Epilepsy Update 2017

Quality Measurement Set

Approved by the Epilepsy Quality Measurement Update Work Group on December 11, 2017. Approved by the AAN Quality and Safety Subcommittee on January 20, 2018. Approved by AAN Practice Committee on January 21, 2018. Approved by AANI Board of Directors on February 15, 2018.

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Improving Outcomes for Patients with Epilepsy

Rationale for Measures

The American Academy of Neurology Institute (AANI) charged this work group with updating previously developed epilepsy quality measures and developing new measures focused on improving outcomes for patients diagnosed with epilepsy.

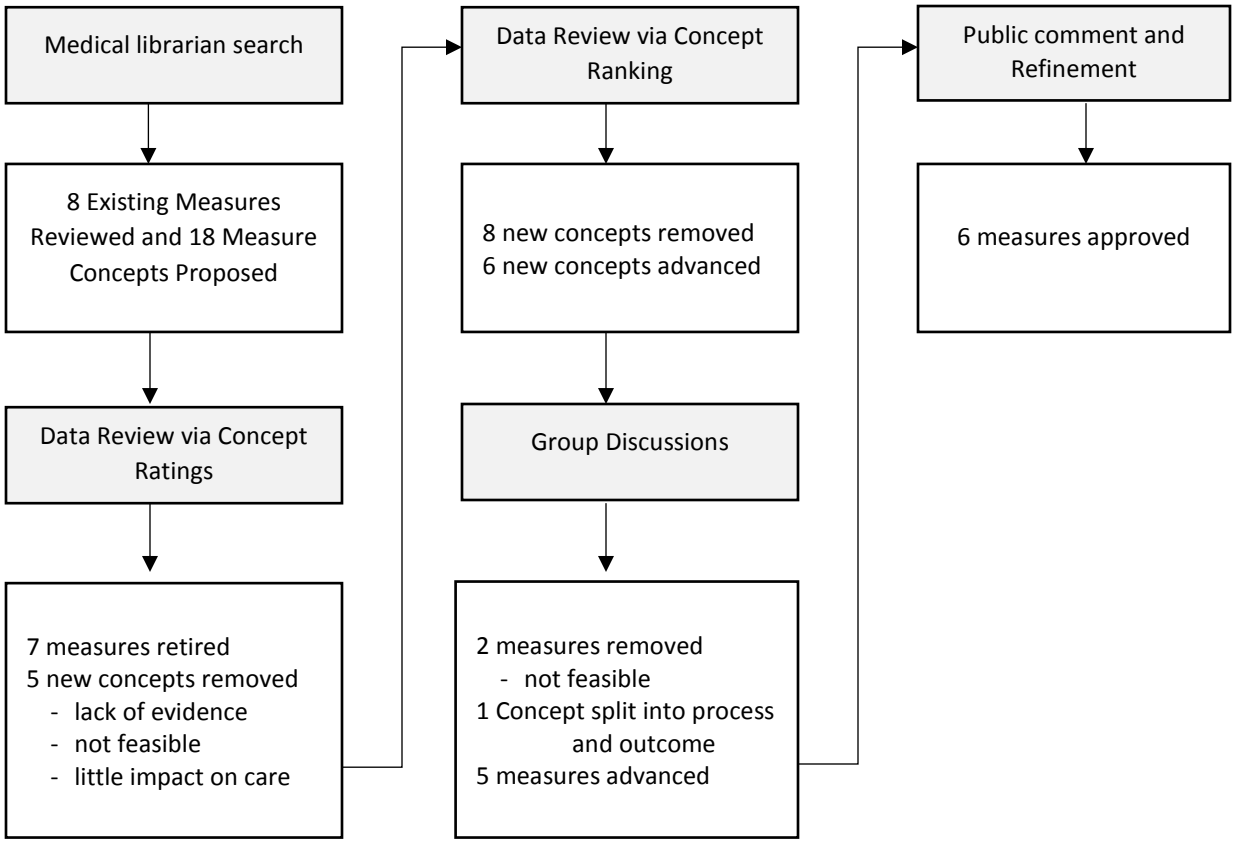
Measure Development Process

The AAN Quality and Safety Subcommittee approved a modified, pilot measure development process for this update. The AAN seated a standing work group for a two-year term. The work group includes physician, nursing, patient, and care giver representatives from professional associations and patient advocacy organizations to ensure measures developed included input from all members of the healthcare team and other relevant stakeholders. All members are required to disclose relationships with industry and other entities to avoid actual, potential, or perceived conflicts of interest. Individuals were instructed to abstain from voting on individual measure concepts if a conflict was present.

The AAN anticipates this work group will revisit measures every six months evaluating new evidence statements, new measure released by other developers, and AAN epilepsy measure implementation and performance data to nimbly respond to developments in these areas. The work group is charged with updating measures as needed over the two-year period and developing supporting materials and implementation guides as appropriate.

The AAN measure development process involves a modified Delphi review by the work group to reach consensus on measures to be developed prior to a 21-day public comment and following public comment further refinement.[i]

Below is an illustration of the measure development process from proposals, discussion, research, evaluation, to approval.



Importance and Prevalence of Epilepsy

Epilepsy data is lacking. In 2012, the Institute of Medicine released *Epilepsy across the Spectrum: Promoting Health and Understanding*, detailing epilepsy research disparities and highlighting specific areas where further research is needed, including the extent of epilepsy, consequences, comorbid conditions and outcomes of epilepsy.[ii] The following statistics only touch on the magnitude of epilepsy given lack of research and stigma:

- In the United States, "epilepsy is not a rare condition". It is estimated 3.4 million people have active epilepsy, totaling about 1.2% of the population[iii]
- Epilepsy prevalence might be underestimated because of underreporting associated with repercussions and stigma in disclosing epilepsy.[iii]
- Epilepsy affects persons of all ages, races, and ethnicities, especially those with the lowest incomes.[ii,iii]
- Common comorbidities among people with epilepsy include somatic (i.e., fractures, asthma, diabetes, and heart disease), neurological (i.e., stroke, heart disease, developmental delays, chronic pain), and mental health conditions (i.e., mood disorders, attention deficit hyperactivity disorders, anxiety disorders, suicidality).[ii,iii, iv]
- It is estimated the number of people with epilepsy who die of sudden unexpected death in epilepsy (SUDEP) range from 1 of every 10,000 who are newly diagnosed to 9 of every 1,000 candidates for epilepsy surgery.[ii]
- People with epilepsy are more likely to be unemployed or unable to work, have low annual household incomes, be obese and physically inactive, and to smoke. [ii, iv]
- People with epilepsy have poorer overall health status, impaired intellectual and physical functioning, a greater risk for accidents and injuries, and negative side effects from anti-seizure medications. [ii, iv]
- It is estimated the annual direct medical cost of epilepsy in the United States is $9.6 billion; combined with indirect costs the total rises to $15.5 billion yearly. [ii]

