Colorado Department

of

Health Care Policy and Financing

Pediatric Healthcare Quality Performance Measures

Recommendations from the Performance Measure Advisory Group

Compiled and written by Carolyn Swenson

Colorado Clinical Guidelines Collaborative

March 31, 2008

Executive Summary

Introduction

A Performance Measure Advisory Group (PMAG) of external expert advisors was formed by the Colorado Department of Health Care Policy and Financing (the Department), and facilitated by Colorado Clinical Guidelines Collaborative (CCGC), to make recommendations on performance measures related to the listed clinical activities in Colorado Revised Statute (C.R.S.) 25.5-1-109.5:

1. Immunization Rates
2. Medical Home Standards for Quality
3. Clinical Care Guidelines
4. Care Coordination
5. Case Management
6. Disease Management
7. Coordination and Integration of Mental Health Services

The PMAG included representation from a wide range of pediatric healthcare and research areas, including medicine, nursing, oral health, mental/behavioral health care, social sciences, public health and epidemiology, management, health plan utilization, and quality improvement. Representatives from the Department attended PMAG meetings and provided input into drafting the measures. The PMAG completed its work from November 2007 through March 2008.

The purpose of the performance measures is to help evaluate the effectiveness of the Department in providing care for children who are enrolled in Medicaid and SCHP+; the measures are not designed to have any unintended consequences for safety-net providers.

Measure Development Process

The PMAG reviewed Department data on top pediatric diagnoses, healthcare research, child health reports, and quality initiatives from Colorado and other states to identify the following priority health areas for measure development:

1. Prevention
    a. Immunizations
    b. Early oral health
    c. Developmental screening
    d. Anticipatory Guidance
    e. Injury prevention
2. Asthma
3. Obesity
4. Upper Respiratory Infection (URI)/Appropriate use of antibiotics

5. Mental/Behavioral Health
    a. Attention Deficit Hyperactivity Disorder (ADHD)
    b. Depression
    c. Screening for psychosocial problems
6. Children with Special Healthcare Needs (CSHCN)

The PMAG used the following guidelines for measure development:

1. Align with national quality measures when feasible measures exist.
2. Review sample measures from other states.
3. Reach consensus on definitions of each of the domains in the legislation.
4. Utilize the following parameters to assess potential measures:
    a. The availability and reliability of data;
    b. The availability of valid measurement tools;
    c. The cost of data collection and analysis;
    d. The burden of data collection;
    e. The potential of each measure to improve health outcomes;
    f. The potential of a measure to improve efficiency and costs of care.

Proposed performance measures

The performance measures proposed by the PMAG are noted below. Each measure crosses several of the domains specified in the legislation. Potential data sources include Department claims data, chart reviews, practice surveys, and/or Colorado Department of Public Health and Environment Child Health Survey or surveillance data.

Measure #1

The percentage of children who turned two years old during the measurement year who had 4 DTaP/DT, 3 IPV, 1 MMR, 3 H influenza type B, 3 Hep B, and 1 VZV by the time period specified and by the child's second birthday (4:3:1:3:3:1)

Measure #2

The percentage of eligible adolescents who have received recommended MMR and Tdap boosters by the 15th birthday

Measure #3

Evidence of developmental screening using a standardized, validated instrument at 9, 18, and 24 (or 30) month visits; or three times by age 3 years. (Recommended tools: ASQ, PEDS)

Measure #4

The percentage of children, 2-18 years of age, whose weight is classified based on BMI percentile for age and gender (provisional measure)

Measure #5

The percentage of infants with an oral health evaluation by a dentist or primary health care provider before age 1 (between ages 6-12 months)

Measure #6

The percentage of children seen for routine preventive dental care every six months once a dental home is established (beginning at age 1 year)

Measure #7

The percentage of children who have received protective sealants on the first permanent molars by age 6 (or when adequately erupted)

Measure # 8

The percentage of children who have received protective sealants on the second permanent molars by age 12 (or when adequately erupted)

Measure #9

The percentage of clients who were given a diagnosis of upper respiratory infection (URI) and were not dispensed an antibiotic prescription on or 3 days after episode date

Measure #10

The percentage of clients who were diagnosed with pharyngitis, prescribed an antibiotic, and who received a group A streptococcus test for the episode

Measure #11

Child with asthma has received influenza immunization (done yearly)

Measure #12

Child with persistent asthma is on an inhaled corticosteroid or controller medication (reviewed for compliance yearly)

Measure #13

Child with persistent asthma has an action plan (reviewed yearly)

Measure #14

Evidence of use of a standardized, validated ADHD screening tool to aid in diagnosis (Vanderbilt, Conners)

Measure #15

Initiation Phase: Percentage of children 6-12 years of age as of the Index Prescription Episode Start Date with an ambulatory prescription dispensed for an ADHD medication and who had one follow-up visit with a practitioner with prescribing authority during the 30-Day Initiation Phase

Measure #16

Of the children who remained on an ambulatory prescribed ADHD medication for at least 210 days, the percentage of children 6-12 years of age as of the Index Prescription Episode Start Date who, in addition to the visit in the Initiation Phase, had at least two additional follow-up visits with a practitioner within 270 days (9 months) after the Initiation Phase Ends

Measure #17

Percentage of recipients who receive age-appropriate well-child checks, including: vision, hearing, developmental, behavioral/mental health, oral health, newborn screening, immunizations (based on EPSDT or HEDIS well child schedule)

Measure #18

The rates at which children with specified chronic, disabling, or ambulatory care sensitive conditions are hospitalized

Measure #19

Length of time on Medicaid

Measure #20

Identify the subgroup of children with Severe Emotional Disturbance (SED) and assess care quality in that group using the Department performance measures

Measure #21

The percentage of children with a diagnosed mental health condition based on the DSM IV or the ICD 9 who received mental/behavioral health services in the past six months

Measure #22

Evidence of psychosocial screening in all ages using a standardized, validated tool (e.g., PSC, GAPS)

Measure #23

Depression management (effective acute phase treatment): Of adolescents started on medication, length of treatment with medication and percentage that were referred to a mental health provider

Measure #24

Adolescent suicide attempt and completion rates

[*Track this measure if suicide attempt data is available (e.g., through Medicaid claims)*]

Measure #25

Assess specific injury rates (specify ICD-9/10 and E-codes)

Discussion

In addition to the listed proposed measures the PMAG referred several additional medical home measures to the Medical Home Evaluation Task Force for consideration. There are certain limitations associated with the proposed measures including: 1) limitations of generic claims codes used for screenings, and bundled codes for EPSDT assessments, 2) a shortage of dentists and behavioral health providers in some regions of Colorado that may affect access to those services, 3) new models of healthcare, in particular the integration of oral health and mental/behavioral health into primary care settings that may present a challenge to evaluation using current claims data methods, and 4) the burden of collecting practice level data.

The PMAG recommended the measures proposed in this report as a starting place for quality improvement in pediatric healthcare. Some measures would be expected to be added or “sunsetted” depending on clinical need and results. The PMAG also recommended that an advisory committee of similar representation be employed to review and comment on annual reports and on the measures array. In addition, they recommended that a formal process be created to expedite interaction between the Department and the academic community (e.g. the Colorado School of Public Health) such that their intellectual and analytical resources can be employed collaboratively to pilot and validate new measures, conduct research projects on pediatric health outcomes, and explore additional opportunities to improve care.

Colorado Department

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Health Care Policy and Financing

Pediatric Healthcare Quality Performance Measures

Recommendations from the Performance Measure Advisory Group

Introduction

A Performance Measure Advisory Group (PMAG) was formed by the Colorado Department of Health Care Policy and Financing (the Department) to make recommendations to the Department on performance measures related to the listed clinical activities in Colorado Revised Statute (C.R.S.) 25.5-1-109.5: to "develop clinical standards and methods for collecting, analyzing and reporting information regarding clinical performance" to assess the quality of healthcare for Colorado children who are covered by the state Medicaid or SCHP+ programs. The domains specified in the legislation include:

1. Immunization Rates
2. Medical Home Standards for Quality
3. Clinical Care Guidelines
4. Care Coordination
5. Case Management
6. Disease Management
7. Coordination and Integration of Mental Health Services

Colorado Clinical Guidelines Collaborative (CCGC) was awarded the contract from the Department in late October 2007 to facilitate the work of the PMAG to develop the set of proposed measures that is summarized in this report. Colorado Clinical Guidelines Collaborative is a non-profit coalition of health plans, physicians, hospitals, employers, government agencies, quality improvement organizations, and other entities working together to implement systems and processes, using evidence-based clinical guidelines, to improve healthcare in Colorado.

Performance Measure Advisory Group

The PMAG is a group of external expert advisors that included representation from a wide range of pediatric healthcare and research areas, including medicine, nursing, oral health, mental/behavioral health care, social sciences, public health and epidemiology, management, health plan utilization, and quality improvement. PMAG members work in a variety of settings including community health centers and private clinics, hospitals, mental/behavioral health organizations, academic institutions, the Colorado Department of Public Health and Environment, the Colorado Hospital Association, and health plans. A complete list of the PMAG members is included in Appendix I.

Two members of the PMAG were involved in drafting C.R.S. 25.5-1-109.5: Dr. James Todd and George DelGrosso. In addition, one PMAG member (Dr. Elizabeth Kraft) currently serves as a surveyor and on the Review Oversight Committee (ROC) of the National Committee for Quality Assurance (NCQA). Several PMAG members also have previous experience delivering or managing health care services in rural regions of the state.

