipsychotics. • Psychotropic Medication Utilization Parameters for Children and Youth in Foster Care (Texas Department of Family and Protective Services, 2016, p13-14).	
Train Clinicians on Youth/Family Engagement	Provide training to clinicians on engaging youth and family in shared-decision making to understand treatment options and associated pros and cons. • Antipsychotic Prescribing to Children: An In-Depth Look at Foster Care and Medicaid Populations (The Children's Hospital of Philadelphia and PolicyLab, 2015). • Early Psychosis Intervention (Pathways RTC, 2016).	
Family Training Materials	Provide training and materials to help clinicians educate and support families in understanding the need for metabolic monitoring. • A Weighty Matter: Antipsychotic Medications for Children and Youth (Maine Independent Clinical Information Service, 2012).	
Web Trainings	Provide web-based training to clinicians.	

Change Idea	Details and Resources	Secondary Driver
Data Monitoring Tools	Use data monitoring tools to monitor provider performance. • Antipsychotic Tracking Tool (HealthInsight Nevada, 2013). This sample tool was developed for use with nursing home residents but may be adapted for plans and providers to track and evaluate the use of antipsychotic medications in youth. • Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES) (New York State, Office of Mental Health).	Monitor provider performance on the measure and provide feedback to providers.
Care Gap Reports	Use care gap reports to feed information back to providers (e.g., primary care physicians, psychiatrists). Care gap reports can also be used to highlight a provider's current performance compared to others.	
Incentive	Establish incentive programs to help match targets.	
Data Exchange	Create data exchanges with key partners (e.g., hospitals).	
Academic Detailing	Implement academic detailing and/or peer-to-peer education interventions with select prescribers (based on performance or volume) to improve prescribing practices. This provides clinicians with access to expert consultation and case reviews. • Practice Facilitation Handbook: Module 10. Academic Detailing as a Quality Improvement Tool (AHRQ). • The Foundations of Academic Detailing (National Resource Center for Academic Detailing (NaRCAD)). Includes an introduction to academic detailing and provides a variety of tools and trainings on how to implement the fundamentals of academic detailing. • Introductory Guide to Academic Detailing (NaRCAD, 2017). • E-Detailing Resources and Research Articles (NaRCAD). Provides information, resources, and curated tools to support virtual detailing. • Journal Article: A Statewide Child Telepsychiatry Consult System Yields Desired Health System Changes and Savings (Telemedicine and e-Health, 2015)[24] • Partnership Access Line (Washington): State-funded program providing mental health consultation for diagnostic clarification, medication adjustment, and treatment planning. • Journal Article: Use of Academic Detailing with Audit and Feedback to Improve Antipsychotic Pharmacotherapy (Psychiatry Services, 2018).[25]	Ensure alignment with evidence-based practice. Target select prescribers based on performance or volume.
Knowledge/Beliefs Assessment	Assess clinician knowledge and beliefs.	
Psychosocial Services Assessment	Assess psychosocial services for management of conditions for which multiple concurrent antipsychotic medications are being prescribed.	

Change Idea	Details and Resources	Secondary Driver
Standing Lab Orders	Align policies and reimbursement for standing lab orders.	Develop efficient internal processes to encourage appropriate lab testing.
Reimbursement for Lab Tests	Allow reimbursement for labs drawn in behavioral health settings.	
Pharmacist Integration	Integrate pharmacists in the process for identifying the need for lab testing.	
Prescription Notification to Provider	Send notifications to clinicians when antipsychotics are first prescribed.	Improve coordination and communication between the plan and behavioral health and primary care providers.
Care Gap Reminders	Send care gap reminders to clinicians who may not be aware a patient needs a recommended service (e.g., primary care providers may not be aware that a patient was prescribed an antipsychotic by a psychiatrist and therefore needs metabolic monitoring).	
EHR Enhancements	Enhance electronic health records (EHR) to support metabolic monitoring through flags or reminders. • Facilitating Cross-System Data Sharing for Psychotropic Medication Oversight and Monitoring (Center for Health Care Strategies, Inc., 2014). • Journal Article: How Health Plans Promote Health IT to Improve Behavioral Health Care (American Journal of Managed Care, 2016).[26]	
Youth/Family Level		
Family/Youth Organizations	Make connections with family and youth run organizations to provide linkages to peer support opportunities.	Increase access to resources and capacity to engage in services.
Family Training Incentives	Support and incentivize participation in family training. • Practice Protocol: Family and Youth Involvement in the Children's Behavioral Health System (Arizona Department of Health Services, Division of Behavioral Health Services, 2009).	
Foster Care Coordination	Coordinate with state and local foster care agencies to identify needs and provide additional supports and incentives for foster parents to engage in services. • Toolkit: Mental Health Practices in Child Welfare Guidelines (Florida's Center for Child Welfare, 2009).	

Change Idea	Details and Resources	Secondary Driver
Medication Management Education	Provide education to youth and families on medication management, including the metabolic impacts of medications. Offer training in evidence-based practices for youth, parents/ guardians, and families (youth with their parents/guardians). • Making Healthy Choices: A Guide on Psychotropic Medications for Youth in Foster Care (DHHS Administration for Children and Families, 2012). • Facts for Families: Psychiatric Medication for Children and Adolescents (AACAP, 2012). – How Medications are Used – Types of Medications – Questions to Ask • Taking Charge of Your Child's Mental Health – A Parent's Guide (Allegheny County Department of Human Services, 2003). • Pamphlet: A Parent's Guide: Understanding Psychotropic Medications (Family Support Services of North Florida, Inc.). • Medications Used for Behavioral & Emotional Disorders: A Guide for Parents, Foster Parents, Families, Youth, Caregivers, Guardians and Social Workers (State of Connecticut Department of Children and Families, 2010). • Second-Generation Antipsychotic Tip Sheet (Magellan Health, Inc., 2014).	Provide education to youth and families via case management.
Monitoring Tools	Provide self-management/monitoring tools for youth and families to use (e.g., charting the frequency of metabolic monitoring, observing warning signs, etc.).	
Team Engagement	Engage key internal teams (e.g., case management) to lead outreach efforts.	
Informed Consent Policies/Education	Implement policies and provide educational materials on informed consent for youth and families. • Informed Consent Process (Minds Matter, 2018). • Psychotropic Medication Training (Texas Department of Family and Protective Services, 2013).	

QUALITY IMPROVEMENT IN ACTION: THE NCINQ ANTIPSYCHOTICS IN CHILDREN LEARNING COLLABORATIVE

From August 2017 to December 2018, NCINQ led a quality improvement (QI) learning collaborative with five New York-based Medicaid health plans. Participants in the collaborative used data gathered through national Healthcare Effectiveness Data and Information Set (HEDIS) reporting and the Medicaid Child Core Set to examine performance and improvement on several quality measures that address the use of antipsychotics in children and adolescents. The plans in this collaborative convened for two in-person meetings, bi-monthly webinars, monthly individual calls, and office hours as needed.

Plans that participated in the collaborative used and tested the key drivers and change ideas presented in this toolkit.[2] Case studies and examples from the collaborative are highlighted below and in the section on *QI Best Practices for the Safe and Judicious Use of Antipsychotic in Children and Adolescents*. Plans also tested strategies to engage youth and family in their QI work. For additional information, strategies, and resources on engaging youth and family to support QI work, please see the standalone toolkit: *Youth and Family Engagement in Quality Improvement*.