Opportunity for Improvement

The AANI partnered with other key stakeholders in 2009 to draft the original epilepsy quality measurement set. In 2014, the measurement set was reviewed and updated as appropriate. For this update, the work group reviewed known epilepsy quality measurement data and implementation feedback made available via CMS, CMS' MIPS benchmarking[v] and AAN's Axon Registry®.

Additional information on treatment gaps in care and opportunity for improvement are included in the individual measure specifications that follow.

Clinical Evidence Base

A comprehensive search to identify published guidelines, measures, and consensus recommendations in the National Guidelines Clearinghouse, the National Quality Measures Clearinghouse, PubMed, MEDLINE, EMBASE, and the Cochrane Library occurred. The work group reviewed past literature used to support prior sets and 1030 newly identified abstracts selecting 133 articles for review. The work group consulted the following clinical practice guidelines and systematic reviews with the following serving as the base of the measure drafts:

1. Viale L, Allotey J, Cheong-See F, et al. Epilepsy in pregnancy and reproductive outcomes: a systematic review and meta-analysis. Lancet 2015; 386: 1845-1852.
2. Sabers A. Treatment guidelines: Women of fertile age. Epileptology 2013;1:11-16.
3. Labiner DM, Bagic AI, Herman ST, et al.; for the National Association of Epilepsy Centers. Essential services, personnel, and facilities in specialized epilepsy centers. Revised 2010 guidelines. Epilepsia 2010;51:2322-2333
4. Wiebe S, et al A Randomized, Controlled Trial of Surgery for Temporal-Lobe Epilepsy N Engl J Med 2001; 345:311-318
5. Scottish Intercollegiate Guidelines Network(SIGN). Diagnosis and management of epilepsy in adults. Edinburgh: SIGN; 2015. (SIGN publication no. 143). [May 2015] Available at: http://www.sign.ac.uk Accessed on June 21, 2017.

6. Patient-Reported Outcome Measurement Group, Oxford. A Structured Review of Patient-Reported Outcome Measures (PROMs) For Epilepsy: An Update 2009. Available at: http://phi.uhce.ox.ac.uk/pdf/PROMs_Oxford_Epilepsy_17092010.pdf Accessed on August 2, 2017.

7. Kerr MP, Mensah S, Besag F, et al. International consensus clinical practice statements for the treatment of neuropsychiatric conditions associated with epilepsy. Epilepsia 2011; 52(11):2133-2138.

8. Harden CL, Pennell PB, Koppel BS et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Vitamin K, folic acid, blood levels, and breastfeeding: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):142-149.

9. Harden CL, Meador KJ, Pennell PB, et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Teratogenesis and perinatal outcomes: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):133-141.

10. Harden CL, Hopp J, Ting TY, et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Obstetrical complications and change in seizure frequency: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):126-132.

Common Abbreviations and Definitions for the Measurement Set

The work group has chosen to use the term intractable epilepsy for this document to reflect what is also known as drug-resistant epilepsy, refractory epilepsy, and pharmacoresistant epilepsy. The work group chose to use intractable epilepsy given its appearance in ICD-9 and ICD-10 systems. For location via a registry it is recommended ICD-10 codes be utilized, and ICD-9 codes used for historical data. For location search term in a registry, the work group recognizes the alternate terms: “drug-resistant epilepsy”, “refractory epilepsy”, and “pharmacoresistant epilepsy”.

Below is a list of acronyms utilized in this document. The AAN has a Quality Improvement Glossary, which provides more in-depth explanations and is available at aan.com/practice/quality-measures/quality-resources.

- ADL: Activities of Daily Living
- CMS: Centers for Medicare & Medicaid Services
- EHR: Electronic Health Record
- NQF: National Quality Forum
- MIPS: Merit-based Incentive Payment System
- PQRS: Physician Quality Reporting System
- QOL: Quality of Life

2017 Epilepsy Quality Measurement Set Update

The following measures were approved by the work group. There is no requirement that all measures in the measurement set be used. Providers are encouraged to identify the one or two measures that would be most meaningful for their patient populations and implement these measures to drive performance improvement in practice.

2017 Epilepsy Quality Measurement Set Update
Counseling for Women of Childbearing Potential with Epilepsy ***Updated***
Comprehensive Epilepsy Care Center Referral or Discussion for Patients with Intractable Epilepsy
Quality of Life Assessment for Patients with Epilepsy
Quality of Life Outcome for Patients with Epilepsy
Depression and Anxiety Screening for Patients with Epilepsy
Seizure Frequency

Other Potential Measures

The work group proposed eighteen measure concepts at the start of the update. Prior to seating the work group, Axon Registry users were questioned about potential outcome and intermediate outcome measures. It was suggested that anti-seizure medication therapeutic ranges be evaluated as a potential intermediate outcome measure, but upon investigation of EHR data lab values are not consistently documented resulting in the concept having low feasibility.

The AAN encourages work groups to focus development of measure concepts that are feasible, meaningful to quality improvement efforts, and address a known treatment gap. Ultimately the work group cannot develop all appropriate concepts due to resource limitations and efforts to reduce provider reporting burden. The work group eliminated thirteen proposed new concepts prior to discussion (See graphic above) to focus on measures with link to improved outcomes, greater feasibility, and opportunity to drive improvement. These concepts were:

1. Sudden Unexplained Death in Epilepsy (SUDEP) counseling,
2. Injury and pressure ulcers occurring on epilepsy monitoring unit,
3. Quality of life adjusted for seizure type,
4. Assessing bone health for patients on anti-seizure medications for two years or more,
5. Referral for cognitive behavioral therapy for patients diagnosed with psychogenic nonepileptic seizures,
6. Evaluation of anti-seizure medication side effects,
7. Patient adherence to anti-seizure medication prophylaxis,
8. Adherence to anti-seizure monitoring regimens,
9. Zero seizure frequency for patients with non-treatment resistant epilepsy,
10. Folic acid use for women with epilepsy
11. Driving safety for patients with epilepsy,
12. Patient confirmation of counseling for women of childbearing potential with epilepsy was provided,
13. Discontinuation of acute anti-seizure medication.

