Quality Measures For Adult Attention Deficit Hyperactivity Disorder

Abstract

Background Quality measures (QMs) (also known as Quality Indicators) quantify healthcare processes, outcomes, patient perceptions, and organizational structure and/or systems that are relevant to the provision of high-quality health care. We describe the first phase of a project that has as its ultimate goal the creation and validation of QMs for tracking the screening, diagnosis, treatment and clinical follow-up of adults with ADHD. This will fill an important gap in the field of Adult ADHD because QMs for adult ADHD do not exist. **Methods** We followed the guidelines of the US Agency for Healthcare Research and Quality (AHRQ) for the development of QMs. These guidelines call for two phases: 1) Identify Candidate QMs and 2) Assess Candidate QMs. This article describes the results of our Phase one activities. To generate QMs for adult ADHD, we took the following steps: 1) searched the clinical/research literature for adult ADHD QMs. 2) convened a multidisciplinary panel comprising clinical and research experts and had them brainstorm potential QMs in the areas of screening, diagnosis, treatment, follow-up, care coordination and patient experience. 3) compared these QMs to existing guidelines for adult ADHD to see if any potential QMs had been missed. This led to a draft list of 46 QMs. 4) had 28 ADHD experts rate the importance, reliability, validity, feasibility and usability of the QMs. **Results** The literature review found several QMs for ADHD in youth but none for ADHD in adults. The brainstorming session generated 52 QMs. The survey showed that all of these QMs were highly rated but that there was sufficient variability in ratings to prioritize some QMs over others. **Conclusions** Based on these results, we prioritized QMs to carry forward into the next phase of the project. This work fills an important gap for the clinical care of adult patients with ADHD and helps to set a precedent for mental health, which has lagged behind other areas of medicine in developing QMs.

Background:

Quality measures (QMs) (also known as Quality Indicators) quantify healthcare processes, outcomes, patient perceptions, and organizational structure or systems that are relevant to the provision of high-quality health care. They are increasingly being used by the US Agency for Health Research and Quality (AHRQ), Medicare and Medicaid. With the implementation of the Affordable Care Act, QMs have become vital for managed care organizations, insurance companies and other organizations tasked with monitoring quality and determining reimbursement rates for services (Nigam, 2012). QMs are intended to improve the delivery of care, identify factors leading to favorable outcomes, reduce variations in care leading to poor outcomes and point the field in the direction of best practices (Patel *et al.*, 2015). To define a QM, one creates a ratio of objective measures. For example, in primary care a QM used for controlling hypertension is: "The percentage of clinic members 18-85 years of age who had a diagnosis of hypertension and whose BP was adequately controlled during the measurement year based on the following criteria: 18-59 = <140/90 mm Hg; 60-85 w/ diabetes = <140/90 mm Hg; 60-85 w/o diabetes = <150/90 mm Hg (National Committee for Quality Assurance, 2018).

QMs are not practice guidelines. Whereas practice guidelines are comprehensive algorithms for screening, diagnosis and treatment, QMs only cover key aspects of practice that can be documented with objective measures. They only track the most essential features of health care delivery (National Committee for Quality Assurance, 2018, Patel *et al.*, 2015). QMs cannot be as detailed as practice guidelines. If they were, healthcare professionals would be unduly burdened.

QMs are typically based on evidence from the research literature and expert opinion. They should be feasible to measure and should focus on one of the following aspects of health care: improving safety or efficacy, being responsive to patient preferences, needs and values, reducing delays in diagnosis and treatment and conserving resources. QMs address four levels of health care delivery: 1) Systems level events (e.g., the ratio of providers to patients in a practice); 2) Provider behaviors (e.g., use of an ADHD screening instrument) 3) Intermediate patient outcomes (e.g., adherence to treatment) and 4) Desired patient outcomes (e.g., percent of responders to a treatment regime). Within each of these domains, QMs will track, not only appropriate practices, but also inappropriate or overused practices (AHRQ, 2011).