The sections below describe measure-specific performance benchmarks, improvement strategies implemented by the participating plans, and performance results from the collaborative. Information on considerations for selecting appropriate improvement targets is also presented, as well as a summary of the contextual factors found to facilitate progress, key components of successful strategies, and identified challenges and barriers to improvement.

CONSIDERATIONS FOR SELECTING APPROPRIATE IMPROVEMENT TARGETS

To identify benchmarks that could be used to set improvement goals for each measure and to subsequently monitor performance during the course of the collaborative, the team undertook the following activities in a stepwise fashion:

1. Reviewed the HEDIS national performance benchmarks as well as the NY state benchmarks (see tables below in each measure-specific section for details).
2. Conducted an “improvement analysis” using 2015 and 2016 HEDIS reporting data to calculate the amount of improvement at the plan level seen year to year. “High improving” plans were defined as those that exhibited improvement rates between 2015 and 2016 in the top 25th percentile.

2 The strategies included in this toolkit were implemented prior to the COVID-19 pandemic and may need to be adapted to account for changes in care access and delivery during the pandemic.

3. Worked individually with the plans participating in the collaborative to compare baseline performance rates to the national and state benchmarks, as well as the findings from the "improvement analysis."

4. Coached plans to track the amount of improvement by comparing current performance rates with where the performance was at one year prior (i.e., internal benchmarking).

Most plans selected modest improvement targets for the Psychosocial Care and Metabolic Monitoring measures, equating to around a 10% increase in performance rates compared to baseline. The Multiple Concurrent Antipsychotics measure performance was already very good for most plans with little room for improvement. Two plans chose to implement focused strategies for improvement that targeted this measure; however, only one of the plans was able to realize an improvement in performance.

USE OF FIRST-LINE PSYCHOSOCIAL CARE FOR CHILDREN AND ADOLESCENTS ON ANTIPSYCHOTICS

Table 3 below provides HEDIS performance benchmarks at the national and NY state levels for the Medicaid product line for the Psychosocial Care measure from 2016 through 2019. Voluntary state reporting data for this measure is available for federal fiscal year 2018 is available at the Medicaid Child Core Set.

Table 3. Medicaid Performance Benchmarks, First-Line Psychosocial Care

Year	Level of Analysis	N of Entities	Mean Performance	SD	Percentile				
					10th	25th	50th	75th	90th
2016	Health Plan - National	134	60.2	13.3	43.9	53.8	61.8	68.2	74.2
	Health Plan - NY State	15	65.7	7.25	54.6	60.0	66.9	71.1	74.2
2017	Health Plan - National	137	59.6	13.4	45.9	53.0	61.4	67.7	72.7
	Health Plan - NY State	15	68.9	8.2	57.4	62.5	68.9	72.3	82.0
2018	Health Plan - National	139	57.6	15.5	36.4	52.7	60.6	66.6	75.0
	Health Plan - NY State	15	64.5	6.7	52.1	59.7	65.9	69.0	71.1
2019	Health Plan - National	148	61.9	15.3	42.0	53.7	64.8	72.5	79.4
	Health Plan - NY State	15	73.8	11.2	67.4	68.9	76.4	79.4	80.5

Specific strategies implemented and tested during the collaborative to improve first-line psychosocial care in children and adolescents are included in Table 4 below. References to case study examples are provided when applicable and notable lessons learned specific to a particular strategy are presented where relevant. Strategies were implemented at the plan level.

Table 4. First-Line Psychosocial Care Improvement Strategies

Strategy	Description
Pharmacy Edit: Prior-Authorization	One plan tested a requirement for providers to: 1) submit prior authorizations to newly dispense an antipsychotic medication; and 2) confirm psychosocial care had first been received (see Case Study 1 below).
Provider Outreach and Education	One plan leveraged existing relationships (via Senior Leadership) with a large provider group to: 1) understand missed opportunities for delivering psychosocial care; and 2) work to improve access and compliance (see Case Study 2 below). ***Key Learning:*** *Focused education and outreach to prescribers (e.g., psychiatrists) was more effective when led by medical directors versus QI team members.*
Member Outreach and Education	Multiple plans used care managers, social workers, and/or community partners to assess whether members had psychosocial care and/or needed help connecting to services. In addition, one plan developed predictive reports based on claims data to: 1) identify youth who might be soon prescribed antipsychotics; and 2) target them for a case management intervention to address any barriers to obtaining psychosocial care.
Strategic Use of PSYCKES Database for Data Reconciliation	One plan utilized PSYCKES and medical record data collection to identify when youth were receiving psychosocial care that was not represented in claims data. This helped the plan determine more accurate rates for the Psychosocial Care measure. Once the data was reconciled, the plan sent alerts to providers for non-compliant members.

CASE STUDY 1: PHARMACY EDIT

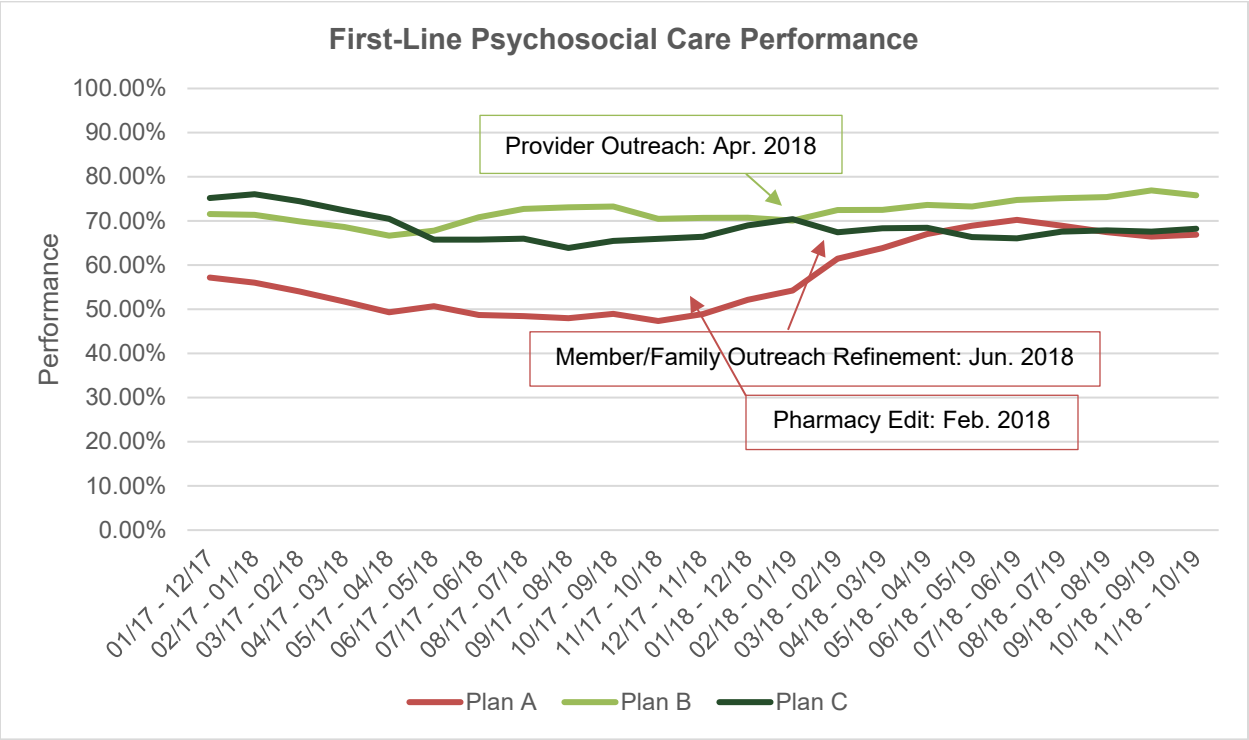
Plan A successfully implemented pharmacy "soft edits" to discourage inappropriate prescribing of antipsychotic medications to youth. One of these edits included the implementation of a prior authorization component that required providers to document that a child had first received a trial of psychosocial care before being prescribed an antipsychotic. Plan A's successful implementation of this edit was in large part due to on-site expertise and oversight by a Senior Pharmacy Consultant. This consultant, along with the full QI team and an engaged Senior Behavioral Health and Medical Leadership team, helped to design the pharmacy edit, proactively address anticipated challenges, identify data the team needed to assess the impact, and review outcome reports. In addition, Senior Behavioral Health and Medical Leadership allocated dedicated resources to QI efforts, further facilitating the success of this improvement strategy. When Plan A implemented the pharmacy edit in February 2018, performance was at 54.3%. By the end of October 2019, performance increased to 66.9%.