Two additional concepts were discussed, but not approved for public comment:

- Epilepsy-related Emergency Department (ED) Visit Rate
  The concept was not further developed due to feasibility concerns and concerns data would not drive meaningful improvement. An EHR or e-specified measure cannot be developed now due to lack of interoperability limiting outpatient provider awareness of ED visits for patients. Providers are dependent upon patients to alert them to an ED visit, and often months pass before a patient relays this information to the provider during their next scheduled appointment. Development of a claims based measure maybe feasible at a system level, however, this data would be delayed and providers and systems unable to respond in real-time to ED visit rate information rendering it limited for quality improvement projects. Further, there are situations where patients are encouraged to receive ED (e.g., recurrent status epilepticus crises) and measurement may unintentionally result in discouragement of ED

care for patients for whom ED care is appropriate. For these reasons, the work group encourages further research and development of interoperability to assist in the provision of meaningful data in real-time to providers, which may lead to future measures on this high-value concept.

- Anti-seizure Rescue Medication
  Two potential process measure concepts were discussed: Patients with an active prescription for benzodiazepine "rescue" medication to abort prolonged or recurrent seizures and Patients with a rescue plan documented. The active rescue medication prescription poses several quality improvement challenges, as having an active prescription does not mean the medication will be used during time of emergency (e.g., adult patients may not have anyone available to administer medication or prescription may not be filled due to personal or financial reasons) and a prescription for rescue medications might be prescribed for alternate reasons other than for rescue reasons (e.g., lorazepam for anxiety attacks and not daily seizure clusters or prolonged seizures). Given these concerns, the concept was determined to not be feasible for implementation. The rescue plan or seizures action plan concept was not approved for similar concerns. Evidence has demonstrated that a seizure action plan's presence does not reduce health care utilization.[vi] Additionally, there is no unified place or structured data field in EHRs for rescue action plan to be documented. The work group discussed measuring the administration of rescue medications, but the goal of such medications is to be used in non-medical, out-of-hospital situations where there will not be formal documentation of administration (such as at home, daycare, or school,) or may be administered in outpatient or outside Emergency Room settings with use not consistently relayed to and/or documented by the outpatient provider. As a result, the work group encourages further efforts in the field to unify documentation, specifically better and uniform documentation on medication rationale, administration, and discontinuation. These changes may result in opportunities for further quality improvement measures. Additionally, creation of standardized instruments for documenting a seizure action plan may assist in increasing utility of this tool toward improved outcomes.

These measures were not included in this measurement set, but these high-value concepts will be retained for future measurement set updates as more evidence may support development or a treatment gap in care at that time.

The AAN has developed additional measures that may be of interest to clinicians and teams treating patients with epilepsy. All AAN measures are available for free at: aan.com/practice/quality-measures/ Additional measures for patients with seizures and/or epilepsy are included in the Inpatient and Emergency, Child Neurology, and Universal Neurology measurement sets.

Retired 2014 Measures

The work group retired all the 2014 epilepsy measures, except two.

2014 Epilepsy Quality Measurement Set Update
Seizure Frequency
Seizure Intervention *Retired*
Etiology, Seizure Type, or Epilepsy Syndrome *Retired*
Querying and Intervention for Side Effects of Anti-seizure Therapy *Retired*
Personalized Epilepsy Safety Issue and Education Provided *Retired*
Screening for Psychiatric or Behavioral Health Disorders for Patients with Epilepsy *Retired*
Counseling for Women of Childbearing Potential with Epilepsy ***Updated***
Referral to Comprehensive Epilepsy Center *Retired*

The work group had proposed retiring seizure frequency, but following the public comment period, the work group reviewed comments regarding retirement recommendations. The work group voted again on if each individual measure

should be retired after discussion on each of the 2014 epilepsy quality measures. The work group voted not to retire the seizure frequency measure following discussion and includes the 2014 specification of the measure to meet user needs. The work group noted seizure frequency measure has been retired from use in CMS accountability programs due to the inability to link documentation to improved outcomes and lack of a gap in care with consistent high performance rates reporting capture of seizure frequency is standard of care. The work group also noted there is a lack of specificity and uniformity in collecting quantity of seizures across providers, which results in feasibility issues. The Axon Registry has implemented the measure through use of a data dictionary and search terms. The work group will collaborate with organizational partners and the many current Learning Healthcare Collaboratives evaluating this issue to update the specifications during future updates when additional evidence supports standardization in documentation of seizure frequency (i.e., standardized tool, standardized reporting period, or other).

The rationale for individual measure retirement is discussed below. Retirement decisions should not be viewed as supporting the belief there is no value in measuring these processes or concepts. The AAN is of the belief no one measurement set can meet the measurement needs of all providers, and prioritizes measure concepts with specificity, feasibility, link to outcomes, and strong evidence. Many lessons on feasibility have been learned since the development of the 2014 measurement set, and some of the prior measures lacked specificity to make the measures feasible or provide meaningful data to drive improvement in practice. Further, many of the process measures could not be linked to improved patient outcomes. Additionally, CMS phased most of the epilepsy measures out of their PQRS and MIPS programs due to the concerns noted below.