Today we know that adult ADHD occurs in 4.4% of adults (Kessler *et al.*, 2006). It leads to substantial impairments, including traffic accidents (Biederman and Faraone, 2005), increased health care expenses (Biederman and Faraone, 2005), alcohol and substance use disorders (Biederman and Faraone, 2005), antisocial behavior (Eyestone and Howell, 1994, Rosler *et al.*, 2004), unemployment (Biederman and Faraone, 2005), relationship difficulties (Biederman and Faraone, 2005), risky behaviors (Barkley *et al.*, 2008) and premature death (Dalsgaard *et al.*, 2015). In adulthood, ADHD costs American society $77.5 to $115.9 billion *every year* (Biederman and Faraone, 2006). The considerable human and financial costs of adult ADHD are magnified by the disorder's chronicity, limited access to treatment by skilled providers, the fact that current treatments are only partially effective and the low levels of adherence to treatment regimes.

Given the considerable impact of ADHD on patients, families and society, the field needs QMs to assure the delivery of quality health care to adults with ADHD. To address this issue, we launched the Adult ADHD Quality Measures Initiative (AAQMI). The AAQMI

seeks to create QMs for the screening, diagnosis and treatment of adult ADHD that will meet the standards of the AHRQ and other regulatory agencies.

Discussion

As our literature review documented, this work is the first step toward defining quality measures (QMs) for the diagnosis and treatment of ADHD in adults. By convening a panel of content experts, reviewing published guidelines for the diagnosis and treatment of ADHD, and surveying additional experts, we generated a short list of QMs that should be considered in monitoring clinical practice in primary care and specialty clinics.

The list of items extracted from the guidelines literature was longer than the list of items generated by the brainstorming session. This result was expected because guidelines are meant to be comprehensive whereas QMs are meant to cover essential aspects of practice that can be documented with objective measures (Patel *et al.*, 2015, Quality, 2014). Moreover, when QMs are used by healthcare organizations and insurance programs only a handful of the most important are implemented so as not to unduly burden healthcare professionals (Patel *et al.*, 2015, Quality, 2014). The larger list of QMs generated by this project could evolve into guidelines if a consensus is achieved by expert clinicians.

Our survey of experts yielded a clear bimodality in the degree to which the QMs were rated as being important, reliable/valid and feasible/usable (Figure 3D). Before focusing on the top-rated QMs, one must understand a key point from Figure3D. All QMs received ratings above average (3.0) which indicates that all could play a role in quality care and, perhaps, should be considered when creating treatment guidelines.

Examination of the top ten QMs (Table 4), based on these ratings is instructive. We generated QMs in six domains: screening, diagnosis, treatment Initiation, treatment follow-up, care coordination and the patient experience. None of the QMs generated for care coordination and the patient experience landed in the top ten list. As Supplemental Table 1 shows, all the QMs in these domains received mean scores of 4.0 or lower, which is in the bottom half of the distribution (See Figure 3D). This view from experts is consistent with the extant guidelines literature; we found none that addressed these two domains. We can only speculate as to why this pattern occurred. One possibility is that the quality of care coordination and the patient experience are distal events. In the absence of quality diagnosis, treatment and follow-up, quality in these domains may be viewed as less relevant. Alternatively, this aspect of our results may reflect a systematic bias in our sample of raters. Future efforts should include other relevant stakeholders, including patients and health care systems, who may be more likely to emphasize the care coordination and the patient experience domains. Regardless of the reason for the de-emphasis of these domains, any interpretation should keep in mind that the ratings are of relative importance. A low rating only means that the item is not essential for documenting the basics of quality care.

The screening and diagnosis items on the top ten list suggest that experts are concerned about the possibility of false positive diagnoses of ADHD (e.g., items documenting use of DSM-5 criteria, especially impairment) and about assessing for comorbidity (e.g., items regarding other disorders). The items chosen from the treatment initiation section all pertain, to some degree, with the risk for adverse events. QMs regarding medication choice, referral to psychosocial treatment, medication misuse and others received lower ratings. The maxim "first do no harm" seems to have guided expert opinion here. The top items in the treatment follow-up section seek to assure that follow-up takes place and that clinicians assess treatment efficacy with a validated measure.