CASE STUDY 2: PROVIDER OUTREACH AND ENGAGED LEADERSHIP

Plan B conducted ongoing provider outreach with a key target site to better understand missed opportunities to provide first-line psychosocial care to indicated youth and adolescents. Outreach focused on identifying providers with members who may not have been triaged for a psychosocial assessment. The QI team and clinical staff subsequently met with these providers to conduct medical record reviews, explore whether assessments were missed, and if so, identify possible causes. To engage providers, the QI team developed specific discussion scripts to ensure conversations centered on barriers hindering access to psychosocial therapies prior to the engagement of an antipsychotic medication. These conversations also addressed potential compliance improvement tactics. In instances where member access appeared to be an issue, the QI team emphasized the plan's existing telehealth options. When Plan B implemented this provider outreach campaign in April 2018, performance was at 72.5%. By the end of October 2019, performance increased to 75.8%.

Of note, Plan B saw firsthand how critical engaging leadership is to the success of QI work. For many months, the QI team exerted significant effort to establish contact with this target site, with limited success. Once Plan B engaged their Medical Director, who contacted the Medical Director at the target site, a meeting to discuss the initiative was scheduled immediately. This key connection and partnership was integral in moving the QI work forward.

Chart 1. First-Line Psychosocial Care Performance Results for Collaborative Plans that Targeted the Measure for Improvement, 2017-19



The run chart above (Chart 1) provides measure performance data for the three plans in the learning collaborative that implemented strategies to improve performance on the Psychosocial Care measure. The chart has been annotated to identify when particular strategies of note were implemented. For reference and context, the various strategies each plan implemented are noted below, as each plan implemented more than one strategy.

- **Plan A:** Prior-authorization pharmacy edits (Case Study 1); member and family outreach, including calls from clinical staff to potentially at-risk members to assess whether the member has had psychosocial care, needs to be connected with services, or is experiencing any barriers to receiving care.
- **Plan B:** Provider outreach and engagement to understand missed assessments and to work to improve access and compliance (Case Study 2); youth empowerment program to provide member programming on mental health treatment options and healthy lifestyle management.
- **Plan C:** Member and family outreach through the use of care managers and predictive reports to identify at-risk children and adolescents and address barriers to receiving psychosocial care; PSYCKES lookups and medical record data collection to identify psychosocial care not found in claims data; mental health awareness campaign to educate families on antipsychotics.

METABOLIC MONITORING FOR CHILDREN AND ADOLESCENTS ON ANTIPSYCHOTICS

Table 5 below provides HEDIS performance benchmarks at the national and NY state levels for the Medicaid product line for the Metabolic Monitoring measure from 2016 through 2019.

Table 5. Medicaid Performance Benchmarks, Metabolic Monitoring

Year	Level of Analysis	N of Entities	Mean Performance	SD	Percentile				
					10th	25th	50th	75th	90th
2016	Health Plan - National	164	33.3	10.9	22.0	24.9	31.8	39.2	48.1
	Health Plan - NY State	15	40.3	8.1	25.0	36.5	41.6	48.1	48.8
2017	Health Plan - National	166	34.6	12.6	22.0	25.9	31.8	41.0	50.8
	Health Plan - NY State	15	41.3	7.0	31.7	36.3	42.1	46.4	50.8
2018	Health Plan - National	169	35.3	12.2	23.1	27.4	33.3	40.9	49.1
	Health Plan - NY State	15	42.0	6.7	33.4	34.9	43.1	47.2	50.9
2019	Health Plan - National	178	37.8	12.0	25.0	29.4	35.5	44.3	56.3
	Health Plan - NY State	15	42.0	7.6	33.3	37.7	41.7	47.9	51.7

Specific strategies implemented and tested during the collaborative to improve appropriate metabolic monitoring in children and adolescents prescribed an antipsychotic are included in Table 6 below. References to case study examples are provided when applicable and notable lessons learned specific to a particular strategy are presented where relevant. Strategies were implemented at the plan level.