Several representatives from the Department attended PMAG meetings to provide input into the measures development process. Lesley Abram, Quality Compliance Specialist attended meetings and was available to CCGC for frequent consultation and communication. Gina Robinson, Program Administrator attended PMAG meetings and was available to provide input as specific questions arose. Representatives from the Business Analysis section also attended meetings to provide input on existing data, methods of data collection and analysis, and multiple other factors that influenced the prioritization and feasibility of measures.

The Process

The PMAG formed three work groups to focus on specific aspects of the work, for example drafting measures in specific clinical areas, and then the full PMAG reviewed and discussed each proposed measure to reach consensus on the final set of proposed measures that is presented in this report.

The PMAG sought input from several outside experts on specific clinical, public health, and healthcare quality issues as questions arose as measures were being drafted. Several of those individuals are involved in other quality improvement initiatives in Colorado and this helped the PMAG align its work with ongoing efforts to improve child and adolescent healthcare in the state.

Finally, the PMAG coordinated its efforts with the Medical Home Evaluation Task Force that developed medical home standards for pediatric healthcare in Colorado. Several PMAG members also participated on the Medical Home

Evaluation Task Force and this ensured that the two efforts would be aligned and complementary. Several measures initially considered for inclusion in this report were referred to the Medical Home Task Force for their consideration for the evaluation of medical home standards for Colorado.

The PMAG had a total of six full group meetings (each lasting 3-4 hours). In addition, each work group met several times in person or by phone.

Pediatric Healthcare Quality

The PMAG reviewed healthcare research, child health reports, and pediatric quality initiatives from Colorado and other states to identify improvement priorities and examples of methods for measuring pediatric healthcare quality. In addition, the group reviewed guidelines for the development of pediatric performance measures. Several of the key resources that were reviewed for this project are listed in the references.

A 2007 paper on the quality of pediatric ambulatory care in the United States examined medical records in 12 metropolitan areas and found that children received only 53% of indicated care for chronic conditions, and 41% of indicated preventive care [1]. A 2004 study [39] reviewed 10 sets of quality measures that were developed specifically for children. The researchers found that most measures could be applied across age groups, few measures applied to specific age groups (especially infants and adolescents), and no measures focused on school-age children. The authors also recommended that measures be used to assess healthcare disparities (such as, disparities by race/ethnicity). A 2006 study on pediatric preventive care [65] found that fewer than half of children in the United States were receiving adequate developmental and psychological surveillance, screenings, or anticipatory guidance; and that time is a major factor in the provision of appropriate care.

In 2004 the National Quality Forum (NQF) report on measurement of child and adolescent healthcare quality recommended priority areas for pediatric measures [41]. The report concluded that the following areas needed standardization of measures:

1. Asthma
2. Inpatient safety
3. Children with special healthcare needs
4. Preventive care
5. Coordination of care
6. Perinatal care
7. Mental healthcare

The report also identified a need for relevant measures for:

1. Diabetes
2. Dental care
3. Obesity

Identification and Evaluation of Performance Measures

In the initial phase of its work the PMAG outlined several key guiding principles for the measure development process:

1. **Identify measures that address specific child and adolescent health priorities**. The PMAG reviewed priorities identified in published literature on pediatric health (including studies conducted by a member of the PMAG), priority areas from other state child health improvement initiatives, and the most common diagnosis codes in children covered by Medicaid in Colorado from July 2006-June 2007 (data provided by the Department). Based upon this information the PMAG selected the following priority health areas for measure development:
    a. Prevention
        - Immunizations
        - Early oral health
        - Developmental screening
        - Anticipatory Guidance
        - Injury prevention
    b. Asthma
    c. Obesity
    d. Upper Respiratory Infection (URI)/Appropriate use of antibiotics
    e. Mental/Behavioral Health
        - Attention Deficit Hyperactivity Disorder (ADHD)
        - Depression
        - Screening for psychosocial problems
    f. Children with Special Healthcare Needs (CSHCN)

    By identifying a clear set of priorities the measure development process was not driven solely by existing measures or currently available data, and it also emphasized a strong commitment to improving health outcomes.

2. **Align measures with endorsed national quality measures when such measures exist and are feasible**. While alignment with national measures was a primary consideration, the group also determined that a lack of national measures in a specific disease or health care domain should not be a limiting factor. The summary of measures proposed by the PMAG specifies when there is alignment with national measures.

3. **Review pediatric performance measure initiatives from other states.** Through personal communication and web searches CCGC gathered basic background information about state level pediatric quality improvement initiatives in North Carolina, Vermont, Washington, Utah, Illinois, and Massachusetts, Iowa and Wisconsin. This process was particularly helpful for informing and confirming the healthcare priorities identified by the PMAG. Overall, the review of initiatives from other states indicated that a) similar health priorities are being addressed in other states, and b) most other states that are addressing pediatric health quality chose to focus initially on a limited number of healthcare issues (such as asthma, ADHD, or developmental screening), and c) many state initiatives target specific subgroups of children, such as CSHCN for quality improvement projects.

4. **Define the healthcare domains addressed in C.R.S. 25.5-1-109.5.** The PMAG discussed and agreed to a basic definition of each healthcare domain in order to focus the work and reach agreement on the concepts that were being measured (see Appendix II).

5. **Specify a set of parameters for reviewing potential measures.** The PMAG outlined parameters to consider as measures were reviewed and developed for C.R.S. 25.5-1-109.5 based on published reports that outlined steps for measure development and expert input from PMAG members who have worked on measure development. Considerations included an examination of the availability and reliability of data; availability of valid measurement tools, the cost of data collection and analysis, burden of data collection, and the potential to improve health outcomes, efficiency and costs of care. The parameters are summarized in Appendix III.

Proposed performance measures

The table in Appendix IV summarizes the proposed performance measures that are described in this report. For each measure the following are specified in the table: health priority area, alignment with national and state measures, health outcomes associated with the measure, healthcare domains that are addressed and intersection across domains, and proposed source(s) of data and methods for measurement. Many of the proposed measures cross multiple domains that are specified in the legislation.

The purpose of the performance measures is to help evaluate the effectiveness of the Department in providing care for children who are enrolled in Medicaid and

SCHP+. The measures are not designed to have any unintended consequences for safety-net providers.

Measure #1

The percentage of children who turned two years old during the measurement year who had 4 DTaP/DT, 3 IPV, 1 MMR, 3 H influenza type B, 3 Hep B, and 1 VZV by the time period specified and by the child's second birthday (4:3:1:3:3:1)

Measure #2

The percentage of eligible adolescents who have received recommended MMR and Tdap boosters by the 15th birthday

Although vaccine preventable disease has reached an all-time low [36], experts in child health note that efforts to maintain and further improve childhood immunization rates must not be relaxed since multiple factors can influence immunization coverage (such as vaccine supply, concerns about the cost of delivering immunizations for some primary care settings, and parent acceptance of immunizations). Measure #1 is based on 2008 Advisory Committee on Immunization Practices (ACIP) childhood immunization recommendations [41]: and it aligns with NCQA and National Immunization Survey (NIS) measures of childhood immunization status (http://www.cdc.gov/nis/).
Medicaid providers are already reporting this immunization measure as part of their reporting for the Vaccines for Children program (http://www.cdc.gov/vaccines/programs/vfc/default.htm). NCQA is reviewing a revision of the measure to include additional vaccines (Prevnar and Rotavirus), and the PMAG recommends that the Department adopt the revised measure once it is approved. Chart reviews for data collection may be necessary if a practice does not use the Colorado Children's Immunization System (CIIS). The expected direct health outcome of a high childhood immunization rate is a low rate of vaccine preventable disease as measured by hospitalizations, ER visits and clinic visits.

New vaccines for adolescents and expanded recommendations for immunization in this age group present an important opportunity to measurably improve health outcomes and prevent disease outbreaks. Measure #2 is based on 2008 Advisory Committee on Immunization Practices (ACIP) immunization recommendations [42].The PMAG recommends that the Department begin with this limited measure of adolescent immunization and then consider expanding it to align with new or expanded national measures over time. NCQA has proposed a new adolescent immunization measure under review for 2009 that includes all recommended adolescent immunizations. The measure proposed by the PMAG should be reasonable to collect even if chart reviews are required because a) it

includes just two antigens that are not part of a series (unless the adolescent did not previously receive MMR) and b) these immunizations are required for school attendance. Also, as the adoption and active use of CIIS expands, it should become increasingly easy to collect adolescent immunization data through CIIS.

Measure #3

Evidence of developmental screening using a standardized, validated instrument at 9, 18, and 24 (or 30) month visits; or three times by age 3 years. (ASQ [51], 33], PEDS [33])

This measure is derived from the American Academy of Pediatrics (AAP)/Bright Futures Recommendations for Preventive Pediatric Health Care and AAP guidelines for developmental screening [33]. It is also aligned with the *Assuring Better Child Health & Development* (ABCD) developmental screening improvement project in Colorado. The goals of the ABCD project are to:
1) Increase the use of standardized development screening tools in pediatric and family health care settings 2) Assist practices in implementing an office process for standardized developmental screening that is efficient and practical 3) Help practices learn about opportunities to obtain reimbursement for developmental screening 4) Promote early intervention and referral and 5) Facilitate a practice's ability to link early intervention and other community services (personal communication - Eileen Auer Bennett ABCD State Coordinator). The inclusion of this measure is consistent with improvement efforts already underway in the state and may help provide data for assessing some of the ABCD project goals. The two recommended validated screening tools are consistent with AAP guidelines and with ABCD project recommendations (personal communication, William Campbell, MD, developmental pediatrician, The Children's Hospital). A practice survey or chart review would be needed to supplement claims data to identify whether providers are using a standardized tool and what tool they are using.