Comparing the top ten QMs for adult ADHD with previously published QMs for childhood ADHD is also instructive, keeping in mind that none of the experts involved in this project had seen the list of the childhood QMs prior to their participation. There are no extant child QMs for screening in healthcare settings, suggesting that clinicians may rely on the screening role provided by the educational system. Only three screening measures were generated by our project and only one reached the top ten for adult QMs (% high risk patients screened). The limited emphasis on screening by experts whose clinical populations are usually pre-screened by referral is understandable. Prior and current surveys of psychiatrists and PCPs about their preferences in diagnosing and assessing adult ADHD found that psychiatrists expressed a lower need for screening for ADHD than PCPs (Adler *et al.*, 2009, Silverstein *et al.*, 2017). The low emphasis on screening for the adult QMs also differs from other mental health conditions such as depression and substance abuse, where screening has become standard in many settings. This may reflect higher participation of PCPs in the formulation of the standard of care for depression and substance abuse, as well as limited data on the population benefits of screening for ADHD in adults.

For the diagnosis domain, both the child and adult QMs call for documenting DSM criteria along with impairment. The only child QM for treatment initiation is about establishing a care management plan. In like manner, the adult QMs indicate the need to consider treatment alternatives but they also focus on assessing vital signs and contraindications to drug treatment. There are three adult QMs for follow-up among the top ten. These three QMs appear on the child QM list. Our top 10 QM only address non-pharmacologic treatment in one QM (% patients receiving ADHD medications for whom treatment alternatives, benefits and risks have been discussed). The de-emphasis of non-pharmacologic treatments may reflect concerns about accessibility of such treatments (e.g., cognitive behavior therapy), their limited evidence base (e.g., working memory training, most supplements) and their relative newness compared with pharmacotherapies.

The list of QMs in Table 4 is not a final list for implementation in clinical practice. Instead, it gives the starting point for the next phase of this project which will incorporate the views of stakeholders and then field test the QMs in clinical settings. Nevertheless, clinicians should view the current list of QMs as a starting point for defining what is essential in screening, diagnosing and managing ADHD in adults.