- Seizure intervention was retired due to inability to link documentation to improved outcomes and burdensome process requirements. The work group noted the measure was dropped from use in CMS accountability programs in 2017 due to low level evidence and failure to link the measure to improved care.
- Etiology, seizure type, or syndrome was retired as existing specifications had little impact on quality improvement efforts. The work group noted the measure was dropped from use in CMS accountability programs in 2017 due to low level evidence and failure to link the measure to improved care.
- Querying and interventions for side effects of anti-seizure therapy was retired due to difficulty in locating uniform data in a medical record impacting feasibility.
- Personalized epilepsy safety issue and education provided was retired as potential counseling options were too broad to inform providers on meaningful interventions for quality improvement efforts and because the definition of education was so broad there was no meaningful performance gap to address. The broad definition of education impacted feasibility of abstraction from the medical record.
- Screening for psychiatric or behavioral health was retired to reduce duplicative measures in the field. The measure was overly broad and inclusive of numerous behavioral health conditions that made abstraction from the medical record difficult. The work group planned to develop an outcome measure addressing depression improvement. However, the work group determined development of an outcome measure on this issue was not feasible now given treatment is delivered by psychiatry, primary care physicians, or other treatment team members. The work group developed a refined depression and anxiety screening measure with greater specificity for quality improvement purposes.
- Referral to comprehensive epilepsy center was retired due to feasibility concerns. The denominator required identifying individuals with failure of two anti-seizure medications, and this is not uniformly documented in the medical record.

Technical Specifications Overview

The Work Group developed technical specifications for measures that includes data from:

- Electronic Health Record (EHR) Data
- Administrative Data
- Registry

Administrative claims specifications are not provided for measures given the AMA's decision to discontinue the maintenance of CPT II codes. The AAN is in the process of creating code value sets and the logic required for electronic capture of the quality measures with EHRs, when possible. A listing of the quality data model elements, code value sets, and measure logic (through the CMS Measure Authoring Tool) for each of the measures will be made available at a later date. These technical specifications will be updated as warranted.

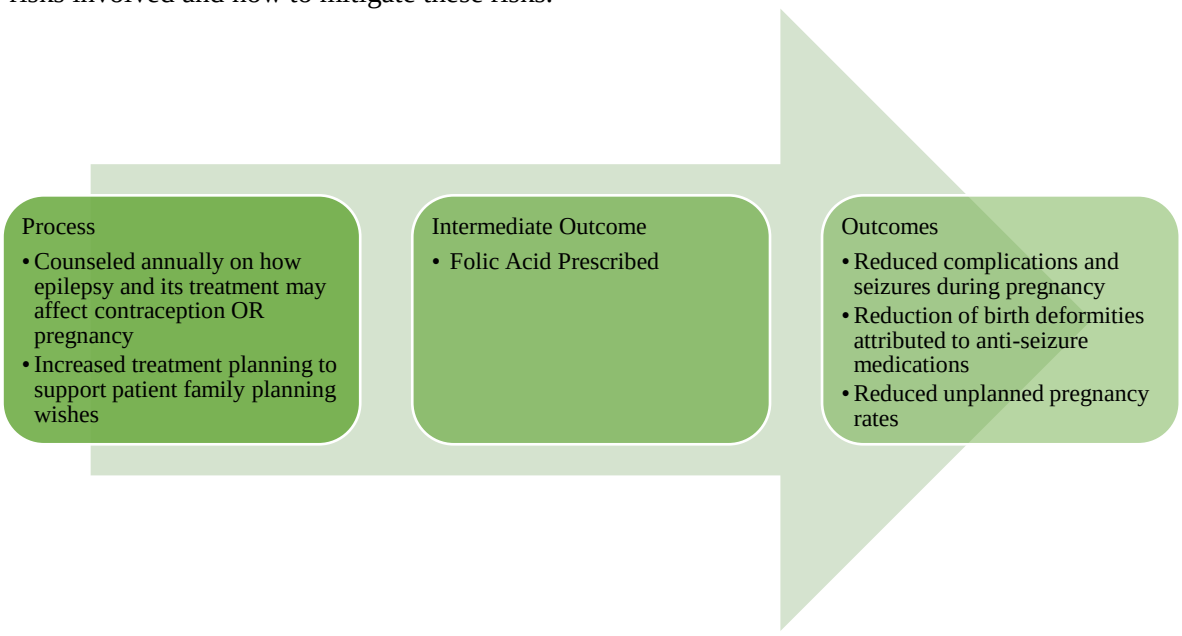
Testing and Implementation of the Measurement Set

The measures in this set are being made available without any prior testing. The AAN encourages testing of this measurement set for feasibility and reliability by organizations or individuals positioned to do so. Select measures will be beta tested once the set has been released, prior to submission to the National Quality Forum for possible endorsement.

2017 Epilepsy Measure Specifications

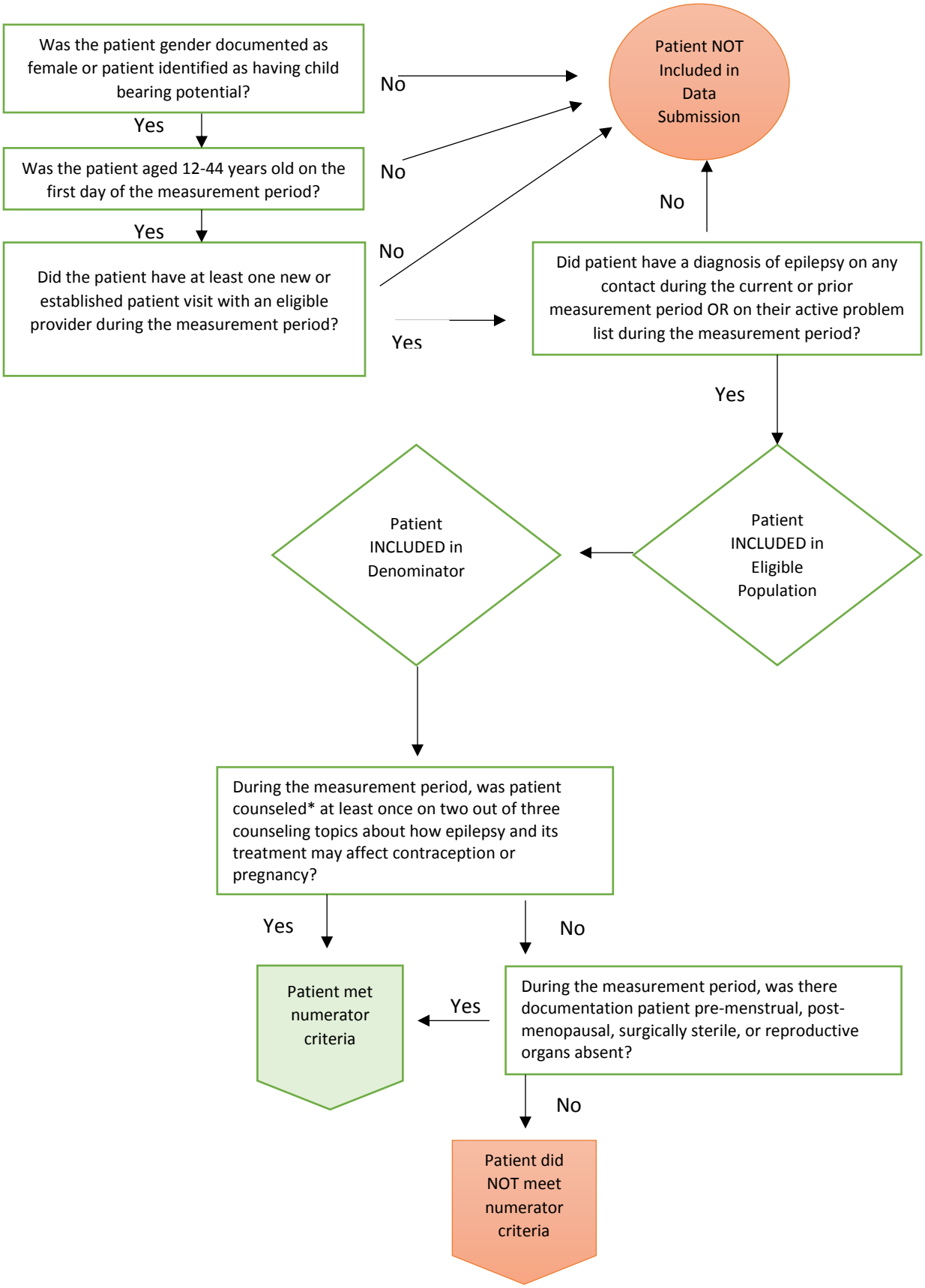
Counseling for Women of Childbearing Potential with Epilepsy