Measure #4

The percentage of children, 2-18 years of age, whose weight is classified based on BMI percentile for age and gender (provisional measure)

The increase in obesity (and associated comorbid conditions) among children and adolescents is a concerning and challenging health problem [3, 21,22, 23, 24, 25]. Recently published guidelines and reports on childhood obesity emphasize that documentation of BMI percentile, recognition of overweight and obesity by health care providers, and notification of parents are important first steps in addressing the problem [26, 28, 29]. At the same time, the PMAG noted that options for evidence-based interventions at the primary health care level are currently limited. The group also noted that clinicians who use an electronic

health record may have tools built into that system to automatically make the BMI percentile calculation while clinics that rely on paper records may have a more difficult time making the calculation. For these reasons this measure is suggested as a provisional measure. Better documentation may provide useful population data that could be used for future community level interventions on obesity. NCQA has introduced two child/adolescent measures on obesity that are under review for HEDIS 2009 [27]. A review of medical records data would most likely be necessary to assess this measure.

Measure #5

The percentage of infants with an oral health evaluation by a dentist or primary health care provider before age 1 (between ages 6-12 months)

Measure #6

The percentage of children seen for routine preventive dental care every six months once a dental home is established (beginning at age 1 year)

Measure #7

The percentage of children who have received protective sealants on the first permanent molars by age 6 (or when adequately erupted)

Measure # 8

The percentage of children who have received protective sealants on the second permanent molars by age 12 (or when adequately erupted)

Early childhood caries is the most common chronic childhood disease in the United States and is most prevalent in underserved populations [64]. Evidence based interventions have been successful in reducing and preventing early childhood caries to decrease costs associated with delaying dental care until oral disease has developed [30, 31, 32]. Failure to prevent early childhood caries predisposes children to greater oral disease at later ages and unaddressed oral health problems may affect readiness to learn and school performance [44]. The PMAG discussed and endorsed the importance of establishing a dental home during infancy due to evidence suggesting this is the most successful and cost effective means of preventing oral disease [63]. Establishing a dental home and early dental care before age one provides an important opportunity for anticipatory guidance on oral health and prevention. The PMAG recognizes that dental services are limited or not available in some regions of the state, however, the intention of a dental home is to coordinate referral for oral health care in all circumstances. These measures could be assessed using Medicaid claims data.

Measure #9

The percentage of clients who were given a diagnosis of upper respiratory infection (URI) and were not dispensed an antibiotic prescription on or 3 days after episode date

Measure #10

The percentage of clients who were diagnosed with pharyngitis, prescribed an antibiotic, and who received a group A streptococcus test for the episode

These are NCQA measures (HEDIS 2008) and endorsed by NQF (http://www.ncqa.org/ ; http://www.qualityforum.org/). Awareness and practice of appropriate use of antibiotics has improved. There is a need to maintain the practice of appropriate antibiotic use, and ongoing patient education about appropriate antibiotic prescribing and resistance [6, 7, 11, 12]. The PMAG strongly endorsed this measure but also noted that it would be very difficult to link specific child health outcomes to the measure. There is evidence that appropriate antibiotic use may result in fewer adverse medication events, less risk of severe and antibiotic resistant infections; and that patient education may lead to fewer inappropriate ER and clinic visits to seek antibiotics [8, 11, 12]. The PMAG also considered a measure on appropriate management of otitis media which has been noted by CDPHE (personal communication) as a clinical area that warrants attention to improve adherence to evidence-based guidelines. However, the group concluded that the complexity of the protocol for diagnosis and management made it difficult to define a clear measure that could be easily implemented. The recently revised CCGC guideline on *Appropriate Use of Antibiotics for Acute Respiratory Infection* may be a helpful tool for primary care clinicians and is available at: http://www.coloradoguidelines.org/ . Medicaid claims data could be used to assess these measures.

Measure #11

Child with asthma has received influenza immunization (done yearly)

Measure #12

Child with persistent asthma is on an inhaled corticosteroid or controller medication (reviewed for compliance yearly)

Measure #13

Child with persistent asthma has an action plan (reviewed yearly)

Asthma is the most common reason for hospitalization in childhood and improved asthma care was identified as a high priority in the national and state pediatric quality improvement initiatives and published reports reviewed for this project [1, 2, 38, 45, 46]. The measures recommended by the PMAG align with the most frequently selected asthma measures in national and state improvement initiatives. Measure #11 aligns with ACIP pediatric immunization recommendations [41, 42]; it is endorsed by NQF; and is supported in a review article on influenza immunization in children with asthma [37]. Measures #12 and 13 are NCQA HEDIS 2007 measures and are endorsed by NQF and the National Initiative for Children's Healthcare Quality (NICHQ: http://www.nichq.org/nichq). The PMAG anticipates that improved asthma care would lead to a decrease in ER visits and hospitalizations for asthma, eventual decreased asthma care costs (though initially costs may increase as more children receive appropriate care). In addition, better asthma care and prevention of infections should lead to an increase in symptom-free days and fewer missed days of school due to asthma though these outcomes would be difficult to measure at the population level. Measures #11 and 12 could be assessed using Medicaid claims data and/or an asthma registry. Measure #13 would require medical records and/or asthma registry data.

Measure #14

Evidence of use of a standardized, validated ADHD screening tool to aid in diagnosis (e.g., Vanderbilt [19, 138], Conners [9])

Measure #15

Initiation Phase: Percentage of children 6-12 years of age as of the Index Prescription Episode Start Date with an ambulatory prescription dispensed for an ADHD medication and who had one follow-up visit with a practitioner with prescribing authority during the 30-Day Initiation Phase

Measure #16

Of the children who remained on an ambulatory prescribed ADHD medication for at least 210 days, the percentage of children 6-12 years of age as of the Index Prescription Episode Start Date who, in addition to the visit in the Initiation Phase, had at least two additional follow-up visits with a practitioner within 270 days (9 months) after the Initiation Phase Ends

Attention Deficit Hyperactivity Disorder has been identified by state and national pediatric quality initiatives and child health experts as a priority area for health outcomes improvement [5, 10, 16, 18, 20]. There is a need for more accurate estimates of the prevalence of ADHD, especially in females [16] and ethnic/racial

minorities [10, 16]; for consistent use of standardized, validated methods in making the ADHD diagnosis [4, 5, 15]; and for improved adherence to evidence-based clinical guidelines for management of ADHD [10, 14, 15, 16]. The ADHD measures proposed by the PMAG are from NCQA and endorsed by NQF (http://www.ncqa.org/ ; http://www.qualityforum.org/). A practice survey or chart review would be needed to identify whether providers are using a standardized assessment tool and what tool they are using (for measure #14) while measures #15 and 16 could be assessed using Medicaid claims data.

Measure #17

Percentage of recipients who receive age-appropriate well-child checks, including: vision, hearing, developmental, behavioral/mental health, oral health, newborn screening, immunizations (based on EPSDT or HEDIS well child schedule)

Well child care is the foundation of pediatric health care. It is when surveillance and screening of physical, oral, developmental and mental/behavioral health occurs; and it provides an opportunity for assessing psychosocial factors related to all aspects of child/adolescent and family functioning and well being. The AAP/Bright Futures recently published updated guidelines for well child/adolescent care [43]. The PMAG strongly endorsed a measure that would monitor the delivery of age appropriate preventive care. At the same time, the group concluded that it would be difficult to link improvement in this area to specific outcomes. Once the baseline level of well child/adolescent care is established it may be possible to use that information to track improvement in the timing of referrals and appropriate follow-up in multiple areas of health care (for example, early initiation of oral health care, follow-up for developmental concerns). Family satisfaction with the comprehensiveness of care and receiving appropriate, helpful anticipatory guidance may also be linked to this measure. This measure also aligns with the goal of the Medical Home Evaluation Task Force to outline priority standards that define a medical home. Several additional data collection sources and methods (including CIIS and CDPHE registry data, and a practice survey) may be necessary to supplement Medicaid claims data to determine that all aspects of well child care are being implemented appropriately.

Measure #18

The rates at which children with specified chronic, disabling, or ambulatory care sensitive conditions are hospitalized

One important priority of this project was to recommend performance measures that would reflect appropriate primary care and management of chronic or disabling conditions in a medical home that lead to improved population-level

health outcomes. The PMAG recommends that hospitalization for the specific conditions outlined in Appendix V be tracked on children who are covered by Medicaid and SCHP+ to monitor quality of care for these conditions. The PMAG noted also that as access to care improves, the rate of hospitalization may initially increase as more children are appropriately managed for their condition(s). However, improved access to care, and continuity and coordination of care are expected to eventually result in a decreased number of hospitalizations, shorter length of stay, and overall decreased costs of care [47]. This proposed measure would provide a method for monitoring the population level effects of child health improvement efforts. This measure could be assessed using Medicaid claims data.

Measure #19

Length of time on Medicaid

This is proposed as a "support measure" with the potential to provide information on healthcare access and continuity of care. Children with more continuous access to care should be more likely to receive age appropriate well child care and follow-up for acute and chronic conditions, and be more likely to receive coordinated health and community services. At the same time, the PMAG recognizes limitations of this measure and recommends that it be used cautiously because: 1) eligibility for Medicaid and SCHP+ is set by statute and 2) in a true medical home children will continue to receive care even though they may no longer be covered by public insurance. This measure could be assessed using Medicaid data.

Measure #20

Identify the subgroup of children with Severe Emotional Disturbance (SED) and assess care quality in that group using the SB211 performance measures

Children with Severe Emotional Disturbance (SED) are defined by the State of Colorado Mental Health Services Division as persons:

1. From birth up to age 18
2. Who currently or at any time during the past year have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM IV
3. That resulted in functional impairment, which substantially interferes with or limits the child's role or functioning in family, school, or community activities. [This can be measured with the Global Area of Functioning score that is required by the Mental Health Services Division and Medicaid.]