Table 2: Quality Measures for Diagnosing and Treating ADHD in adults

Quality Measure	*Metric*
Screening	
	% patients screened using validated method to screen for ADHD
	% patients with ADHD screened at least once a year for mood, anxiety and substance use disorders
	% high risk patients screened (e.g., depressed patients, family history of ADHD)
Diagnosis	
	% patients treated for ADHD having documented DSM-5 diagnosis of ADHD
	% patient for whom validated self-report scale of symptoms used to supplement diagnostic evaluation
	% patients with ADHD with review of medical problems
	% patients with ADHD with review of other psychiatric disorders
	% patients evaluated for ADHD having a collateral report
	% patients with ADHD for whom evaluation of cognitive and psychiatric comorbidities is documented
	% patients with ADHD with documentation of impairment in 2 or more settings
Treatment Initiation	
	% patients receiving ADHD medications for whom treatment alternatives, benefits and risks have been discussed
	% patients with ADHD prescribed evidenced based FDA approved medication
	% patients with ADHD for whom psychosocial treatment, disability services or coaching options have been discussed
	% patients with ADHD referred to evidenced-based Internet resources
	% patients with ADHD educated about adverse untreated ADHD outcomes
	% patients with ADHD counseled about risks of driving without medications
	% patients with ADHD for whom rationale for stimulants vs. nonstimulants discussed
	% patients with ADHD where sustained release stimulants tried before immediate release stimulants
	% patients with ADHD assessed for diversion risk
	% patients with ADHD educated about dangers of diversion
	% patients with ADHD for whom a prescription monitoring program has been consulted
	% patients with ADHD for whom specific functional outcomes have been targeted for treatment
	% patients with ADHD assessed for vitals prior to medication treatment
	% patients with ADHD for whom warnings and contraindications for medication were reviewed
	% patients with ADHD receiving more than one psychiatric medication for whom rationale for combined pharmacotherapy has been discussed
Treatment Follow-up	
	% patients treated for ADHD provided education about ADHD treatment and disability service options at least 1x/year
	% patients with ADHD where methods to improve adherence implemented
	% patients with ADHD where validated measure of symptom change used to assess treatment efficacy at least annually
	% patients treated with ADHD medication for whom daily use of medication recommended
	% patients treated with ADHD medications for whom vitals taken at least annually
	% patients treated for ADHD for whom prescription monitoring program was consulted at least annually
	% patients with ADHD for whom psychosocial and educational needs have been re-evaluated at least annually
	% patients with ADHD where substance use has been evaluated at least annually
	% patients stabilized on an ADHD medication seen at least once per year
	% patients prescribed medication for ADHD seen within one month of first prescription
	% patients treated for ADHD for whom risks and benefits of stopping treatment have been discussed at least annually
Care Coordination	
	% patients with ADHD referred to external treatment resources
	% patients with ADHD for whom communication with other health care providers occurs at least annually
	% of patients medicated for ADHD for whom prescription refills are coordinated with other prescribers
	% of patients with ADHD for whom transition care has been coordinated for vacations and other times away
	% of patients with ADHD leaving practice for whom discussions of transfer of care with new clinician have been made
The Patient Experience	
	% patients with documented satisfaction assessment at least annually
	% patients with documented discussion of patient generated goals
	% patients with documentation of concerns being discussed
	% patients with ADHD seen within in a timely fashion
	% patients with ADHD who report adequate lines of communication with healthcare providers

Guidelines for Treating ADHD in Adults			
Screening			
	Screen for symptoms of ADHD		
	Increase awareness about high-risk populations (e.g., prisoners, individuals born prematurely).		
	Administer & score World Health Organization's Adult Self Report Scale (ASRS-V1.1, 18 item)		
	Developmental Screen: Patient must fulfill the criterion of age 12 childhood onset.		
	Impairment Screen: Are these symptoms causing difficulty in your life right now?		
Diagnosis			
	Adults with impairing symptoms of ADHD without a childhood diagnosis of ADHD, should be referred to specialist		
	Adults previously treated for ADHD with impairing symptoms of ADHD should be referred for adult psychiatric services assessment.		
	Evaluation of adults presenting with ADHD symptoms typically requires 2 or more visits.		
	Age-appropriate presentations of symptoms should be considered when evaluating adult ADHD symptoms		
	Evaluate current ADHD symptoms using rating scales with adult norms.		
	Obtain a physical examination to eliminate medical causes.		
	Diagnosis based on self-report only is acceptable; collateral information is desirable.		
	Some symptoms and functional impairment need to have been present in patients prior to age 12.		
	For a diagnosis of ADHD, symptoms of H-I and/or IA should: (1) meet DSM-IV or ICD-10 criteria, (2) be associated with impairment based on interview and/or direct observation in multiple settings, and (3) be pervasive, occurring in 2+ settings.		
	Only consider patients with at least moderate impairment in 2 different settings for medication treatment.		
	Symptoms should meet DSM-IV or ICD-10 criteria and be associated with at least moderate impairment in multiple settings.		
	ADHD diagnosis requires: (1) meets DSM-5 symptom criteria; (2) developmental history consistent with ADHD & childhood symptoms of ADHD; (3) past & current pattern of impairment consistent with ADHD; (4) no other disorder explains the symptoms.		
	Severity should be measured and based on the number and severity of ADHD symptoms/behaviors, presence of psychiatric comorbidity, level of impairment, including pervasiveness (e.g., occurrence in ≥ 2 important settings)		
	ADHD diagnosis should not be made solely on the basis of rating scale or observational data. However, such scales are valuable adjuncts. Use observations if unsure about symptoms.		
	Maternal alcohol use during pregnancy should be included in an evaluation for ADHD.		
	Some of the unique characteristics of hypersexual patients may lead to the misdiagnosis of adult ADHD.		