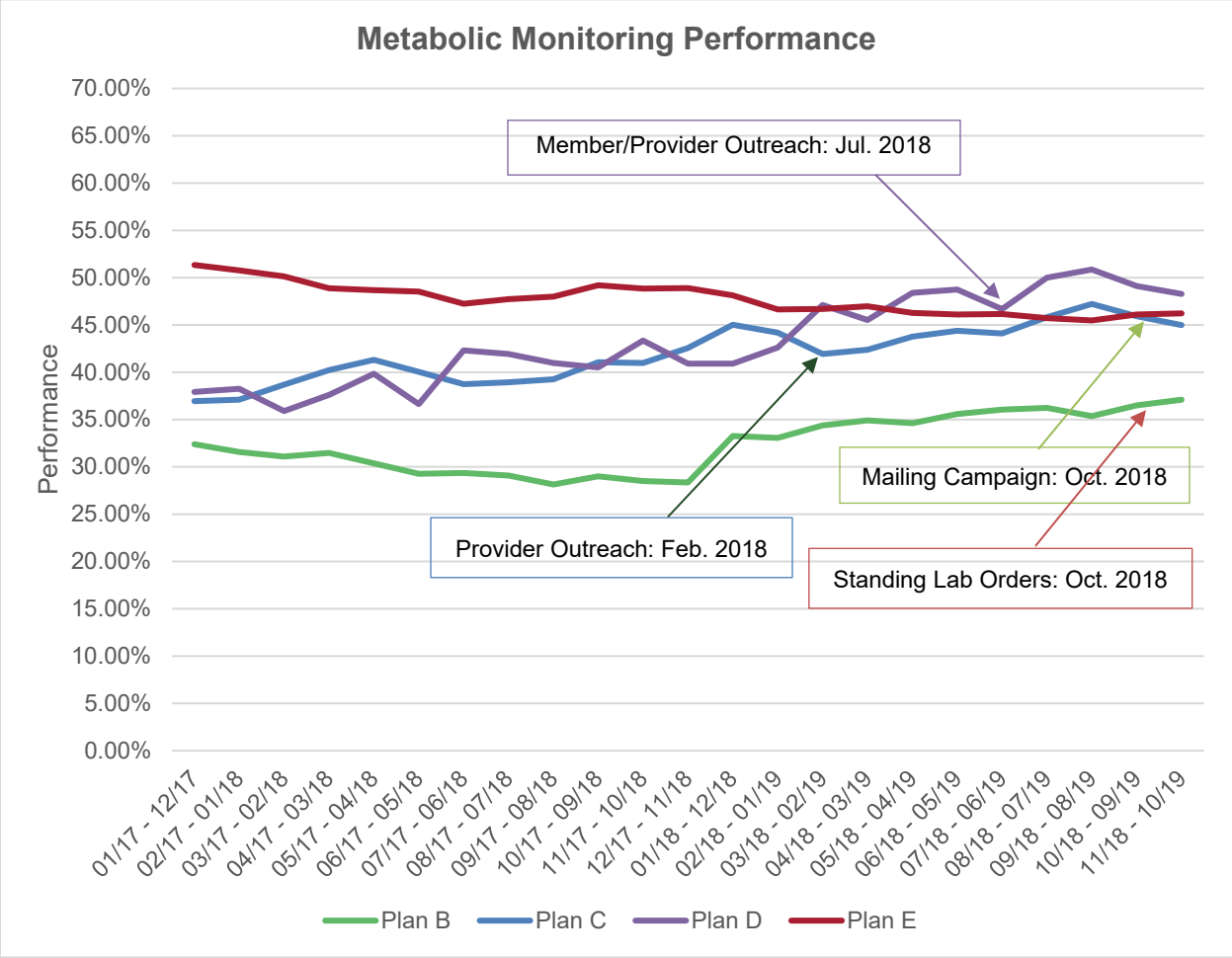
Table 6. Metabolic Monitoring Improvement Strategies

Strategy	Description
Member Outreach	All plans used a combination of internal teams and/or community partners for active outreach to members and families to discuss mental health treatment options and healthy lifestyle engagement. For one plan, the data team pulled at regular intervals a list of members noncompliant for receiving metabolic monitoring, which allowed care managers to then target member education and lab appointment reminders most effectively (see Case Study 3 below).
Standing Lab Order	One plan piloted an intervention program with key provider and lab partners to implement standing six-month metabolic screenings for children and adolescents on antipsychotic medications. This strategy included both educational and professional development components.
Data Exchange	One plan worked with hospital partners to capture metabolic lab testing data that was not submitted or captured through traditional claims.
Provider Outreach	Multiple plans used gap in care reports given to providers to capture members who needed lab testing. In addition, one plan developed a provider relations team that consistently reviewed data to identify providers who had members missing regular metabolic monitoring on their patient panels. The provider relations team subsequently contacted identified providers to supply targeted psychoeducation materials. ***Key Learning:*** *Regular face-to-face meetings with clinical and front office staff at practices proved to be most effective in engaging provider teams and serving as opportunities to educate and provide resources.*
Incentive Program	One plan implemented a member incentive program to encourage Medicaid members identified as needing metabolic monitoring to get the appropriate lab tests by providing a $25 gift card once the tests were completed. This was a short term, five-month effort that helped encourage members to receive guideline recommended care.

CASE STUDY 3: MEMBER OUTREACH CAMPAIGN LED BY INTERDEPARTMENTAL TEAM

Plan D saw a marked improvement in their metabolic monitoring rates for adolescents from 2017 to 2019 (about 10 percentage points), in part due to a targeted member outreach campaign led by their care management team. An interdepartmental team (including IT, care management, behavioral health, and the plan's Medical Director) analyzed data on a bi-weekly basis to identify youth who had not received metabolic monitoring. Next steps to close these care gaps included targeted member education outreach, lab appointment reminders, and/or the provision of lab reports from parents. Barriers, such as staff turnover and limited resources in certain departments, were discussed regularly and addressed as needed. Workload was modified on an ongoing basis to facilitate continued progress. Specific workflows and responsibilities for this intervention were mutually determined at team meetings and executed accordingly, further contributing to the success of the intervention.

Chart 2. Metabolic Monitoring Performance Results for Collaborative Plans that Targeted the Measure for Improvement, 2017-19



The run chart above (Chart 2) provides measure performance data for the four plans in the learning collaborative that implemented strategies to improve performance on the Metabolic Monitoring measure. The chart has been annotated to identify when improvement strategies were implemented. For reference and context, a complete list of the strategies implemented are included below, since each plan implemented a multi-pronged improvement approach.

- **Plan B:** Standing lab orders; empowerment program with community partner to host member programming on mental health treatment options and health lifestyle management; incentive program to encourage appropriate metabolic monitoring.
- **Plan C:** Provider outreach, including care gap reports and discussion; data exchange with hospitals to capture lab test data not captured in claims; member and family education through care management.

- **Plan D:** Provider outreach and education (Case Study 3); member and family outreach (data team identified members past due on monitoring and case managers targeted these members through education and lab appointment reminders).
- **Plan E:** Provider outreach and engagement via mailing campaign.

USE OF MULTIPLE CONCURRENT ANTIPSYCHOTICS IN CHILDREN AND ADOLESCENTS

Table 7 below provides HEDIS performance benchmarks at the national and NY state levels for the Medicaid product line for the Multiple Concurrent Antipsychotics measure from 2016 through 2018. Voluntary state reporting data for this measure is also available from fiscal year 2016 through 2018 at the Medicaid Child Core Set.

Table 7. Medicaid Performance Benchmarks, Multiple Concurrent Antipsychotics

Year	Level of Analysis	N of Entities	Mean Performance	SD	Percentile				
					10th	25th	50th	75th	90th
2016	Health Plan - National	162	2.4	1.7	0.5	1.2	2.1	3.3	4.6
	Health Plan - NY State	15	3.5	0.8	2.6	2.8	3.3	4.0	4.6
2017	Health Plan - National	162	2.4	1.7	0.5	1.2	2.1	3.4	4.6
	Health Plan - NY State	15	3.4	1.3	1.8	2.2	3.5	4.6	5.0
2018	Health Plan - National	155	2.4	1.6	0.4	1.2	2.2	3.3	4.3
	Health Plan - NY State	15	3.6	1.2	1.9	2.7	3.5	4.7	5.0

Specific strategies implemented and tested during the collaborative to improve performance on the Multiple Concurrent Antipsychotics measure are included in Table 8 below. References to case study examples are provided when applicable and notable lessons learned specific to a particular strategy are presented where relevant. Strategies were implemented at the plan level.