From 9-13% of children and adolescents in the United States are estimated to have SED; and it is costly and requires intensive management of services [67]. The PMAG noted many of these children receive much of their ongoing care from a mental or behavioral health provider. Assessment all of the recommended C.R.S. 25.5-1-109.5 performance measures in this subgroup of children and adolescents would serve as a measure of coordination and management of care, and integration of mental health services since it would assess how often well child care and appropriate management of physical health problems are being delivered to these children. One example of specific guidelines for the definition of SED for the purpose of data analysis is included in Appendix VI (from the State of Arizona). This measure could be assessed using Medicaid claims data.

Measure #21

The percentage of children with a diagnosed mental health condition based on the DSM IV or the ICD 9 who received mental/behavioral health services in the past six months

Appropriate referral and follow-up for mental/behavioral health concerns is considered an important aspect of child healthcare that needs improvement and many factors can affect the likelihood that a child will receive appropriate care [59, 60]. This measure addresses care coordination and the integration of mental/behavioral health services with primary care and other service areas. It would allow for evaluation of factors associated with greater access to and follow-up on referrals for mental/behavioral healthcare (such as rural vs. urban dwelling, ethnic/racial disparities if ethnicity/race could be accurately determined, etc.). It would also allow for examination of specific mental/behavioral health conditions that are less likely to be appropriately addressed and receive needed mental/behavioral healthcare. This measure could be assessed using Medicaid claims data, possibly supplemented with chart data.

Measure #22

Evidence of psychosocial screening in all ages using a standardized, validated tool (e.g., PSC [49], GAPS [50])

In a 2001 statement the AAP reaffirmed that psychosocial aspects of pediatric care are an increasingly important area of healthcare that require a commitment to prevention, early detection and management [60]. In their report the AAP outlined several recommendations for improving this area of care including increasing the diagnostic and interviewing skills of providers. Time and practice process issue are limiting factors in carrying out appropriate assessment of psychosocial needs. This measure recommends the use of a standardized, validated tool as a step toward improved detection of psychosocial needs (the

two that are listed were specifically suggested by the PMAG because they are comprehensive including mental and behavioral health). Other tools that assess risk for specific mental health conditions include: 1) Depression Scale for Children (www.brightfutures.org), 2) Childhood Depression Checklist (NC Neuropsychiatry Attention and Memory Center), 3) Depression Self-Rating Test (for adolescents - Forest Pharmaceuticals: referenced from National Institutes of Mental Health), 4) BDI-PC Beck Depression Scale, 5) Childhood Anxiety Checklist (NC Neuropsychiatry Attention and Memory Center), 6) Social Anxiety Scale for Children/Adolescents (NC Neuropsychiatry Attention and Memory Center), 7) Child OCD Inventory (NC Neuropsychiatry Attention and Memory Center), 8) Patient Self-Evaluation (for adolescent anxiety - Goodman, 1994), and 9) Yale-Brown Obsessive –Compulsive Scale (Y-BOCS). Providers can request reimbursement for screening using the tools suggested for this measure. A practice survey or chart review would be needed to identify whether providers are using a tool and what tool they are using. This measure would require a practice survey and/or chart review data to supplement Medicaid claims data.

Measure #23

Depression management (effective acute phase treatment): Of adolescents started on medication, length of treatment with medication and percentage that were referred to a mental health provider.

Depression in adolescents is common and under-treated; and teens in Colorado may be at higher risk for depression and less likely to receive appropriate care [66] than teens in other parts of the country. Evidence-based guidelines recommend that most adolescents with major depression will be treated with medication and mental health therapy [57]. This proposed measure could provide valuable information about subgroups of teens that are less likely to receive appropriate treatment, regions of the state that warrant more intensive efforts to improve mental health care, and other factors that would improve adolescent depression outcomes. This measure could be assessed using Medicaid claims data.

Measure #24

Adolescent suicide attempt and completion rates
[*Track if suicide attempt data is available (e.g., through Medicaid claims)*]

The western region of the United States has the highest suicide rate in the country, and based upon 2005 data, Colorado ranks 6th in the nation for suicide deaths in all ages [personal communication: Jarrod Hindman, Program Manager Suicide Program, CDPHE]. Young people (especially women) are much more likely to be hospitalized for a suicide attempt than older adults, and only about 10% of those who are at risk for suicide have seen a healthcare provider for

mental health or emotional problems in the past year [68]. The PMAG noted that monitoring both the suicide completion and attempt rates are necessary in order to fully understand and address this important health issue. The Colorado Violent Death Reporting System (CDPHE) collects information on violent deaths (homicide, suicide, deaths of undetermined intent, and unintentional firearm-related deaths) occurring within Colorado, from a variety of data sources including death certificate, coroner/medical examiner reports, law enforcement investigations, crime lab information, and firearm trace data. Data on suicide attempts comes primarily through hospital discharge data (from the Colorado Hospital Association) and currently suicide attempts treated in emergency rooms are not included in that dataset though discussions are underway to expand data collection by CDPHE to include emergency room data (personal communication: Jarrod Hindman, Program Manager Suicide Program, CDPHE, and Holly Hedegaard, MD, Director, Injury Prevention Program, CDPHE). The PMAG recommends that suicide attempts and completed suicides be tracked as an C.R.S. 25.5-1-109.5 measure using Medicaid claims data to provide the most complete picture of suicidal behavior, and to inform prevention, education, and mental health integration and coordination efforts for children and adolescents covered by Medicaid and SCHP+. A method of defining suicide attempts and suicide using ICD-9, ICD-10, psychiatric and E-codes is provided [58].

Measure #25

Assess specific injury rates (specify ICD-9/10 and E-codes)

Unintentional injuries are the leading cause of death for children age >1 year in Colorado, and in the United States [52]. While there has been improvement in some safety practices, injury prevention counseling by primary care providers still needs to be a high priority as there is room for improvement [55, 56]. There is evidence that counseling about injury is associated with safer behaviors [54]. A variety of tools and methods for injury prevention education and counseling by healthcare providers are available, for example The Injury Prevention Program (http://www.aap.org/family/tippmain.htm). The PMAG referred an injury prevention education measure to the Medical Home Task Force for consideration. In addition, they recommended that injury morbidity and mortality in Medicaid clients are tracked as a C.R.S. 25.5-1-109.5 measure using Medicaid claims, trauma registry and hospitalization data. Recommended key injury ICD-9/10 and E-codes for tracking are listed in Appendix VII. While it may be not be possible to directly link improved injury prevention education and counseling by healthcare providers to injury outcomes, the PMAG felt that establishing a baseline incidence for the more common injuries and then monitoring changes over time was an important part of the effort to improve this area of child health.

Discussion

The PMAG recommends the measures proposed in this report as a starting place for quality improvement in pediatric healthcare. They are based upon a thorough review of child health priorities and opportunities for real improvement in population level health outcomes. The group tried to select a modest number of measures that could be reasonably collected, and at the same time not limit the recommendations to only currently available data, measures that are already being collected, or measures that other quality initiatives have chosen to address.

Because the PMAG recommended that the selected measures serve only as a starting point and that some would be expected to be added or "sunsetted" depending on clinical need and results; and also that an advisory committee of similar representation be employed to review and comment on annual reports and on the measures array. In addition, they recommend that a formal process be created to expedite interaction between the Department and the academic community (e.g. the Colorado School of Public Health) such that their intellectual and analytical resources can be employed collaboratively to pilot and validate new measures and opportunities to improve care.

Although the C.R.S. 25.5-1-109.5 improvement initiative is directed at children and adolescents covered by Medicaid and SCHP+, the PMAG noted that healthcare providers do not (and should not) deliver different standards of care based upon whether an individual has private, public, or no health insurance coverage. For this reason, quality improvement efforts initiated by the Department could reasonably be expected to lead to improved care and health outcomes for all children in Colorado.

Measures Referred to the Medical Home Evaluation Task Force

In addition to the measures summarized in this report the PMAG discussed several additional measures associated with a medical home. Those measures were referred to the Medical Home Evaluation Task Force for consideration. The referred measures are summarized in Appendix VIII.

Limitations

One possible challenge in evaluating some of the proposed measures may be the limitations of generic claims codes used for screenings, and bundled codes for EPSDT assessments. In order to specifically assess whether all components of a bundled assessment were actually carried out, and whether practitioners are using recommended tools, it may be necessary to collect supplemental data at the practice level, or provide precise codes for the specific aspects of the assessment or process that need to be evaluated.

Data for many of the measures proposed in this report should be available from Medicaid claims, supplemented in some cases by medical records data (for example, the hybrid method of assessing immunization status). The PMAG considered carefully whether to recommend measures that required the collection of additional supplemental data (such as practice surveys, family surveys, or chart reviews). When the group recommended measures that require supplemental data it was to address an important quality issue that could not otherwise be assessed (for example, evidence of using a validated developmental screening tool).

A shortage of dentists and behavioral health providers in some regions of Colorado may affect access to those services; this factor should be considered when evaluating the measures pertaining to those health areas.

New models of healthcare, in particular the integration of oral health and mental/behavioral health into primary care settings may present a challenge to evaluation of some of the measures using current claims data methods. For example, when oral or mental health are co-located with a medical provider a referral is made at the time of need and in most cases the child receives the oral or mental health service that same day. In addition, new standards for pediatric oral health care include an expanded oral health assessment of infants and toddlers during the well child exam by a primary care provider and this may not be adequately captured in the current claims codes.