	ADHD symptoms can be the result of stressful and unpredictable environment rather than being symptoms of ADHD.		
	A timetable of onsets for excessive substance use compared with onset of ADHD symptoms can help differentiate ADHD symptoms and substance induced symptoms.		
	A careful screen for cardiac issues, early dementia, arthritis, obesity, poor dental hygiene, glaucoma, traumatic brain injuries and injuries for accidents is crucial.		
Treatment Initiation			
	Refer to psychiatrist for: extreme dysfunction, suicidality, homicidality, substance abuse, psychosis, extreme psychosocial stressors, past treatment failures, atypical presentations.		
	Consider psychotherapy for drug treatment resistant patients and those well motivated for this approach. CBT is the preferred approach.		
	Psychosocial interventions should be considered, especially cognitive behavior therapy.		
	Address comorbid or alternative psychiatric conditions prior to ADHD treatment. Milder disorders may be deferred.		
	Treatment selection (medication or psychosocial interventions) should consider severity, context of symptoms and impairment, patient age, preferences, capabilities, and personal circumstances of the patients, parents/caregivers. Can combine treatments.		
	Drug treatment should be started only under the guidance of a psychiatrist, nurse prescriber specializing in ADHD, or other clinical prescriber with training in the diagnosis and management of ADHD.		
	Drug treatment should always form part of a comprehensive treatment program that addresses psychological, behavioral and educational or occupational needs.		
	Before initiating medication, perform a physical examination including BP, pulse, weight and height.		
	Document adequate assessment, past psychosocial treatments, & previous drug treatments before initiating stimulant treatment.		
	Before starting drug treatment, complete a: 1) mental health & social assessment, 2) history & physical examination, 3) ECG if past medical or family history of serious cardiac disease, or abnormal findings on cardiac examination, 4) risk assessment for substance misuse and drug diversion.		
	Assess risk for potential substance misuse and drug diversion when prescribing stimulants. Not necessary for non-stimulants, which have no abuse potential.		
	Monitor for signs of diversion and misuse of stimulant medication, especially for young adults.		
	The risks of abuse, misuse and diversion can be reduced by use of long-acting formulations of MPH or AMPH. The prodrug LDX has a very low abuse potential and is a good alternative to immediate-release amphetamines.		
	Prescribers should be familiar with the requirements of controlled drug legislation governing stimulant prescription.		

	In patients with ADHD and substance use disorder, ADHD treatment with stimulants should not be withheld, but rather postponed until problematic substance use stops and there is a commitment to the treatment process.		
	Drug treatment for patients who misuse substances should be prescribed by an appropriately qualified healthcare professional with expertise in managing both ADHD and substance misuse.		
	Stimulants contraindicated in patients with history of illicit stimulant use, unless treating in a controlled or supervised setting.		
	Current or previous substance abuse can be seen as either a contraindication for stimulant prescription, especially immediate release preparations, or as a reason for extremely close monitoring of a patient's stimulant use.		
	For patients at high risk of substance abuse, consider establishing a drug contract or conducting periodic drug screens.		
	Abstinence is not an absolute precondition to start treatment, but substance use must be stabilized.		
	Use of cannabis is not necessarily a contraindication to prescribing stimulant medication.		
	Prescribers should be familiar with the pharmacokinetic profiles of all long-acting and immediate-release preparations to ensure treatment is tailored effectively.		
	Drug treatment should be the first-line treatment unless patient prefers psychological treatment.		
	Stimulants are the first line of drug treatment for ADHD.		
	Longer-acting forms of stimulants and nonstimulants improve convenience and extend control of ADHD symptoms in challenging environments.		
	Medication trials should usually begin with stimulants and proceed to non-stimulants in the case of non- or poor response or intolerable AEs.		
	If starting drug treatment, try MPH first.		
	ATX or DEX should be considered in adults unresponsive or intolerant to an adequate 6-week trial of MPH. Exercise caution when prescribing DEX to those likely to be at risk of stimulant misuse or diversion.		
	Antipsychotics are not recommended.		
	Prior to ATX treatment, previous history of liver disease should be evaluated.		
	Genetic variants affect metabolism of ADHD medications.		
	Treatment with stimulants requires careful titration over 4 to 6 weeks due to marked individual differences in final dose.		
	During titration, gradually increase doses until no further improvement and side effects are tolerable.		
	Dose titration should be slower if tics or seizures are present.		
	If using MPH: (1) Begin initial treatment with low doses; increase dose according to response, (2) Give long-acting preparations 1x daily and no more than 2x daily; Give immediate-release preparations up to 4x daily, and (3) long-acting forms may increase adherence or reduce risk for substance misuse or diversion.		