Measure Title	Counseling for Women of Childbearing Potential with Epilepsy	
Description	Percentage of all patients of childbearing potential (12-44 years old) diagnosed with epilepsy who were counseled at least once a year about how epilepsy and its treatment may affect contraception and pregnancy.	
Measurement Period	January 1, 20xx to December 31, 20xx	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient Care
	Ages	Between 12-44 years old
	Event	Office visit
	Diagnosis	Epilepsy
Denominator	All females, including all individuals of childbearing potential (12-44 years old) with a diagnosis of epilepsy.	
Numerator	Patients or caregivers counseled* at least once a year about how epilepsy and its treatment may affect contraception and/or pregnancy. Measure is met if patient has documentation they are pre-menstrual, post-menopausal, surgically sterile, or reproductive organs absent. *Counseling must include a discussion of at least two of the following three counseling topics: • Need for folic acid^ supplementation (1), • Drug to drug interactions with contraception medication (2,3), • Potential anti-seizure medications effect(s) on fetal/child development and/or pregnancy (2,3). ^Note a folic acid prescription alone will not meet the measure, as there are multiple reasons folic acid may be prescribed. The work group note the intent is to ensure counseling is provided, as many patients are prescribed folic acid without knowing the rationale for the prescription.	
Required Exclusions	None	
Allowable Exclusions	None	
Exclusion Rationale	Not Applicable	
Measure Scoring	Percentage	
Interpretation of Score	Higher Score Indicates Better Quality	
Measure Type	Process	
Level of Measurement	Provider	
Risk Adjustment	Not Applicable	
For Process Measures Relationship to Desired Outcome	Epilepsy is associated with reduced fertility, increased pregnancy risks, and risks for malformations in the infant.(4) Treatment of seizures with anti-seizure medications may alter hormone levels, render oral contraceptives less effective and may interfere with embryonic and fetal development.(5-8) Certain anti-seizure medications have higher risks for congenital malformations and cognitive or behavioral developmental risks.(7,8) Folic acid supplementation, monotherapy for epilepsy, using lower doses of medication when possible, and proper obstetrical,	

	prenatal and pre-pregnancy care all should be discussed with the patient, so they understand the risks involved and how to mitigate these risks. 
Opportunity to Improve Gap in Care	Counseling and discussion for women with epilepsy can have important and beneficial effects (9,10) with the goal of reducing unplanned pregnancies, birth/cognitive deficits to infants, and complications that can occur during pregnancy and/or delivery for women with epilepsy. Guidelines (11) and interventions (12) are available in the literature to assist in how to provide such important information. However, gaps in providing such counseling to women with epilepsy exist (13-15). The denominator language has been expanded to require counseling be provided to all patients of childbearing potential, including self-identified males who may be capable of bearing children. This language was added to capture LBGTQ+ populations who may have counseling needs overlooked. The numerator counseling definition was drafted for simplicity of data collection. When addressing drug-to-drug interactions this counseling should include information on possible interactions leading to higher rates of unplanned pregnancy for women with epilepsy. Potential anti-seizure medications effect(s) on fetal/child development and/or pregnancy counseling should include information on the risks of stopping medication(s) without consulting treatment team providers if a patient with epilepsy becomes pregnant unexpectedly.
Harmonization with Existing Measures	There are no known similar measures.