Table 8. Multiple Concurrent Antipsychotics Improvement Strategies

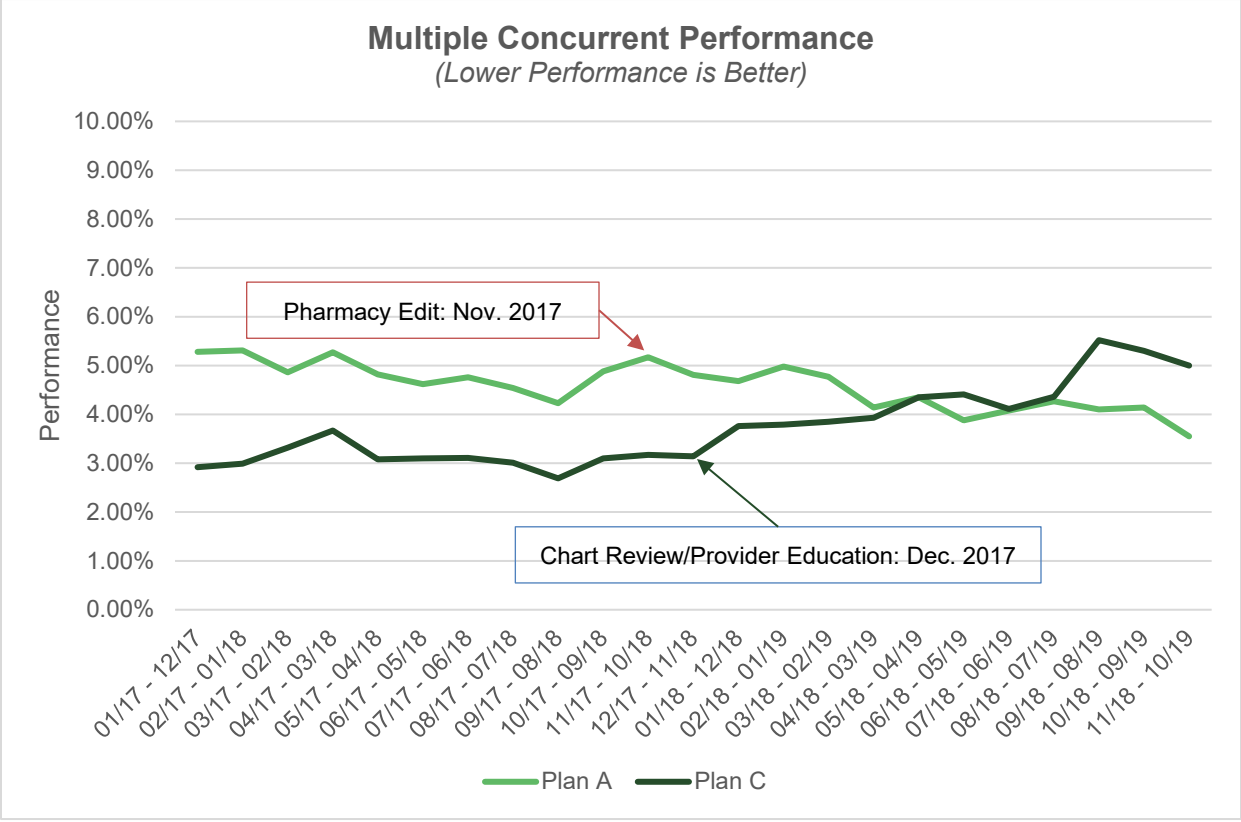
Strategy	Description
Pharmacy Edit: Duplicate Therapy	One plan rolled out a pharmacy edit in which the pharmacy automatically rejected dispensing a second antipsychotic medication, identifying it as a "drug utilization error," when a child had already been prescribed an antipsychotic medication. Pharmacists then had the option to fill the medication (i.e., call the provider to determine why two antipsychotics were prescribed or discuss with the patient at the point of sale). See Case Study 4 below.
Monthly Chart Review and Provider Education	One plan worked with behavioral health partners to: 1) review medical charts of children who have multiple concurrent antipsychotic use to understand their behavioral health diagnoses and utilization; 2) identify the prescribing provider; and 3) conduct provider outreach to understand the rationale for treatment with multiple concurrent antipsychotics in the hopes to encourage deprescribing of the second medication. In this case, continued tracking and trending of measure compliance supported ongoing conversation as to why certain providers continue to have children on multiple antipsychotics and whether/how this can change. ***Key Learning:*** *The plan found it challenging to engage providers on this measure given the very small number of youths receiving multiple concurrent antipsychotics. Providers were also resistant to changing the course of treatment for their patients. The plan's chart review*

Strategy	Description
	and provider education intervention did not lead to improvement. In fact, the plan's performance rate worsened over the course of the collaborative.

CASE STUDY 4: PHARMACY EDIT

Plan A implemented pharmacy "soft edits" to discourage inappropriate prescribing of antipsychotic medications to youth. The first of these edits was introduced in the Fall of 2017 and focused on reducing multiple concurrent antipsychotic use by automatically rejecting prescription fills for a second antipsychotic when a child was already on an antipsychotic. This pharmacy edit impacted measure rates, and Plan A saw a substantial decrease in the rate of children and adolescents on multiple concurrent antipsychotics, indicating performance improvement. When Plan A implemented the pharmacy edit in November 2017, performance was at 5.2%. By the end of October 2019, measure performance improved to 3.6%.

Chart 3. Multiple Concurrent Antipsychotics Performance Results for Collaborative Plans that Targeted the Measure for Improvement, 2017-19



The run chart above (Chart 3) provides measure performance data for the two plans in the learning collaborative that implemented strategies to improve performance on the Metabolic Monitoring measure. The

chart has been annotated to identify when improvement strategies were implemented. For reference and context, the strategies implemented by each plan for improvement on this measure are noted below.

- **Plan A:** Pharmacy edits to reject second prescription when a child or adolescent is already prescribed an antipsychotic medication (Case Study 4).
- **Plan C:** Monthly chart review and provider education.

CONTEXTUAL FACTORS FACILITATING PERFORMANCE IMPROVEMENT

Throughout the course of the collaborative, the team found that the following contextual factors facilitated performance improvement on the safe and judicious use of antipsychotics in children and adolescents.

- Availability of National HEDIS and State ***measure performance benchmarks*** helped plans set improvement goals.
- ***Alignment of measures*** across reporting programs allowed the plans to capitalize on data from national, state, plan, and provider levels to target QI efforts. For the NY Quality Assurance Reporting Requirements (QARR)[27], plans are required to use HEDIS specifications, which ensures alignment of data elements and coding across both programs. High levels of reportability and measure utilization stemming from measure alignment contributed to measure uptake and widely available performance results, enabling an examination and comparison of performance rates for NY plans participating in the collaborative, other plans in NY, and plans reporting nationally.
- Running ***monthly performance rates*** allowed plans to examine data monthly and compare against the previous year to determine if they were trending toward improvement.
- Having a ***range of expertise*** represented on the QI team allowed some plans to implement very specific strategies, such as pharmacy edits, because they had access to the relevant specific expertise (e.g., pharmacy consultant on staff).
- Involvement and ***buy-in from senior leadership*** facilitated key provider partner relationships.