Data Analysis Considerations

In discussions of methods for data analysis the PMAG noted the following issues related to data sources and analysis:

1. Continuity of coverage is an important factor that could affect follow-up on referrals, length of treatment, ability to coordinate care and many other aspects of care. The PMAG noted that although many children continue to receive care from the same provider(s) even if they experience interruptions in Medicaid eligibility or enrollment, interruptions in coverage (“churn”) may affect outcomes and quality.
2. Multifactor risk adjustment at both the provider and individual client level will be important when evaluating the quality data. Factors to consider for adjustment include eligibility and continuity of Medicaid coverage, medical home status, race/ethnicity, rural residence, region or county of the state, language and gender. The PMAG recognized that race/ethnicity classification may be unavailable or unreliable, but nevertheless noted that it may be associated with quality of care or with receiving certain diagnoses (e.g., ADHD) and appropriate follow-up.

3. It may be useful to present stratified results for some quality indicators – especially when there is research that suggests disparities by gender, race/ethnicity, or other factors.
4. Limitations of the data sources that the PMAG identified or recommended may result in incomplete data for some measures. For example, ER data on suicide attempts or specification of payer source in hospital data may be incomplete or inaccurate.

The PMAG started discussions about availability of data (in addition to Department data) that may be available to assess the performance measures outlined in this report. Several existing data sources are noted in the measures chart. The PMAG recommends that the Department develop an evaluation plan that includes securing data from other sources with an MOU or other formal agreements.

Potential Academic Research Projects

The PMAG identified several possible academic research projects to supplement the proposed C.R.S. 25.5-1-109.5 performance measures:

Measure #19: *Length of time on Medicaid*

To assess patterns of care, factors associated with dropping off of Medicaid and how it affects quality of care.

Measure #21: *The percentage of children with a diagnosed mental health condition based on the DSM IV or the ICD 9 who received mental/behavioral health services in the past six months*

To assess patterns of care, adherence to clinical guidelines, integration of mental/behavioral health, coordination of care, and health outcomes.

Measure #24: *Adolescent suicide attempt and completion rates*

To assess detection and diagnosis of depression, substance abuse, and other emotional/behavioral health conditions and evidence of appropriate mental/behavioral health treatment following clinical guidelines, care coordination, and integration of mental health services.

Measures #14, 15, and 16*: ADHD and medication and follow-up adherence.*

To assess how quality of care is associate with risky behaviors and outcomes. Much of this analysis could potentially be done with Medicaid claims data.

Measure #22: *Evidence of psychosocial screening in all ages using a standardized, validated tool (e.g., PSC, GAPS)*

To assess whether more standardized assessment of tobacco use and exposure to second-hand smoke is associated with increased referrals to the Colorado Quitline. The emergency department at The Children's Hospital has done some research on the effectiveness of tobacco and second-hand smoke prevention interventions in that setting. There may be potential for collaboration with the Quitline to use data that assesses where referrals were generated from.

Measure #23*:* *Depression management (effective acute phase treatment): Of adolescents started on medication, length of treatment with medication and percentage that were referred to a mental health provider.*

To assess how quality of care is associate with risky behaviors and outcomes. Much of this analysis could potentially be done with Medicaid claims data.

Measure #25: *Assess specific injury rates (using ICD-9/10 and E-codes)*

To assess whether the inclusion of Injury Prevention Standards in clinics that provide care to children (such as standardized assessment and counseling on key injury prevention topics and the provision of best practice educational materials) affect the rates and/or severity of pediatric trauma. One potential source of data to look at this question is the Kiwanis Pediatric Trauma Institute with a possible interface with the Injury Prevention Program.

Recommendations for Future Measures

The PMAG also discussed additional health priority areas that may be important to measure to assess quality of care and health outcomes:

1. Smoking and second-hand smoke: Efforts to prevent initiation of smoking or smokeless tobacco use, tobacco cessation, and exposure to second-hand smoke could have far reaching effects on health outcomes. The PMAG recommends that measures on this topic be introduced as it becomes more feasible to track preventive care through claims coding, reimbursement patterns, and access to and ability to track smoking-related interventions (such as use of the Quitline). Some associated indicators on these issues are already tracked through the Colorado Child Health Survey (adolescent component).
2. Sexually transmitted infections (STI) and quality of care: Note the March 2008 CDC report (www.cdc.gov) that indicated that as many as 25% of girls have an STI. Measures could examine the quality of risk assessment, education for prevention, and detection and management of STI. Some

indicators of this issue are already tracked through the Colorado Child Health Survey (adolescent component).

3. Appropriate management of otitis media: As noted in the comments on measures #9 and #10.

Recommendations for a Health Care Policy And Finance Quality Report

The PMAG made the following recommendations for a quality report prepared by the Department:

1. Prepare a draft report.
2. Incorporate comparisons with privately-insured children when possible (e.g., hospitalization rates).
3. Present change in measures over time.
4. Include risk stratification for available risk factors (e.g. age, geographic area, racial/ethnic, time enrolled, medical home status) for each measure.
5. Have the draft report reviewed by the PMAG or other qualified oversight group.
6. Recommend changes that will improve the measures, eliminate, measures that are no longer considered useful, or add new measures to address new improvement priorities.
7. Recommend improvement projects based on the analyses of the performance measures to implement and disseminate lessons learned.

Appendices

Appendix I

List of PMAG Members

Appendix II

Domain Definitions for C.R.S. 25.5-1-109.5

Appendix III

Parameters used to Review Measures

Appendix IV

Chart of performance measures

Appendix V

Measure #18: List of chronic, disabling or ambulatory care sensitive conditions

Appendix VI

Definition of SED from Arizona

Appendix VII

Measure #25: List of injury-related ICD-9/10 and E-codes

Appendix VIII

Table of measures referred to the Medical Home Evaluation Task Force

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APPENDIX I

SB 07-211 Performance Measure Advisory Group
Committee Members: 2007-2008

Members

Lalit Bajaj, MD, MPH
Assistant Professor of Pediatrics
Research Director for the Section of Emergency Medicine
Director of Evidence Based Practice and Clinical Care Guidelines
The Children's Hospital/University of Colorado at Denver Health Sciences Center

Cathy Battaglia, Ph.D, MSHA, RN
Clinical Faculty, Department of Family Medicine
University of Colorado at Denver, Anschutz Medical Campus
Partner, The Joffit Group, Inc.

Crystal Berumen, MSPH
Director of Patient Safety Initiatives
Colorado Hospital Association

Joe Craig, MD, FAAP
Medical Director for Clinical Affairs
Associate Clinical Professor of Pedatrics
Rocky Mountain Youth Clinics

George DelGrosso, MA
Executive Director
Colorado Behavioral Healthcare Council

KaraAnn Donovan, MSPH
Epidemiologist & Statistician
Colorado Department of Public Health & Environment

Gabriel Kaplan, Ph.D (Observer)
Epidemiology Planning & Evaluation Branch Director
Prevention Services Division
Colorado Department of Public Health & Environment

Samatha Kommana, MS
Director of Quality Improvement
Behavioral Healthcare Incorporated

Elizabeth Kraft, MD, MHS
Associate Medical Director, Utilization Management
Anthem Wellpoint
Medical Director, Tobacco Program
Colorado Clinical Guidelines Collaborative

Molly O'Fallon, RNC, CS
Clinical Quality Division Director
Colorado Community Health Network

Carolyn Shepherd, MD
Medical Director & Vice President Clinical Affairs
Clinica Campesina Family Health Services

James Todd, MD
Jules Amer Chair in Community Pediatrics
Professor of Pediatrics, Microbiology & Preventive Medicine/Biometrics
Director, Department of Epidemiology
Director of Clinical Outcomes
Director of Clinical Microbiology
The Children's Hospital/University of Colorado School of Medicine

Anne Wilson, DDS, MS
Director of Healthy Smiles Clinic
Associate Professor, Department of Pediatric Dentistry
Director, Predoctoral Education, Department of Pediatric Dentistry
Medical Staff, Department of Surgery
Medical Staff, Department of Dentistry
The Children's Hospital/University of Colorado School of Dental Medicine

Lise Marie Youngblade, Ph.D, MS
Professor & Head, Department of Human Development & Family Studies
Colorado State University

Health Care Policy And Finance

Lesley Reeder Abram, RN, BSN
Quality Compliance Specialist
Colorado Department of Health Care Policy and Finance

Beth Martin
Senior Analyst, Business Analysis Section,
Colorado Department of Health Care Policy and Finance

Aniss Sahli
Analyst, Business Analysis Section
Colorado Department of Health Care Policy and Finance

Gina Robinson
Program Administrator, Office of Client & Community Relations
Colorado Department of Health Care Policy and Finance Health

CCGC Staff

Carolyn Swenson, MSPH, MSN, FNP
Project Manager
Colorado Clinical Guidelines Collaborative

Kari Loken
Executive Assistant
Colorado Clinical Guidelines Collaborative

APPENDIX II

SB211: Performance Measure Domain Definitions

1. Immunization Rates

Immunization rates are the percent of children in a specified population that received recommended immunizations by a specified age.

References: 1) CDC, 2) A Dictionary of Epidemiology (JM Last)

2. Medical Home Standards for Quality

A Medical Home provides continuous, accessible, and comprehensive medical and non-medical services to a child and their family. It must ensure (at a minimum):

a) Health maintenance and preventative care.
b) Anticipatory guidance and health education.
c) Acute and chronic illness care.
d) Coordination of medications, specialists, and therapies.
e) Provider participation in hospital care.
f) 24 hour telephone care.