References	1. Harden CL, Pennell PB, Koppel BS et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Vitamin K, folic acid, blood levels, and breastfeeding: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):142-149. 2. Harden CL, Meador KJ, Pennell PB, et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Teratogenesis and perinatal outcomes: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):133-141. 3. Harden CL, Hopp J, Ting TY, et al. Practice Parameter update: Management issues for women with epilepsy – Focus on pregnancy (an evidence-based review): Obstetrical complications and change in seizure frequency: Report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 2009;73(2):126-132. 4. Viale L, Allotey J, Cheong-See F, et al. Epilepsy in pregnancy and reproductive outcomes: a systematic review and meta-analysis. Lancet 2015; 386: 1845-1852. 5. Herzog AG. Differential impact of antiepileptic drugs on the effects of contraceptive methods on seizures: Interim findings of the epilepsy birth control registry. Seizure 2015; 28:71-75. 6. Herzog AG, Mandle HB, Cahill KE, et al. Contraceptive practices of women with epilepsy: Findings of the epilepsy birth control registry. Epilepsia 2016; 57(4):630-637. 7. Hernández-Díaz S, Smith CR, Shen A, et al., for the North American AED (Antiepileptic Drug) Pregnancy Registry. Comparative Safety of Antiepileptic Drugs during Pregnancy. Neurology 2012;78:1692-1699. 8. Pennell PB. Antiepileptic drugs during pregnancy: what is known and which AEDs seem to be safest? Epilepsia 2008;49(suppl 9):43-55. 9. Espinera AR, Gavvala J, Bellinski I, et al. Counseling by epileptologists affects contraceptive choices of women with epilepsy. Epilepsy Behav 2016;65:1-6. 10. Laganà AS, Triolo O, D'Amico V, et al. Management of women with epilepsy: from preconception to post-partum. Arch Gynecol Obstet 2016;293:493-503. 11. Sabers A. Treatment guidelines: Women of fertile age. Epileptology 2013;1:11-16. 12. Mody SK, Haunschild C, Farala JP, et al. An educational intervention on drug interactions and contraceptive options for epilepsy patients: a pilot randomized controlled trial. Contraception 2016; 93: 77-80. 13. Moura LMVR, Yacaman Mendez D, De Jesus J, et al. Quality care in epilepsy: Women's counseling and its association with folic acid prescription or recommendation. Epilepsy Behav 2015; 44: 151-154. 14. Fitzsimons M, Dunleavy B, O'Byrne P, et al. Assessing the quality of epilepsy care with an electronic patient record. Seizure 2013;22(8):604-610. 15. George IC. How do you treat epilepsy in pregnancy? Neurology Clinical Practice. August 2017. Published online before print. Available at: http://cp.neurology.org/content/early/2017/08/01/CPJ.0000000000000387.full.pdf+html Accessed on August 8, 2017.

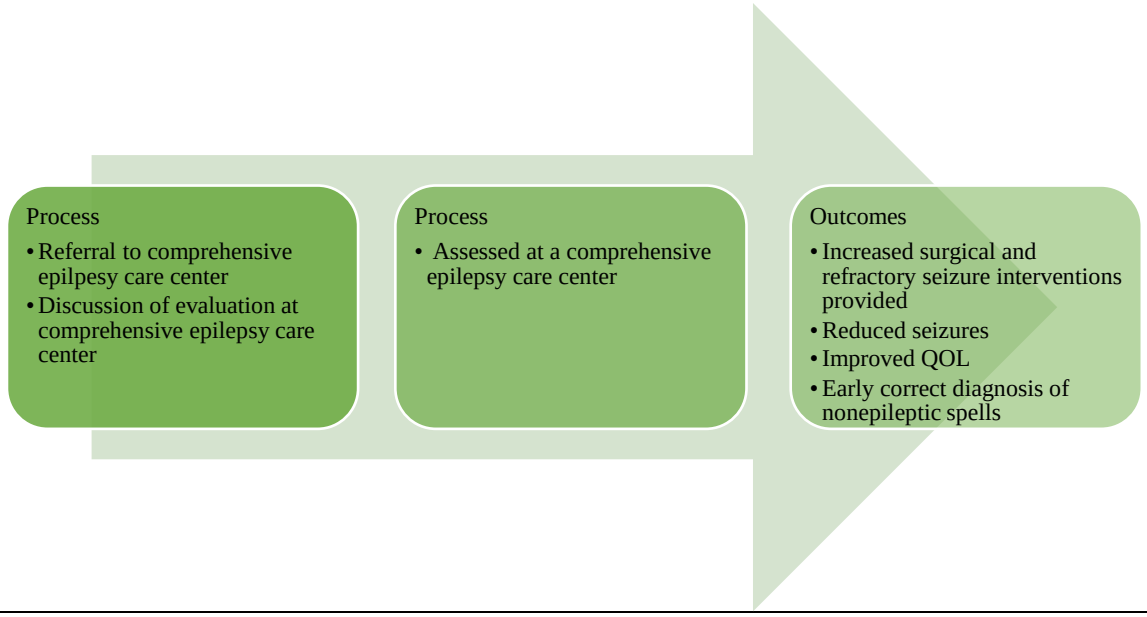
Flow Chart Diagram: Counseling for Women of Childbearing Potential with Epilepsy



Code System	Code	Code Description
CPT	99201-99205	Office or Other Outpatient Visit - New Patient (E/M Codes)
CPT	99211-99215	Office or Other Outpatient Visit - Established Patient (E/M Codes)
CPT	99241-99245	Office or Other Outpatient Consultation – New or Established Patient
		Gender Female
		Age 12-44 years old
ICD-9	345.00	Generalized nonconvulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.01	Generalized nonconvulsive epilepsy, with intractable epilepsy
ICD-9	345.10	Generalized convulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.11	Generalized convulsive epilepsy, with intractable epilepsy
ICD-9	345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy
ICD-9	345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy
ICD-9	345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
ICD-9	345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy
ICD-9	345.60	Infantile spasms, without mention of intractable epilepsy
ICD-9	345.61	Infantile spasms, with intractable epilepsy
ICD-9	345.70	Epilepsia partialis continua, without mention of intractable epilepsy
ICD-9	345.71	Epilepsia partialis continua, with intractable epilepsy
ICD-9	345.90	Epilepsy, unspecified, without mention of intractable epilepsy
ICD-9	345.91	Epilepsy, unspecified, with intractable epilepsy
ICD-10	G40.A09	Absence epileptic syndrome, not intractable, without status epilepticus
ICD-10	G40.A11	Absence epileptic syndrome, intractable with status epilepticus
ICD-10	G40.A19	Absence epileptic syndrome, intractable, without status epilepticus
ICD-10	G40.109	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, not intractable, without status epilepticus
ICD-10	G40.119	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable, without status epilepticus
ICD-10	G40.209	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, not intractable, without status epilepticus
ICD-10	G40.219	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable, without status epilepticus
ICD-10	G40.309	Generalized idiopathic epilepsy and epileptic syndromes, not intractable, without status epilepticus OR G40.409 Other generalized epilepsy and epileptic syndromes, not intractable, without status epilepticus
ICD-10	G40.319	Generalized idiopathic epilepsy and epileptic syndromes, intractable, with status epilepticus
ICD-10	G40.419	Other generalized
ICD-10	G40.822	Epileptic spasms, not intractable, without status epilepticus
ICD-10	G40.824	Epileptic spasms, intractable, without status epilepticus
ICD-10	G40.909	Epilepsy, unspecified, not intractable, without status epilepticus
ICD-10	G40.919	Epilepsy, unspecified, intractable, without status epilepticus