KEY COMPONENTS OF SUCCESSFUL STRATEGIES

A handful of key components to successful strategies were identified during the collaborative. These key components were not specific to improvement on any specific measure, but rather appeared to have a positive impact regardless of the measure targeted for improvement.

- Using reports to ***highlight provider performance*** offered opportunities to educate and deliver resources to providers.

- Focused ***education and outreach*** to prescribers (e.g., psychiatrists) was more effective when led by medical directors (i.e., peer-to-peer education) versus QI team members.
- Regular ***in-person meetings at practice sites*** with clinical and front office staff at practices proved to be most effective in engaging provider teams and served as opportunities to educate and provide resources to provider teams that supported performance improvement.

CHALLENGES AND BARRIERS TO IMPROVEMENT

Throughout the collaborative, it became apparent that the following items presented challenges to plans when undertaking initiatives to improve performance on the pediatric antipsychotics use measures. To the extent that plans embarking on quality improvement campaigns for the antipsychotics measures can mitigate or control these factors, doing so may increase the likelihood of performance improvement. These challenges were not found to be specific to one particular measure but rather global in nature.

- Given the very small number of youths receiving antipsychotics, plans were met with ***resistance from providers*** to engage in QI for these measures. Providers were more focused on quality measures that impacted a greater number of their patients. In particular, the Multiple Concurrent Antipsychotics measure was challenging to engage providers on due to the very small number of youths receiving this therapy.
- There were challenges to coordination of care between behavioral health and physical health providers in settings where there was a ***lack of behavioral health integration*** in primary care.
- Due to ***concerns about sharing mental health information*** per federal regulations and the stigma associated with behavioral disorders, pediatricians were not always aware of services their patients received elsewhere.
- Plans found it challenging to determine ***which providers to hold accountable*** for managing the metabolic side effects of antipsychotics. While antipsychotics were often prescribed by psychiatrists, lab tests to monitor side effects were not typically shared with pediatricians.
- For the Metabolic Monitoring measure, the ***specifications did not highlight care gaps*** that existed. Plans found that examining whether children and adolescents received glucose testing and cholesterol testing as two separate rates provided more actionable information. Specifically, when these rates were reported separately, gaps in cholesterol testing became evident, which plans could then target to drive improvements.
- ***Lack of Information on Deprescribing:*** Even when plans were able to engage providers, there was very little evidence-based guidance available on protocols for deprescribing antipsychotics in children and adolescents that QI teams could provide via provider outreach and education.

Other Resources

This section provides guidance, resources, and tools to assist with implementing best practices for the safe and judicious use of antipsychotics in children and adolescents. It includes a structured approach to develop organizational readiness, as well as clinical capacity, for implementing best practices. This protocol can be tailored to specific needs, and is organized into five stages, with key activities and tools at each stage.

I. QI BEST PRACTICES FOR THE SAFE AND JUDICIOUS USE OF ANTIPSYCHOTICS IN CHILDREN AND ADOLESCENTS

STAGE 1. MAKE THE CASE: ENGAGE KEY STAKEHOLDERS

Engaging key stakeholders and identifying champions is critical to facilitating the success of new interventions. Leadership support helps to prioritize target interventions, build organizational readiness, and carve out appropriate resources. Additionally, understanding the care experience from the youth and family perspective has the potential to significantly inform and enhance QI activities. By engaging youth and families in QI work, organizations can better understand what it takes for people to successfully navigate health services, make informed decisions, and coordinate among multiple providers to achieve desired health outcomes.

Step 1: Engage Senior Leadership in QI Work

- Webinar: Engaging Senior Leadership in Your Quality Improvement Work (National Institute for Children's Health Quality, 2016).
- Webinar: How to Speak So Leaders Will Listen (Institute for Healthcare Improvement (IHI), 2019).

Step 2: Form a Team

- Handbook: Creating Quality Improvement Teams and QI Plans (AHRQ, 2013).

Step 3: Engage Youth and Family

- Journal Article: Patient And Family Engagement: A Framework For Understanding The Elements And Developing Interventions And Policies (Health Affairs, 2013).[28]
- Toolkit: Effectively Employing Young Adult Peer Providers (University of Massachusetts Medical School, 2017).
- Webinar: Employing Young Adult Peer Support Workers (University of Massachusetts Medical School, 2017).

Example: One plan successfully engaged with a community partner to increase mental health awareness among members and to connect with individuals with lived experience to further help engage youth. Together, these organizations designed and implemented a successful back-to-school event, which included both social and educational components. The purpose of the event was to provide health education to members while also hosting activities such as face painting, dental screenings, and meditation classes. Health education information was provided via handouts (along with school supplies) to raise awareness of behavioral health services and specifically the importance of monitoring side effects when taking antipsychotic medications (i.e., need for lab testing). During preparation for the event, the community partner and a youth advisor provided feedback on the health education materials to ensure the content was relevant and clear for youth and their families. Feedback from the community was very positive; the goal is to leverage this partnership and develop materials for subsequent programming.

STAGE 2. ASSESS & BUILD ORGANIZATION READINESS FOR CHANGE

It is important to understand an organization's readiness for change before implementation efforts begin. Stage 2 helps to guide this assessment and plan for necessary changes related to QI efforts.

Step 1: Assess Readiness and Address Gaps with Stakeholders

- Fundamentals of Health Care Improvement: A Guide to Improving Your Patients' Care, Third Edition (Joint Commission Resources, 2018).

Step 2: Develop Workflows

- Develop a workflow for practice preparation, identification, assessment, and initial management.

Step 3: Identify and Address Barriers

- As change efforts are rolled out, the QI team may encounter various barriers and challenges that will need to be addressed to continue implementation work. Engage leadership and champions to help overcome barriers. To facilitate ongoing success and address new challenges, continue to prioritize QI efforts with dedicated meetings and appropriate staff time allocations, as needed.

Step 4: Plan for Key Trainings

- Determine whether ample training time specific to staff involvement in the QI work has been allocated and whether key guidelines have been incorporated into training plans.

STAGE 3. BUILD INFRASTRUCTURE TO SUPPORT PRACTICE CHANGE

In tandem with engagement efforts and organizational readiness assessment, building an infrastructure to support ongoing change efforts is also critical to successful implementation and sustainability.

Step 1: Build Staff Commitment and Efficacy

- To help drive continued and meaningful staff commitment, it may be helpful to frame new efforts as part of an organization's overall goal or mission (e.g., commitment to providing the best care for the patient and their families, commitment to drive good outcomes). It can be helpful to provide other contextual information as extrinsic motivators (e.g., incentives, policies, comparisons, state of the art care, etc.).

Step 2: Leverage Existing Capacity with Plans to Support Change Efforts

- Determine how existing roles within an organization can be allocated to support each part of the QI work, including what existing resources can be used and what adequate referral networks are in place. In planning ahead, consider what infrastructure supports (e.g., registries, case managers, pharmacy staff) are available to assist change efforts.

STAGE 4. IMPLEMENT BEST PRACTICES

Below is a set of best practices to assist with planning during the transition to the implementation phase of the QI change efforts.

Step 1. Set Goals

- Establishing tangible goals is key to any QI initiative. To monitor success, choose a set of metrics to help assess goal realization and guide QI efforts. Teams, along with leadership, should identify priorities and measurable goals to understand if change ideas are leading to improvements.
- Science of Improvement: Setting Aims (IHI, 2020).