	If using DEX: (1) Begin initial treatment with low doses (5 mg 2x daily); increase dose according to response up to a maximum of 60 mg/day, (2) give treatment in divided doses between 2-4x daily, and (3) long-acting forms may increase adherence or reduce risk for substance misuse or diversion.		
	If using ATX: (1) weight up to 70 kg, initial total daily dose should be ~0.5 mg/kg; increase after 7 days up to ~1.2 mg/kg/day, (2) > 70 kg, initial total daily dose should be 40 mg; increase dose after 7 days up to a maintenance dose of 100 mg/day, (3) usual maintenance dose is either 80 or 100 mg, may be taken in divided doses, (4) allow 6-week trial on a maintenance dose to evaluate full effectiveness		
	Give patient written information about local and national support groups and voluntary organizations.		
	Give patient information about ADHD at every stage of their care.		
	Review with the patient current empirical research from clinical trials with ADHD adults.		
	Explore patient's apprehensions (e.g., "This is a crutch," "Stimulants are addictive").		
	Involve families in the treatment process		
	Stress the value of a balanced diet, good nutrition and regular exercise.		
	Prior to a stimulant trial assess cardiac risk factors.		
	Check pulse and blood pressure prior to prescribing any ADHD medication.		
Treatment Follow-up			
	Schedule follow-up appointments at least monthly until the patient's symptoms have been controlled		
	At each follow-up visit review: (1) diurnal variation in symptoms; (2) target symptoms, job/school performance, relationship issues; (3) adherence to therapy, drug side effects/toxicity or signs of abuse/diversion; (4) vital signs		
	Regularly monitor medication response to treatment & titrate doses to control symptoms, reduce impairment and other behavioral targets, while minimizing adverse events.		
	Regularly monitor adverse events, blood pressure, pulse, weight, illicit substance use, & medication diversion		
	A pulse rate consistently above 120/min should signal a cardiac review; occasional extra beats are not necessarily a cause for concern, but persistent tachycardia needs investigation.		
	For stimulants: check blood pressure and pulse quarterly.		
	For stimulants, a sustained resting tachycardia, arrhythmia or systolic BP of greater than the 95th % (or a clinically significant increase) measured on two occasions should prompt medical referral and dose reduction.		
	Side effects of drug treatment for ADHD should be routinely monitored and documented.		
	Systematically assess adverse events by asking about known side effects.		
	Consider dose reduction if there are troublesome side effects.		
	Monitor sexual dysfunction and dysmenorrhea as potential side effects of ATX.		