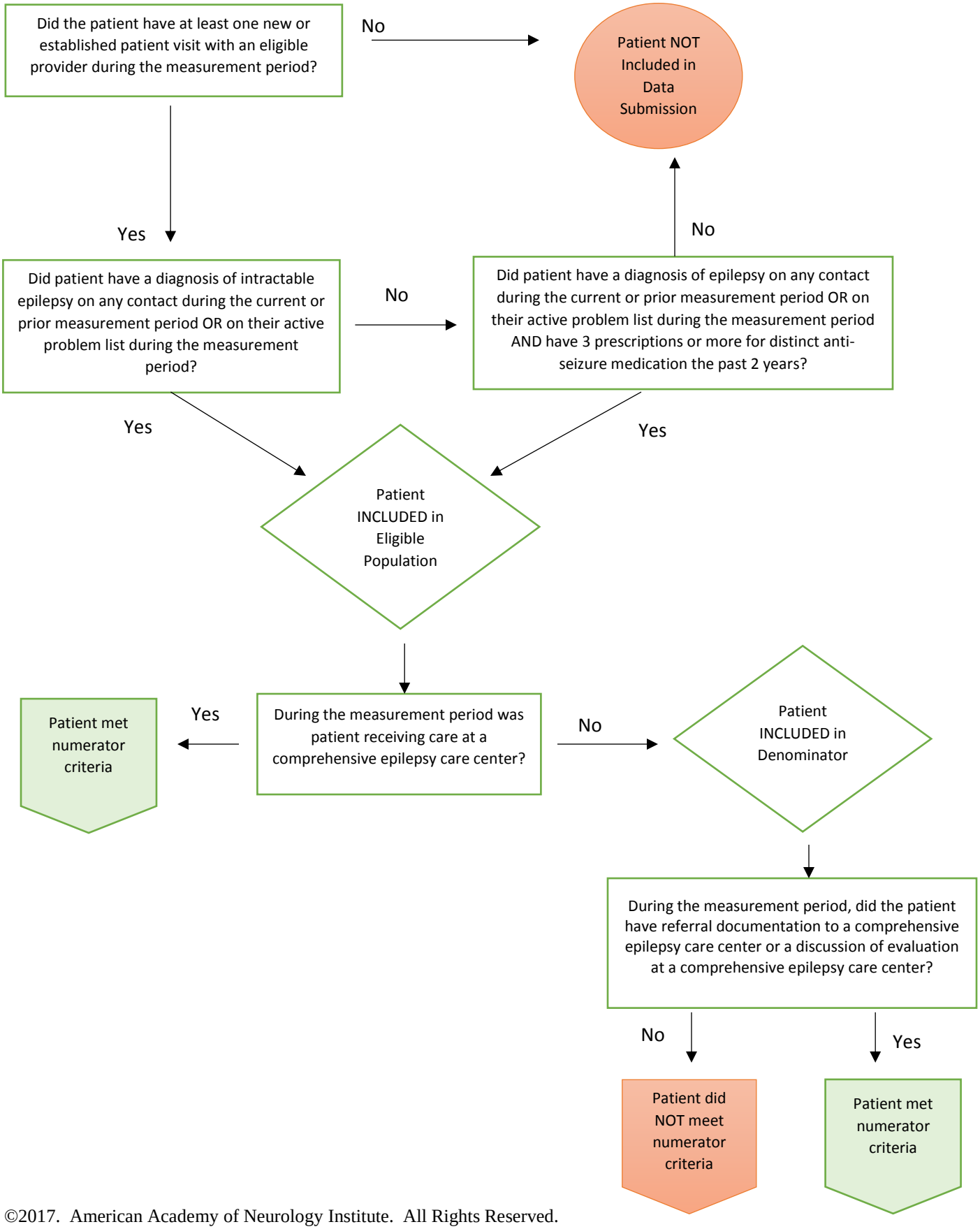
Comprehensive Epilepsy Care Center Referral or Discussion for Patients with Intractable Epilepsy

Measure Title	Comprehensive Epilepsy Care Center Referral or Discussion for Patients with Intractable Epilepsy	
Description	Percentage of patients who were referred or had a discussion of evaluation at a comprehensive epilepsy care center*.	
Measurement Period	January 1, 20xx to December 31, 20xx	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient Care
	Ages	All
	Event	Office visit
	Diagnosis	Epilepsy
Denominator	Patients diagnosed with intractable epilepsy (See Appendix of Codes) OR Patients diagnosed with epilepsy who were prescribed three or more distinct anti-seizure medications in past 2 years. The work group has chosen to use the term intractable epilepsy for this document to reflect what is also known as drug-resistant epilepsy, refractory epilepsy, and pharmacoresistant epilepsy. The work group chose to use intractable epilepsy given its appearance in ICD-9 and ICD-10 systems. For location via a registry it is recommended ICD-10 codes be utilized, and ICD-9 codes used for historical data. For location search term in a registry, the work group recognizes the alternate terms: "drug-resistant epilepsy", "refractory epilepsy", and "pharmacoresistant epilepsy".	
Numerator	Patients with an order for referral to a comprehensive epilepsy care center, who had a discussion of evaluation at a comprehensive epilepsy care center, OR who received treatment at a comprehensive epilepsy care center during the measurement period. *Comprehensive Epilepsy Care Center: Epilepsy centers that provide comprehensive diagnostic and treatment modalities and access to multidisciplinary teams to address comorbidities that are common in epilepsy. The National Association of Epilepsy Centers has provided details of the essential services, personnel, and facilities at comprehensive epilepsy centers.(1) In general, comprehensive centers will provide diagnostic evaluation including inpatient video electroencephalogram (EEG) monitoring, epilepsy surgery evaluation, access to epilepsy surgery, and staff to address psychiatric and psychosocial issues. The Work Group notes the intent of the referral to a Comprehensive Epilepsy Care Center is to reinforce detection of refractory cases, confirm classification of epilepsy, improve access to other treatments including ketogenic diet and neuromodulation, and evaluation of potential co-morbid symptom or social counseling, and not solely for presurgical evaluation and surgery. For location via search term in a registry, the work group encourages providers to document comprehensive epilepsy care center in following format: • "Comprehensive epilepsy care center", "CEC", or "CECC" • "Level 3 epilepsy care center" • "Level 4 epilepsy care center"	
Required Exclusions	None	
Allowable Exclusions	None Measure will be evaluated for future updates to address potential unintended consequences that may include false positive identifications in the denominator of patients with migraine or other neurological conditions warranting prescription of anti-seizure medications.	
Exclusion Rationale	None	