Step 2. Identify Key Drivers

- This toolkit highlights the use of the key drivers to achieving aims (see the *Key Driver Diagrams* section). QI teams can use driver diagrams to prioritize change ideas.

Step 3. Implement Change

- Depending on what the QI team prioritizes, there are a variety of change ideas that can be implemented that specifically target improvement in the safe and judicious use of antipsychotics

in children and adolescents. For a full list of change ideas and resources, see the *Change Ideas* sections of this toolkit.

- How to Improve (IHI, 2020). The Model for Improvement involves testing change ideas using Plan-Do-Study-Act (PDSA) cycles.
- PDSA Worksheet (IHI, 2020). This is a useful tool for documenting a test of change and can help leaders define the stages of a PDSA cycle.

Step 4. Use Youth/Family-Focused Best Practices

- Use youth and family advisors to select *Change Ideas* specifically focused on improving communication and care with youth that are on antipsychotics and their families.

STAGE 5. PLAN FOR THE FUTURE: SUSTAINABILITY

Critical to on-going success of implementation efforts is understanding when additional support is needed, and when to spread success.

Step 1: Develop a Sustainability Plan

- Planning for the Future: Developing a Sustainability Plan (Advancing Integrated Mental Health Solutions (AIMS) Center, 2019).
- The Program Sustainability Assessment Tool: A New Instrument for Public Health Programs (Centers for Disease Control and Prevention (CDC), 2014).
- Improvement Leaders' Guide: Sustainability (National Health Service (NHS) Institute for Innovation and Improvement, 2007).

Step 2: Spread Successful Efforts to Other QI Initiatives

- Tool: Spread Planner (IHI, 2020).

II. GUIDELINES AND RECOMMENDATIONS FOR THE SAFE AND JUDICIOUS USE OF ANTIPSYCHOTIC MEDICATIONS IN CHILDREN AND ADOLESCENTS

Recommendations Supporting Use of Psychosocial Interventions for Children and Adolescents

Guideline (Date)	Population	Recommendation or Statement	Type/Grade
AACAP-AAA (2011) Practice parameter for the use of atypical antipsychotic medications in children and adolescents.[18]	5-18 years	"Prior to the initiation of and during treatment with an AAA, the general guidelines that pertain to the prescription of psychotropic medications should be followed… *including education and psychotherapeutic interventions for the treatment and monitoring of improvement.*" (Recommendation 1)	Clinical Standard
		"*In the absence of specific FDA indications or substantial evidence for effectiveness, physicians should consider other medication or psychosocial treatments before initiating antipsychotic treatment.*" (Under Recommendation 2)	Clinical Standard
AACAP-BP (2007) Practice parameter for the assessment and treatment of children and adolescents with bipolar disorder.[29]	≤18 years	"Psychotherapeutic interventions are an important component of a comprehensive treatment plan for early-onset bipolar disorder." (Recommendation 10)	Minimal Standard
AACAP-ODD (2007) Practice parameter for the assessment and treatment of children and adolescents with oppositional defiant disorder.[30]	≤18 years	"The clinician should develop an individualized treatment plan based on the specific clinical situation….*The two types of evidence-based treatments for youth with ODD are individual approaches in the form of problem solving skills and family interventions in the form of parent management training.*" (Recommendation 7)	Minimal Standard
		"The clinician should consider parent intervention based on one of the empirically tested interventions." (Recommendation 8)	Minimal Standard
		"Medications may be helpful as adjuncts to treatment packages, for symptomatic treatment, and to treat comorbid conditions." (Recommendation 9) Supporting notes recommend that if medications are initiated, it should be after psychosocial interventions are in place, and that medications should not be the only treatment. *"Several open and double-blind placebo-controlled studies show that typical and atypical antipsychotics are helpful in treating aggression after appropriate psychosocial interventions have been applied in the context of mental retardation and PDD."* (Under Recommendation 9)	Clinical Guideline
AACAP-SZ (2001) Practice parameter for the assessment and treatment of children and adolescents with schizophrenia.[31]	≤18 years	"Adequate treatment requires the combination of psychopharmacological agents plus psychosocial interventions." (Recommendations – Treatment)	Minimal Standard
		"The following psychosocial interventions are recommended: 1) Psychoeducational therapy for the patient, including ongoing education about the illness, treatment options, social skills training, relapse prevention, basic life skills training, and problem-solving skills and strategies. 2) Psychoeducational therapy for the family to increase their understanding of the illness, treatment options, and prognosis, and for developing strategies to cope with the patient's symptoms." (Recommendations – Psychosocial Interventions)	Minimal Standard
		"Specialized educational programs and/or vocational training programs may be indicated for some children or adolescents to address the cognitive and functional deficits with the illness." (Recommendations-Psychosocial Interventions)	Clinical Guidelines

PPWG (2007) The AACAP-sponsored Preschool Psychopharmacology Working Group – Psychopharmacological treatment for very young children: contexts and guidelines.[32]	<6 years	"Universal guidelines are provided to encourage careful and planful clinical practice: • Avoid medications when therapy is likely to produce good results • Generally, an adequate trial of psychotherapy precedes consideration of medication, and psychotherapy continues if medications are used…"	(see diagnostic specific ratings)
		ADHD: Parent Management Training or other behavioral intervention x eight weeks minimum is first line for preschoolers.	A (Preschool)
		Disruptive behavioral disorders: Psychotherapy (e.g., Parent management training, parent child interaction therapy) x 10-20 weeks.	A (Preschool)
		MDD: Psychotherapy is first line (e.g., dyadic psychotherapy, target emotional regulation) x three-six months.	C (Preschool) A (6-18yrs)
		BP: Psychotherapy is first line (e.g., dyadic psychotherapy, target emotional regulation) x eight-12 sessions.	C (Preschool) A (6-18yrs)
		Anxiety (GAD, SAD, SM, SP): CBT is first line, x 12 weeks.	C (Preschool) A (6-18yrs)
		PTSD: Psychotherapy is first line (Child Parent Psychotherapy x six months minimum; or CBT x 12 weeks minimum; or, if unavailable, then Play therapy x months.	A (Preschool CPP, CBT) B (Preschool; Play therapy) A (6-18yrs, CBT)
		OCD: CBT with parent involvement, behavioral therapy x 12 weeks minimum.	C (Preschool) A (6-18yrs)
		PPD: Behavioral, developmental, psychoeducational intervention is first line.	A (Preschool and 0-18yrs)
		Sleep: Parent education and sleep hygiene.	C (Preschool) A (6-18yrs)
T-MAY (2012) Center for Education and Research on Mental Health Therapeutics – Treatment of maladaptive aggression in youth.[33]	≤18 years	"Provide or assist the family in obtaining evidence-based parent and child skills training during all phases of care." (Recommendation 10)	Evidence: A Recommendation: Very Strong
		"Engage the child and family in taking an active role in implementing psychosocial strategies and help them to maintain consistency." (Recommendation 11)	Evidence: B Recommendation: Very Strong
		"Recommendations 10 and 11 pertain to psychosocial interventions, which should be the first line of treatment because of its lower risk, preceding the use of medication to address aggression except in emergency circumstances…" (Under Treatment Recommendations – Unrated Explanatory Comment)	Not specified
TRAAY (2003) Center for the Advancement of Children's Mental Health: Treatment recommendations for the use of antipsychotics for aggressive youth.[34]	≤18 years	Psychosocial and educational interventions should continue after medication treatment begins.	Not specified*

*TRAAY (2003) did not specify the use of any rating system.