References: 1) SB 130 Bill, 2) American Academy of Pediatrics

3. Clinical Care Guidelines

Clinical care guidelines are systematically developed, user-friendly statements that provide the best evidence to assist practitioner *and* client decisions about appropriate health care for specific clinical circumstances, and lead to improvement in health outcomes.

References: 1) NCQA 2)Institute of Medicine,1990 3) Sackett DL et al in Evidence-based Medicine.

4. Care Coordination

Care coordination is a process for sharing information and organizing individual client health care services over time, and across people and disciplines that perform different functions in different care and service locations in order to address patient and family needs, preferences, and current health status.

References: 1) NQF-Endorsed Definition and Framework for Measuring Care Coordination 2) McAllister, et. al, Practice-Based Care Coordination: A Medical Home Essential; *Pediatrics* 2007; e723-e733, 3) SB211 PMAG.

5. Case Management

Case management is a collaborative process that assesses, plans, implements, coordinates, monitors and evaluates the options and services required to meet an individual's health

needs. It arranges access to services that are needed to implement the care coordination plan.

References: 1) NCQA, 2) University of OK Health Sciences Center, 3) SB211 PMAG

6. Disease Management

Disease management is a multi-disciplinary, continuum-based approach to health care delivery that proactively identifies populations with, or at risk for, chronic medical conditions. Disease management supports the practitioner-client relationship and plan of care, emphasizes the prevention of exacerbation and complications using cost-effective, evidence-based practice guidelines and client empowerment strategies such as self-management. It continuously evaluates clinical, humanistic and economic outcomes with the goal of improving overall health.

Reference: 1) NCQA, 2) SB211 PMAG

7. Coordination and Integration of Mental Health Services

Coordination and integration of mental health services encompasses communication and collaboration among mental health, primary care, oral and specialty care providers; *and* clients and families to share information and organize health care services over time, and across people and disciplines that perform different functions in different care and service locations.

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APPENDIX III

SB 07-211: Performance Measure Parameters

Considerations in the development of each performance measure

1. **Identify child health priorities for each domain**

2. **Determine type(s) of measure that are most appropriate for the domain**
   - ❖ Outcome measures
     - o clinical
     - o functional
     - o patient satisfaction
   - ❖ Process measures
   - ❖ Structural measures
   - ❖ Cost efficiency/Return on investment measures (example: comparison of sample with a medical home to a sample without a medical home)

Consider feasibility and utility of stratification by ethnicity but note that HCPF ethnicity data may not be appropriate for this stratification.

3. **Assess potential for alignment with existing national measures**

4. **Assess the quality of proposed measure(s)**

Questions to consider:

a. Is the measure evidence-based?
b. Is the measure *important* to multiple stakeholders?
c. Is the measure *meaningful* to multiple stakeholders?
d. Does the measure significantly affect population health?
e. What is the potential for influence and improvement on the measure?
f. Is the measure valid (face, construct, and content validity)?
g. Is the measure reliable?
h. Has the measure been tested and deemed feasible?

5. **Assess availability and quality of data to measure performance**

Questions to consider:

a. What Medicaid/SCHIP data could be utilized to assess this measure?
b. What other data are available to assess this measure?
c. How feasible is it to collect and analyze data for the measure?
d. Will the data be available <u>when</u> it is needed to assess the measure?
e. Who could and would collect data to assess the measure?
f. What is the likely burden on the provider to collect the data?
g. What is the estimated cost to collect and analyze the data?
h. Who would pay to collect and analyze the data?

PowerPoint presentation *Measuring the Quality of Quality Measures* (James Todd, MD) was used to prepare this document.

APPENDIX IV

Proposed Performance Measures Chart

March 31, 2008

Notes

1. Sources of measures:

1. AAP (American Academy of Pediatrics)
2. ABCD: (Assuring Better Health and Development)
3. ACIP (Advisory Committee on Immunization Practices – CDC)
4. AHRQ (Agency for Healthcare Research and Quality)
5. Bright Futures (Maternal Child Health Bureau (MCHB)/AAP)
6. CDC (BRFSS, Colorado Child Health Survey, National Child Health Survey)
7. CDPHE (Colorado Department of Public Health and Environment)
8. Future of Children (The Woodrow Wilson School of Public & International Affairs at Princeton University and The Brookings Institution)
9. HRSA-MCHB (Health Research Services Administration-Maternal Child Health Bureau)
10. ICSI (Institute for Clinical Systems Improvement)
11. NCQA (National Committee for Quality Assurance) - HEDIS
12. NICHQ (National Initiative for Children's Healthcare Quality)
13. NIS (National Immunization Survey)
14. NQF (National Quality Forum)

2. **The data sources listed are potential sources of data**

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
1. Percentage of children who turned two years old during the measurement year who had 4 DTaP/DT, 3 IPV, 1 MMR, 3 H influenza type B, 3 Hep B, and 1 VZV by the time period specified and by the child's second birthday (*4:3:1:3:3:1*)	Prevention – infectious disease	▪ NCQA (updating 2009) ▪ NQF- endorsed ▪ NIS	Process	▪ Vaccine-preventable disease incidence stable or decreased	▪ Immunizations ▪ Clinical guidelines ▪ Care coordination	▪ CIIS ▪ Chart review (if CIIS not used or not complete) ▪ CoCASA reports (required by VFC) 1) Compare rates over time 2) Adjust for vaccine shortages 3) Phase in additional immunizations: align with HEDIS 4) HCPF uses HEDIS methods (*not* adjusted for refusals or contraindications)

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
2. The percentage of eligible adolescents who have received recommended MMR and Tdap boosters by the 15th birthday	Prevention – infectious disease	▪ NCQA (new adolescent measure introduced for 2009) ▪ ICSI	Process	▪ Increase in adolescent immunization rate ▪ Potential decrease in pertussis reservoir (may not be measurable) ▪ Vaccine-preventable disease incidence stable or decreased	▪ Immunizations ▪ Clinical guidelines ▪ Care coordination	▪ CIIS ▪ Chart review 1) Compare rates over time 2) Adjust for vaccine shortages 3) Phase in additional immunizations: align with HEDIS 4) HCPF uses HEDIS methods (*not* adjusted for refusals or contraindications)
3. Evidence of developmental screening using a standardized, validated instrument at 9, 18, and 24 (or 30) month visits or three times by age 3 years (ASQ, PEDS)	Prevention – well child care	▪ AAP/Bright Futures ▪ ABCD project	Process	▪ Increased referrals for assessment of developmental disorders ▪ Increased diagnoses of developmental disorders ▪ Increased false positives for developmental disorders (because of referrals based on parent concern alone) ▪	▪ Clinical guidelines ▪ Disease management ▪ Care coordination ▪ Case management ▪ Integration of MH	▪ Medicaid claims -EPSDT ▪ Practice survey (assess use of screening tool) ▪ CDPHE ABCD project Codes: 96110, 96111

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
4. Percentage of children, 2-18 years of age, whose weight is classified based on BMI percentile for age and gender. (*provisional measure*)	Prevention - obesity	▪ NCQA (new 2009) ▪ NICHQ	Process	▪ Increased percentage of parents report that PCP informed them that child is overweight or obese ▪ Increased assessment of risk factors for co-morbidities (lipids, BP, diabetes) ▪ Revised/ improved estimates of the prevalence of childhood overweight/obesity ▪ Identification of high risk regions of the state for intervention	▪ Clinical guidelines ▪ Disease management	Medical record 1) Currently - no Medicaid claims code for this 2) Potential use of CO Child Health Survey (to track parent reports of PCP notification of overweight/obesity)
5. Percentage of infants with an oral health evaluation by a dentist or primary health care provider before age 1 (between ages 6-12 months)	Prevention-Oral health	▪ Healthy People 2010 ▪ CDPHE (Dental Home initiative)	Process	▪ Early oral health intervention ▪ Early initiation of anticipatory guidance ▪ Longer-term: Decreased early childhood caries		Medicaid claims CO Child Health Survey Code=0145
6. Percentage of children seen for routine preventive dental care every six months once a dental home is established (beginning at age 1 year)	Prevention-Oral health	▪ Healthy People 2010 ▪ North Carolina ▪ CDPHE (Dental Home initiative)	Process	▪ Early oral health intervention ▪ Early initiation of anticipatory guidance ▪ Earlier initiation of sealants ▪ Longer-term: Decreased early childhood caries ▪ Decreased costs (longer term)		Medicaid claims Stratify by age System-level measure
7. Percentage of children who have received protective sealants on the first permanent molars by age 6 (or when adequately erupted)	Prevention-Oral health	▪ HRSA-MCHB ▪ Healthy People 2010 ▪ CDPHE (Dental Home initiative)	Process	▪ Decreased prevalence of childhood caries ▪ Possible decrease in oral health care costs (longer term)	▪ Clinical guidelines ▪ Disease management ▪ Care coordination	Medicaid claims System-level measure **Goal=50%**