	Observe those treated with ATX for agitation, irritability, suicidal thinking, self-harming behavior, and unusual changes in behavior, particularly during the initial months of treatment, or after a change in dose. Warn patients of rare potential liver damage.		
	If psychotic symptoms emerge following the introduction of stimulants, ATX should be considered.		
	Do not give stimulants to a patient with an active psychotic disorder.		
	If stimulants cause anxiety, lower the dose and/or combine treatment with an antidepressant; switching to ATX may also be effective.		
	Follow-up with patients on medications regularly to determine if continued treatment is warranted and if effectiveness continues.		
	Continue drug treatment if clinically effective & reviewed at least annually. Evaluate effects of missed doses, planned dose reductions, and periods of no treatment. Drug holidays may be useful to assess treatment continuation need.		
	Maintain medication if it remains clinically effective and is reviewed annually		
	Assess long term benefits, especially if continuing treatment from childhood. Consider medication discontinuation if warranted.		
	Use ADHD rating scales with the patient as a psychoeducational tool.		
	Help patients find observational anchors they can use to self-monitor progress.		
	For those stabilized on medication but with persisting functional impairment or no response to drug treatment, consider cognitive behavior therapy		
	If drug treatment leads to excessive weight loss, consider monitoring body mass index & changing the drug.		
	Strategies to reduce weight loss in people with ADHD include: (1) taking medication either with or after food, (2) taking additional meals or snacks early in the morning or late in the evening, (3) consuming high-calorie foods of good nutritional value.		

Table 4. Top Ten Adult ADHD Quality Measures

Quality Measure	***Metric***	***Importance***	***Reliability***	***Feasibility***	***Mean***
Screening					
1.	% high risk patients screened (e.g., depressed patients, family history of ADHD)	4.64	4.11	4.21	4.32
Diagnosis					
2.	% patients treated for ADHD having documented DSM-5 diagnosis of ADHD	4.23	4.32	4.17	4.24
3.	% patients with ADHD with review of other psychiatric disorders	4.89	4.46	4.19	4.51
4.	% patients with ADHD with documentation of impairment	4.70	4.22	4.00	4.31
Treatment Initiation					
5.	% patients receiving ADHD medications for whom treatment alternatives, benefits and risks have been discussed	4.70	4.41	4.30	4.47
6.	% patients with ADHD assessed for vitals prior to medication treatment	4.63	4.33	4.15	4.37
7.	% patients with ADHD for whom warnings and contraindications for medication were reviewed	4.56	4.19	4.22	4.32
Treatment Follow-up					
8.	% patients with ADHD where validated measure of symptom change used to assess treatment efficacy at least annually	4.38	4.12	3.77	4.09
9.	% patients stabilized on an ADHD medication seen at least once per year	4.69	4.54	4.46	4.56
10.	% patients prescribed medication for ADHD seen within one month of initial prescription	4.65	4.54	4.15	4.45

Supplementary Table 1. Adult ADHD Quality Measures: Draft List Mean Ratings

Quality Measure	*Metric*	*Importance*	*Reliability*	*Feasibility*	*Mean*
		Screening			
1.	% patients screened using validated method to screen for ADHD	4.25	4.00	4.21	4.15
2.	% patients with ADHD screened at least once a year for mood, anxiety and substance use disorders	4.46	4.18	3.86	4.17
3.	% high risk patients screened (e.g., depressed patients, family history of ADHD)	4.64	4.11	4.21	4.32
		Diagnosis			
4.	% patients treated for ADHD having documented DSM-5 diagnosis of ADHD	4.23	4.32	4.17	4.24
5.	% patient for whom validated self-report scale of symptoms used to supplement diagnostic evaluation	4.14	4.11	3.11	3.79
6.	% patients with ADHD with review of medical problems	4.61	2.29	4.00	3.63
7.	% patients with ADHD with review of other psychiatric disorders	4.89	4.46	4.19	4.51
8.	% patients evaluated for ADHD having a collateral report	4.00	3.89	2.78	3.56
9.	% patients with ADHD for whom evaluation of cognitive and psychiatric comorbidities is documented	4.41	4.00	3.44	3.95
10.	% patients with ADHD with documentation of impairment	4.70	4.22	4.00	4.31
		Treatment Initiation			
11.	% patients receiving ADHD medications for whom treatment alternatives, benefits and risks have been discussed	4.70	4.41	4.30	4.47
12.	% patients with ADHD prescribed evidenced based FDA approved medication	4.19	4.26	4.15	4.20
13.	% patients with ADHD for whom psychosocial treatment, disability services or coaching options have been discussed	4.44	3.78	3.48	3.90
14.	% patients with ADHD referred to evidenced-based Internet resources	3.37	2.93	3.41	3.24