Recommendations for Metabolic Screening and Monitoring for Children and Adolescents on Antipsychotic Medication

Guideline (Date)	Recommendation	Type/Grade
AACAP-AAA (2011) Practice parameter for the use of atypical antipsychotic medications in children and adolescents.[18]	"The acute and long-term safety of these medications in children and adolescents has not been fully evaluated and therefore careful and frequent monitoring of side effects should be performed…*Ideally, monitoring of BMI, blood pressure, fasting glucose, and fasting lipid profiles should follow, whenever feasible, the recommendations found in the consensus statement put forth by the American Diabetes Association and American Psychiatric Association."* Table: Fasting plasma glucose – Baseline, 12 weeks, annually; Fasting lipid profile – Baseline, 12 weeks. (Recommendation 10 and Table 2)	Clinical Guideline
	"Careful attention should be given to the increased risk of developing diabetes with the use of AAA, and blood glucose and other parameters should be assessed at baseline and monitored at regular intervals." (Recommendation 12)	Clinical Standard
	"In those patients with significant weight changes and/or a family history indicating high risk, lipid profiles should be obtained at baseline and monitored at regular intervals." (Recommendation 13)	Clinical Guideline
AACAP-BP (2007) Practice parameter for the assessment and treatment of children and adolescents with bipolar disorder.[29]	"Psychopharmacological interventions require baseline and follow-up symptom, side effect, and laboratory monitoring as indicated…. *The American Diabetes Association's recommendations for managing weight gain for patients taking antipsychotics should be followed. This includes baseline BMI, waist circumference, blood pressure, fasting glucose, and a fasting lipid panel. The BMI should be followed monthly for 3 months and then quarterly. Blood pressure, fasting glucose, and lipids should be followed up after 3 months then yearly*." (Recommendation 8)	Minimal Standard
AACAP-SZ (2001) Practice parameter for the assessment and treatment of children and adolescents with schizophrenia.[31]	"The use of antipsychotic agents requires…. documentation any required baseline and follow-up laboratory monitoring..."	Minimal Standard
CAMESA (2011) Canadian Alliance for Monitoring Effectiveness and Safety of Antipsychotics in Children – Evidence-based recommendations for monitoring safety of second generation antipsychotics in children and youth.[35]	The guideline provides antipsychotic medication-specific recommendations for monitoring physical examination maneuvers (height, weight, BMI, waist circumference, blood pressure, and neurological examination for extrapyramidal symptoms), and laboratory tests (glucose, insulin, lipid profile tests, AST, ALT, prolactin, and TSH) for children on AAAs. The GRADE rating system is used to rate each test, for each medication, at each time point examined (baseline, three, six, and 12 months). In recognition that clinicians may not have the resources to apply drug specific recommendations, the guideline developers also created a simplified version of the recommendations. Summary recommendation: All children prescribed AAAs should be monitored for metabolic side effects at baseline, three, six, and 12 months with the following tests: fasting glucose, fasting insulin, and fasting lipid profile (total cholesterol, LDL, HDL, TG). (Note: Fasting insulin is not recommended for youth on aripiprazole but is appropriate for all other AAAs).	Ranges from 1A (strong) to not recommended depending on the specific medication, laboratory test, and timeframe. Strongest evidence and recommendations are for baseline tests.
	A baseline fasting glucose is recommended for all children and adolescents on AAAs (strong recommendation/low quality evidence all AAAs except Ziprasidone, weak recommendation/ consensus based).	1C (all AAA except Ziprasidone) 3 (Zip=3)
	A baseline fasting lipid profile is recommended for all children and adolescents on AAAs (strong recommendation with high to low evidence depending upon the AAA, except Ziprasidone, weak recommendation/consensus based).	1A-1C (all AAAs except Ziprasidone) 3 (Zip=3)
	A follow-up fasting glucose and fasting lipid panel (one or more of the tests within the panel) is strongly recommended for all children at one or more time points during the year. (strong recommendation/high-moderate-low evidence for all AAAs, except Ziprasidone, weak recommendation/consensus based).	1A-1C (all AAAs except Ziprasidone) 3 (Zip=3)

PPWG (2007) The AACAP-sponsored Preschool Psychopharmacology Working Group – Psychopharmacological treatment for very young children: contexts and guidelines.[32]	"Use of AAA should follow the AACAP practice parameter on AAAs. This practice parameter describes the minimum standards for monitoring vital signs, BMI, fasting blood glucose, extrapyramidal symptoms, lipid profiles, and electrocardiography." (Disruptive Behaviors Algorithm, Stage 2: Pharmacological Intervention)	Not specified
T-MAY (2012) Center for Education and Research on Mental Health Therapeutics – Treatment of maladaptive aggression in youth.[33]	Practitioners should conduct appropriate, guideline-based laboratory monitoring.	Evidence: A Recommendation: Very Strong
TX (2010) Texas Department of Family and Protective Services – Psychotropic medication utilization parameters for foster children.[36]	Practitioners should document appropriate monitoring of laboratory findings.	Not specified*

*TX (2010) did not specify the use of any rating system.

Grading System Key

Guideline Developer	Definition
AACAP	**Minimal Standard/Clinical Standard:** Rigorous/substantial empirical evidence (meta-analyses, systematic reviews, RCTs) and/or overwhelming clinical consensus; expected to apply more than 95% of the time.
	Clinical Guidelines: Strong empirical evidence (non-randomized controlled trials, cohort or case-control studies) and/or strong clinical consensus; expect to apply in most cases (75% of the time).
	Options: Acceptable but not required; there may be insufficient evidence to support higher recommendation (uncontrolled trials, case/series reports).
	Not endorsed: Ineffective or contraindicated.
AACAP endorsed best practice principles	**Best practice principles** that underlie medication prescribing, to promote the appropriate and safe use of psychotropic medications.
CAMESA	GRADE[37,38]
	1A: Strong recommendation, High quality evidence.
	1B: Strong recommendation, Moderate quality evidence.
	1C: Strong recommendation/ Low quality evidence.
	2A: Weak recommendation, High or moderate quality evidence.
	2B: Weak recommendation, Low quality evidence.
	3: Weak recommendation, No evidence, consensus based.
PPWG	**A:** Well controlled RCTs, large meta-analyses, or overwhelming clinical consensus.
	B: Empirical evidence (open trials, case series) or strong clinical consensus.
	C: Single case reports or no published reports, recommendation developed by expert consensus (informal).
T-MAY Ratings	Oxford Centre for Evidence-Based Medicine grade of evidence (A-D)[39]
	Strength of Recommendation: Very strong (≥90% agreement).
	Strength of Recommendation: Very strong (70-89% agreement).
	Strength of Recommendation: Very strong (50-69% agreement).
	Strength of Recommendation: Very strong (<50% agreement).

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