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
8. Percentage of children who have received protective sealants on the second permanent molars by age 12 (or when adequately erupted)	Prevention-Oral health	▪ Healthy People 2010 ▪ CDPHE (Dental Home initiative)	Process	▪ Decreased prevalence of childhood caries ▪ Possible decreased oral health care costs (longer term)	▪ Clinical guidelines ▪ Disease management ▪ Care coordination	Medicaid claims System-level measure **Goal=50%**
9. Percentage of patients who were given a diagnosis of upper respiratory infection (URI) and were not dispensed an antibiotic prescription on or 3 days after episode date	URI – Appropriate use of antibiotics	▪ NCQA	Process	▪ Maintain and improve level of appropriate antibiotic use ▪ Increase in percent of parents who report knowledge of appropriate antibiotic use	▪ Clinical guidelines ▪ Disease management	Medicaid claims 1) Monitor sinusitis diagnosis rate (for corresponding increase as antibiotics in URI decreases) 2) CO Child Health Survey (parent knowledge re appropriate antibiotic use (monitor ethnic disparity in knowledge)
10. Percentage of patients who were diagnosed with pharyngitis, prescribed an antibiotic, and who received a group A streptococcus test for the episode	URI - Appropriate use of antibiotics	▪ NCQA	Process	▪ Maintain and improve level of appropriate pharyngitis management	▪ Clinical guidelines ▪ Disease management	Medicaid claims
11. Child with asthma has received an influenza immunization (annually)	Asthma	▪ NCQA ▪ NICHQ	Process	▪ Decreased hospitalization for asthma ▪ Decreased ER visits for asthma	▪ Clinical guidelines ▪ Disease management ▪ Immunizations ▪ Care coordination	▪ Medicaid claims ▪ Asthma registry Universal influenza immunization anticipated 2009-2010 flu season

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
12. Child with persistent asthma is on an inhaled corticosteroid or controller medication (assess compliance annually)	Asthma	▪ NCQA ▪ NQF ▪ NICHQ	Process	▪ Decreased hospitalization for asthma ▪ Decreased ER visits for asthma ▪ Increase in symptom-free days	▪ Clinical guidelines ▪ Disease management ▪ Care coordination	▪ Medicaid claims ▪ Asthma registry ICD-10 may introduce code for persistent asthma
13. Child with persistent asthma has an action plan (reviewed for compliance yearly)	Asthma	▪ NICHQ	Process	▪ Decreased hospitalization for asthma ▪ Decreased ER visits for asthma	▪ Clinical guidelines ▪ Disease management ▪ Care coordination	▪ Medical record ▪ Asthma registry ICD-10 may introduce code for persistent asthma
14. Evidence of use of a standardized, validated ADHD screening tool to aid in diagnosis (Vanderbilt, Conners)	ADHD	▪ NCQA	Process	▪ Possible change in overall prevalence of ADHD ▪ Possible narrowed gap in ethnic and gender disparity in prevalence	▪ Clinical guidelines ▪ Disease management	▪ Medical record ▪ Practice survey Codes: 96110, 96111
15. Initiation Phase: Percentage of children 6-12 years of age as of the Index Prescription Episode Start Date with an ambulatory prescription dispensed for an ADHD medication and who had one follow-up visit with a practitioner with prescribing authority during the 30-Day Initiation Phase	ADHD	▪ NCQA ▪ NQF	Process	▪ Increase in percentage of patients who have an acceptable symptom score or lower their symptom score (NICHQ)	▪ Clinical guidelines ▪ Disease management ▪ Care coordination ▪ Integration of MH	Medicaid claims

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
16. Of the children who remained on an ambulatory prescribed ADHD medication for at least 210 days, the percentage of children 6-12 years of age as of the Index Prescription Episode Start Date who, in addition to the visit in the Initiation Phase, had at least two additional follow-up visits with a practitioner within 270 days (9 months) after the Initiation Phase Ends	ADHD	▪ NCQA ▪ NQF	Process	▪ Increased percentage of patients who have an acceptable symptom score or lower their symptom score (NICHQ) ▪ Length of time on medication (intermediate outcome)	▪ Clinical guidelines ▪ Disease management ▪ Care coordination ▪ Integration of MH	Medicaid claims
17. Percentage of recipients who receive age-appropriate well-child checks, including: vision, hearing, developmental, behavioral/mental health, oral health, newborn screening, immunizations (*based on EPSDT or HEDIS well child schedule)*	Prevention-Well child care	AAP/Bright Futures	Process	▪ Increased use of preventive services ▪ Evidence of early initiation of care and intervention ▪ Increase in child and family satisfaction with their primary source of medical care ▪ More comprehensive well child/adolescent care	▪ Care coordination ▪ Medical Home ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Immunizations ▪ Integration of MH	▪ HCPF hybrid method ▪ Practice survey ▪ CO Newborn hearing registry (NEST) ▪ CIIS Ages to assess: ▪ <=12 months ▪ 1 – 4 years ▪ 5-11 years ▪ 12-17 years
18. The rates at which children with specified chronic, disabling, or ambulatory care sensitive conditions are hospitalized	Prevention	▪ Future of Children ▪ SB211	Outcome	▪ Decreased costs of care ▪ Possible shorter duration of hospitalization if care is better coordinated and more focused (especially for mental/behavioral health conditions)	▪ Care coordination ▪ Medical home ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	Medicaid Claims 1) Specify ICD codes 2) Rate may initially increase (as access improves)

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
19. Length of time on Medicaid	Medical Home	SB211	Process	May be linked to: ▪ Continuity of care ▪ Decreased ER visits and hospitalization ▪ Costs of care: delayed care increase costs	▪ Care coordination ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	Medicaid data 1) Consider also looking at continuity 2) Limitations: ▪ Eligibility set by statute ▪ View as a support measure; use results cautiously
20. Identify the subgroup of children with *Severe Emotional Disability* (SED) and assess care quality in that group using the Department performance measures	Medical Home	SB211	Process Outcome		▪ All domains covered	Medicaid claims
21.The percentage of children with a diagnosed mental health condition based on the DSM IV or the ICD 9 who received mental/behavioral health services in the past six months	Mental/Behavioral health	SB211	Process	▪	▪ Care coordination ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	▪ Medicaid claims ▪ Chart review (to identify on-site service delivery)
22. Evidence of psychosocial screening in all ages using a standardized, validated tool (e.g., PSC, GAPS)	Mental/Behavioral Health	SB211	Process	▪ Early identification of mental and behavioral health risk factors and conditions	▪ Care coordination ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	▪ Chart review ▪ Practice survey Code for screening= 96110

Measure	***Health Priority Area***	***Alignment and Source(s) of measures***	***Type of Measure***	***Associated Outcomes***	***SB211 Domains***	***Data Source(s)*** ***Comments***
23. Depression management (effective acute phase treatment): Of adolescents started on medication, length of treatment with medication and percentage that were referred to a mental health provider	Mental/Behavioral Health	NCQA	Process	▪ Decreased symptoms of depression ▪ Improved functioning	▪ Care coordination ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	Medicaid claims
24. Adolescent suicide attempt and completion rates [Track if suicide attempt data is available (e.g., through Medicaid claims)]	Mental/Behavioral Health	SB211	Outcome		▪ Medical Home ▪ Care coordination ▪ Case management ▪ Disease management ▪ Clinical guidelines ▪ Integration of MH	▪ Medicaid claims ▪ Hospital discharge data
25. Assess specific injury rates (*specify ICD-9/10 and E-codes)*	Injury prevention	SB211	Outcome		▪ Medical home ▪ Clinical guidelines ▪ Care coordination	▪ Trauma registry ▪ Medicaid claims

APPENDIX V

ICD9 Definitions of clinical categories

Category	ICD9 & MDC Codes
Appendectomy for appendicitis	(PX: 470 or 470.2 or 470.9) AND (DX: 540.0 or 540.1 or 540.9)
Appendectomy for appendicitis with rupture or peritonitis	(PX: 470 or 470.2 or 470.9) AND (DX: 540.0 or 540.1)
Vaccine-preventable disease	
Diphtheria	032.x
Pertussis	033, 033.0, 033.9, 484.3
Tetanus	037
Haemophilus influenzae	320.0, 038.41, 041.5, 482.2
Varicella	052.x
Hepatitis A	070.0, 070.1
Hepatitis B	070.2, 070.3
Measles	055.x
Streptococcus pneumoniae	038.2, 041.2, 320.1, 481, 567.1
Psychiatric Disease	MDC 19
Asthma	493.x
Diabetes	250.x
Chronic Disease	
Neuromuscular	

Brain and spinal cord malformations	740.0-742.9
Mental retardation	318.0-318.2
Central nervous system degeneration and disease	330.0-330.9, 334.0-334.2, 335.0-335.9
Infantile cerebral palsy	343.0-343.9
Muscular dystrophies and myopathies	359.0-359.3
Cardiovascular	
Heart and great vessel malformations	745.0-747.4
Cardiomyopathies	425.0-425.4, 429.1
Conduction disorders	426.0-427.4
Dysrhythmias	427.6-427.9
Respiratory	
Respiratory malformations	748.0-748.9
Chronic respiratory disease	770.7
Cystic fibrosis	277.0
Renal	
Congenital anomalies	753.0-753.9
Chronic renal failure	585
Gastrointestinal	
Congenital anomalies	750.3, 751.1-751.3,

	751.6-751.9
Chronic liver disease and cirrhosis	571.4-571.9
Inflammatory bowel disease	555.0-556.9
Hematologic or immunologic	
Sickle cell disease	282.5-282.6
Hereditary anemias	282.0-282.4
Hereditary immunodeficiency	279.00-279.9, 288.1-288.2, 446.1 0420-0421
Acquired immunodeficiency	
Metabolic	270.0-270.9
Amino acid metabolism	271.0-271.9
Carbohydrate metabolism	272.0-272.9
Lipid metabolism	277.3-277.5
Storage disorders	275.0-275.3, 277.2, 277.4, 277.6,
Other metabolic disorders	277.8-277.9
Other congenital or genetic defect	
Chromosomal anomalies	758.0-758.9
Bone and joint anomalies	259.4, 737.3, 756.0-756.5
Diaphragm and abdominal wall	553.3, 756.6-756.7 759.7-759.9
Other congenital anomalies	140.0-208.9, 235.0-239.9
Malignancy: Malignant neoplasms	

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APPENDIX VI

Frequently Asked Questions on Serious Emotional Disturbance (FAQ on "SED")

What does "SED" mean?
SED is an acronym for serious emotional disturbance.