Supplementary Table 1. Adult ADHD Quality Measures: Draft List Mean Ratings

15.	% patients with ADHD educated about adverse untreated ADHD outcomes	4.33	3.85	3.89	4.02
16.	% patients with ADHD counseled about risks of driving without medications	4.41	3.93	3.93	4.09
17.	% patients with ADHD for whom rationale for stimulants vs. nonstimulants discussed	4.19	3.93	3.81	3.98
18.	% patients with ADHD where sustained release stimulants tried before immediate release stimulants	4.04	4.19	4.15	4.13
19.	% patients with ADHD assessed for diversion risk	4.37	3.56	3.59	3.84
20.	% patients with ADHD educated about dangers of diversion	4.41	3.96	3.70	4.02
21.	% patients with ADHD for whom a prescription monitoring program has been consulted	3.89	3.78	3.11	3.59
22.	% patients with ADHD for whom specific functional outcomes have been targeted for treatment	4.59	4.19	3.96	4.25
23.	% patients with ADHD assessed for vitals prior to medication treatment	4.63	4.33	4.15	4.37
24.	% patients with ADHD for whom warnings and contraindications for medication were reviewed	4.56	4.19	4.22	4.32
25.	% patients with ADHD receiving more than one psychiatric medication for whom rationale for combined pharmacotherapy has been discussed	4.44	4.22	4.07	4.24
Treatment Follow-up					
26.	% patients treated for ADHD provided education about ADHD treatment and disability service options at least 1x/year	3.85	3.38	3.19	3.47
27.	% patients with ADHD where methods to improve adherence implemented	4.35	3.69	3.42	3.82
28.	% patients with ADHD where validated measure of symptom change used to assess treatment efficacy at least annually	4.38	4.12	3.77	4.09

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29.	% patients treated with ADHD medication for whom daily use of medication recommended	4.08	4.00	4.15	4.08
30.	% patients treated with ADHD medications for whom vitals taken at least annually	4.54	4.46	4.38	4.46
31.	% patients treated for ADHD for whom prescription monitoring program was consulted at least annually	4.04	3.85	3.50	3.80
32.	% patients with ADHD for whom psychosocial and educational needs have been re-evaluated at least annually	4.42	3.92	3.85	4.06
33.	% patients with ADHD where substance use has been evaluated at least annually	4.58	3.88	3.92	4.13
34.	% patients stabilized on an ADHD medication seen at least once per year	4.69	4.54	4.46	4.56
35.	% patients prescribed medication for ADHD seen within one month of initial prescription	4.65	4.54	4.15	4.45
36.	% patients treated for ADHD for whom risks and benefits of stopping treatment have been discussed at least annually	4.04	3.77	3.81	3.87
Care Coordination					
37.	% patients with ADHD referred to external treatment resources	3.38	3.15	3.19	3.24
38.	% patients with ADHD for whom communication with other health care providers occurs at least annually	3.69	3.35	3.00	3.35
39.	% of patients medicated for ADHD for whom prescription refills are coordinated with other prescribers	4.00	3.42	3.00	3.47
40.	% of patients with ADHD for whom transition care has been coordinated for vacations and other times away	3.88	3.35	3.04	3.42
41.	% of patients with ADHD leaving practice for whom discussions of transfer of care with new clinician have been made	4.27	3.92	3.23	3.81
The Patient Experience					

Supplementary Table 1. Adult ADHD Quality Measures: Draft List Mean Ratings

42.	% patients with documented satisfaction assessment at least annually	3.77	3.38	3.31	3.49
43.	% patients with documented discussion of patient generated goals	4.27	3.69	3.50	3.82
44.	% patients with documentation of concerns being discussed	4.23	3.96	3.81	4.00
45.	% patients with ADHD seen within in a timely fashion	4.27	3.88	3.38	3.84
46.	% patients with ADHD who report adequate lines of communication with healthcare providers	4.15	3.38	3.12	3.55