Is there any entitlement or special status regarding receipt of behavioral health services associated with being SED?

No. In 1990, only children with a serious emotional disturbance had full Title XIX behavioral health coverage in Arizona. Since 1992, all children who are Title XIX (and now Title XXI as well) have full behavioral health coverage regardless of SED category.

If there is no special status associated with being SED, why does the State require or collect information on SED?

The federal block grants and AHCCCS require counts of children served who are SED for statistical purposes.

How is SED determined in Arizona?

In Arizona, SED is determined based on the child's diagnosis (see list below).

Are SED diagnoses the same as SMI diagnoses?

Not exactly. An SMI diagnosis qualifies as an SED diagnosis as well, but there are additional SED diagnoses that are not SMI (see list below).

Is SED the same as SEH?

No. SEH means serious emotional handicap and is an educational term to describe a child with requires special education as a result of an emotional disturbance. Children who are determined to be emotionally handicapped by their home school district should be referred to the local RBHA. The RBHA will work with the local school district to provide supportive services to maintain the child in their home community.

Do children with SED require second level review?
If the child has a diagnosis and functional level based on the Arizona Level of Functioning Assessment that requires second level review, the child's record must be reviewed by a psychiatrist, psychologist, physician assistant or nurse practitioner to determine if the child needs a face-to-face visit by a psychiatrist, psychologist, physician assistant or nurse practitioner for further evaluation or treatment.

What ADHS/DBHS policies apply to determination of SED and second level review?

The ADHS/DBHS Policy 2.44 on Behavioral Health Category Assignment describes how children are assigned to the SED category. The ADHS/DBHS Policy 1.1 on the Arizona Level Of Functioning Assessment describes how second level review is performed.

SMI/SED Diagnoses

Schizophrenia (295.10, 295.20, 295.30, 295.60, 295.70, 295.90)
Other Psychotic Disorders (297.1, 298.9)
Bipolar Disorders (296.00, 296.01, 296.02, 296.03, 296.04, 296.05, 296.06, 296.40, 296.41, 296.42, 296.43, 296.44, 296.45, 296.46, 296.50, 296.51, 296.52, 296.53, 296.54, 296.55, 296.56, 296.60, 296.61, 296.62, 296.63, 296.64, 296.65, 296.66, 296.7, 296.80, 296.89)
Depressive Disorders (296.20, 296.21, 296.22, 296.23, 296.24, 296.25, 296.26, 296.30, 296.31, 296.32, 296.33, 296.34, 296.35, 296.36, 296.90, 300.4, 301.13, 311)
Anxiety Disorders (300.00, 300.01, 300.02, 300.21, 300.22, 300.3, 309.81)
Dissociative Identity Disorder(300.14)
Personality Disorders (301.0, 301.20, 301.22, 301.4, 301.50, 301.6, 301.81, 301.82, 301.83, 301.9)

Additional SED Diagnoses

Anxiety Disorders (309.21, 313.89)
Attention Deficit/Hyperactivity Disorders (314.00, 314.01, 314.9)
Eating Disorders (307.1, 307.5x)
Pervasive Developmental Disorders (299.xx)
Oppositional Defiant Disorder (313.81)
Impulse Control Disorders (312.30, 312.33, 312.34, 312.9)
Phobic Disorders (300.23, 300.29)
Elimination Disorders (307.6, 307.7) **Tic Disorders/Trichotillomania** (307.2x, 307.3, 312.39)

APPENDIX VII

Injury Prevention

Proposed measures and possible ICD-9 and E codes that can be followed for trends over time

Primary Injury Prevention

Major themes

1. Traffic/Car Seat/Helmets
   Follow trauma codes (see below) and Motor Vehicle E codes
2. Burns
   Follow Burn codes (see below); E codes would be designated by type of burn (i.e. fire vs. environment (like kitchen stove burn)
3. Falls
   Follow trauma codes and Accidental Fall E codes
4. Poisoning
   See Poisoning Primary and E codes

ICD 9 Codes

Trauma codes:

- Fractures **(800 – 829)**
- Dislocations **(830-839)**
- Sprains and Strains of Joints and Adjacent Muscles **(840 -848)**
- Intracranial Injury (excluding those with skull fracture) **(850 -854)**
- Internal Injury of Thorax, Abdomen, Pelvis **(860-869)**
- Open Wounds**(870 – 897)**

Burns **(940 -949)**

Poisonings by Drugs, Medicinal, Biological Substances **(960-979)**

Use E code(s) to identify the cause and intent of the injury or poisoning (E800-E999)

Motor Vehicle/Road Vehicle E codes

Motor Vehicle Accidents **(E810 – E819)**
Motor Vehicle Nontraffic Accidents **(E820 – E 824)** – accidents involving motor vehicles being used in recreational or sporting activities off the highway collision and non-collision motor vehicle accidents occurring entirely off the highway (snow mobiles, motorcycle)
Other Road Vehicle Accidents **(E 826-E829)** accidents involving other road vehicles being used in recreational or sporting activities (e.g., bicycles)

Poisoning

ACCIDENTAL POISONING BY DRUGS, MEDICINAL SUBSTANCES, AND BIOLOGICALS **(E850-E858)**

ACCIDENTAL POISONING BY OTHER SOLID AND LIQUID SUBSTANCES, GASES, AND VAPORS **(E860-E869)**

Falls
ACCIDENTAL FALLS **(E880-E888)**

Burns
ACCIDENTS CAUSED BY FIRE AND FLAMES **(E890-E899)**

ACCIDENTS DUE TO NATURAL AND ENVIRONMENTAL FACTORS **(E900-E909)**

Drowning

ACCIDENTS CAUSED BY SUBMERSION, SUFFOCATION, AND FOREIGN BODIES (**E910-E915)** includes drowning

Suicide/Homicide

SUICIDE AND SELF-INFLICTED INJURY **(E950-E959)**

HOMICIDE AND INJURY PURPOSELY INFLICTED BY OTHER PERSONS (**E960-E969)**

APPENDIX VIII
Proposed Measures Referred to Medical Home Evaluation Task Force
March 2008

MEASURE	DOMAIN	ALIGNMENT	TYPE	POTENTIAL OUTCOMES	OTHER DOMAINS	DATA/METHODS
1. The practice has a system and process in place for developing a plan of care for every pediatric client.	Medical Home	NQF	Structure Process	▪ Increased and more timely follow through on referrals ▪ Cost savings	Care coordination Case management Medical home Disease management	Medical record Practice survey
2. The practice has a protocol and methods in place for the referral process to include the following: ▪ Identifying appropriate primary care providers specialists, or consultants when needed ▪ Bi-directional communication with referral service providers ▪ Tracking referrals using paper-based or electronic systems	Medical Home	NCQA NQF	Process	▪ Increased follow-up on care ▪ Better overall health outcomes ▪ Decreased cost (of repeat tests, services) ▪ Increased family satisfaction with care ▪ Increased provider and staff satisfaction	Care coordination Disease management Case management Integration of MH	Practice Survey
3. The practice has a process in place for compiling and referring to community services and resources	Medical Home	NQF	Process	▪ Increased follow-up on care ▪ Better overall health outcomes ▪ Decreased costs of care ▪ Decreased duplication of services ▪ Increased family satisfaction with care ▪ Increased provider and staff satisfaction	Care coordination Case management	Practice Survey

APPENDIX VIII
Proposed Measures Referred to Medical Home Evaluation Task Force
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4. Practice has written protocols for patient access and patient communication that address the following: ▪ 24/7 access to a provider or clinically qualified staff (such as a triage service) ▪ Method(s) for ensuring that each patient has a personal provider or team ▪ Method(s) for appropriate timing of appointments based on condition (acute, chronic, well) – may include protocol for scheduling same-day appointments	Medical Home	NCQA	Process	▪ Decreased ER visits ▪ Decreased costs of care ▪ Increased patient and family satisfaction	Care coordination Disease management Case management Integration of MH Clinical guidelines	Practice survey
5. The practice organizes clinical information to identify important diagnoses and conditions.	Medical Home	NCQA	Process	▪	Care coordination Disease management Case management Integration of MH	Practice survey
6. The practice demonstrates that it is taking steps to utilize registries for immunizations and chronic conditions.	Medical Home	NCQA	Structure Process	▪	Care coordination Disease management Case management Integration of MH	Practice survey
7. The practice utilizes reminders and recall for age appropriate screenings, immunizations, well child care, risk assessment and anticipatory guidance and counseling.	Medical Home	NCQA	Process	▪	Care coordination Disease management Case management Clinical guidelines	Practice survey CIIS

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8. The practice has a written protocol in place for annual training on cultural competence and client assessment of cultural needs of clients and families that includes the following: ▪ Staff training (at least annually?) on cultural competence using a recognized resource ▪ A method for assessing and documenting the language and cultural needs of clients and families (including preferred language for services and educational materials, dietary preferences that may influence the care plan, and asking about other cultural preferences and practices that may affect care) ▪ Access to qualified language interpretation services	Medical Home	NCQA	Process	▪ Increased patient and family satisfaction ▪ Increased staff self efficacy and satisfaction ▪ Better health outcomes	Clinical guidelines Care coordination	Practice survey
Adoption and use of the Colorado Immunization Information System (CIIS)	Medical Home		Structure Process	Improved immunization and well child care rates	Care coordination Case management Clinical guidelines	CIIS
Evidence that a practice provides anticipatory guidance and prevention education utilizing one or more methods (e.g., injury prevention, risky behaviors)	Medical Home		Process	Decreased injury and risky behavior rates Increased patient and family satisfaction with care	Care coordination Clinical guidelines	Practice survey