Measure Scoring	Percentage
Interpretation of Score	Higher Score Indicates Better Quality
Measure Type	Process
Level of Measurement	Provider
Risk Adjustment	Not Applicable
For Process Measures Relationship to Desired Outcome	Appropriate evaluation must occur for patients diagnosed with intractable epilepsy or who have indications of treatment resistant epilepsy, as suggested by three distinct seizure medication prescriptions. By creating a measure ensuring these patient populations are referred or have comprehensive epilepsy care center services discussed it is anticipated that there will be an increase in appropriate evaluations, which would confirm diagnostic accuracy and result in offering of effective non-drug and non-surgical treatment options. This may include psychiatric, psychological, and social counseling to address consequences of epilepsy. Evidence suggests that epilepsy surgery is superior to medical treatment in controlling seizures, improving quality of life, rates of unemployment and school attendance. (2-5) Prolonged unsuccessful medical treatment can lead to unnecessary disability and even death. (3) Most importantly, in patients with either temporal lobe or extratemporal lobe epilepsy, favorable and seizure-free outcome rates remained stable after surgery over long-term follow-up. Therefore, pre-surgical evaluation should be considered in all patients with refractory epilepsy. (5) Additionally, referral to comprehensive epilepsy centers may result in earlier diagnosis of psychogenic seizures; remission of psychogenic nonepileptic seizures is more likely the earlier diagnosis is made related to onset. (6) 
Opportunity to Improve Gap in Care	Despite the strong evidence of superior outcomes among those who receive epilepsy surgery and other specialized services at comprehensive epilepsy centers, only a small fraction of patients are referred within 2 years of developing drug-resistant epilepsy, and many years of delay before referral for epilepsy surgery is common (7-9). Contributors to the delay in referral include gaps in

	knowledge related to epilepsy surgery guidelines and definition of drug resistance (10). Among those ultimately found to have psychogenic seizures, history of multiple seizure medication prescriptions is associated with delay to diagnosis (11). This measure aims to increase awareness of the need for timely referral among practitioners.
Harmonization with Existing Measures	There are no known similar measures.
References	1. Labiner DM, Bagic AI, Herman ST, et al.; for the National Association of Epilepsy Centers. Essential services, personnel, and facilities in specialized epilepsy centers. Revised 2010 guidelines. Epilepsia 2010;51:2322-2333 2. Wiebe S, Blume WT, Girvin JP, et al. A Randomized, Controlled Trial of Surgery for Temporal-Lobe Epilepsy N Engl J Med 2001; 345:311-318. 3. Wasade VS, Elisevich K, Tahir R, et al. Long-term seizure and psychosocial outcomes after resective surgery for intractable epilepsy. Epilepsy Behav. 2015; 43: 122-127. 4. Gonzalez-Martinez et al. Epilepsy Surgery of the Temporal Lobe in Pediatric Population: A Retrospective Analysis Neurosurgery (2012) 70 (3): 684-692. 5. Scottish Intercollegiate Guidelines Network(SIGN). Diagnosis and management of epilepsy in adults. Edinburgh. SIGN publication no. 143. May 2015. Available at: http://www.sign.ac.uk Accessed on June 21, 2017. 6. Selwa L, Geyer J, Nikakhtar N, et al. Nonepileptic seizure outcome varies by type of spell and duration of illness. Epilepsia. 2000; 41: 1330-1334. 7. Jette N, Sander J, Keezer M. Surgical treatment for epilepsy: the potential gap between evidence and Practice. Lancet Neurology. 2016 ; 15: 982-984. 8. Burneo J, Shariff S, Liu K, et al. Disparities in epilepsy surgery among patients with epilepsy in a universal health system. Neurology. 2016; 86: 72-78. 9. Pieters H, Iwaki T, Vickrey B, et al. "It was five years of hell": Parental experiences of navigating and processing the slow and arduous time to pediatric resective epilepsy surgery. Epilepsy Behavior. 2016; 62: 276-284. 10. Roberts J, Hrazdil C, Wiebe S, et al. Neurologists' knowledge of and attitudes toward epilepsy surgery: a national survey. Neurology. 2015; 84: 159-166. 11. Rodriguez-Urrutia A, Toledo M, Eiroa-Orosa F, et al. Psychosocial factors and antiepileptic drug use related to delayed diagnosis of refractory psychogenic nonepileptic seizures. Cogn Behav Neurol. 2014; 27: 199-205.

Flow Chart Diagram: Comprehensive Epilepsy Care Center Referral or Discussion



Code System	Code	Code Description
CPT	99201-99205	Office or Other Outpatient Visit - New Patient (E/M Codes)
CPT	99211-99215	Office or Other Outpatient Visit - Established Patient (E/M Codes)
CPT	99241-99245	Office or Other Outpatient Consultation – New or Established Patient
AND		
ICD-9	345.01	Generalized nonconvulsive epilepsy, with intractable epilepsy
ICD-9	345.11	Generalized convulsive epilepsy, with intractable epilepsy
ICD-9	345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy
ICD-9	345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy
ICD-9	345.61	Infantile spasms, with intractable epilepsy
ICD-9	345.71	Epilepsia partialis continua, with intractable epilepsy
ICD-9	345.91	Epilepsy, unspecified, with intractable epilepsy
ICD-10	G40.A11	Absence epileptic syndrome, intractable with status epilepticus
ICD-10	G40.A19	Absence epileptic syndrome, intractable, without status epilepticus
ICD-10	G40.119	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable, without status epilepticus
ICD-10	G40.219	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable, without status epilepticus
ICD-10	G40.319	Generalized idiopathic epilepsy and epileptic syndromes, intractable, with status epilepticus
ICD-10	G40.824	Epileptic spasms, intractable, without status epilepticus
ICD-10	G40.919	Epilepsy, unspecified, intractable, without status epilepticus

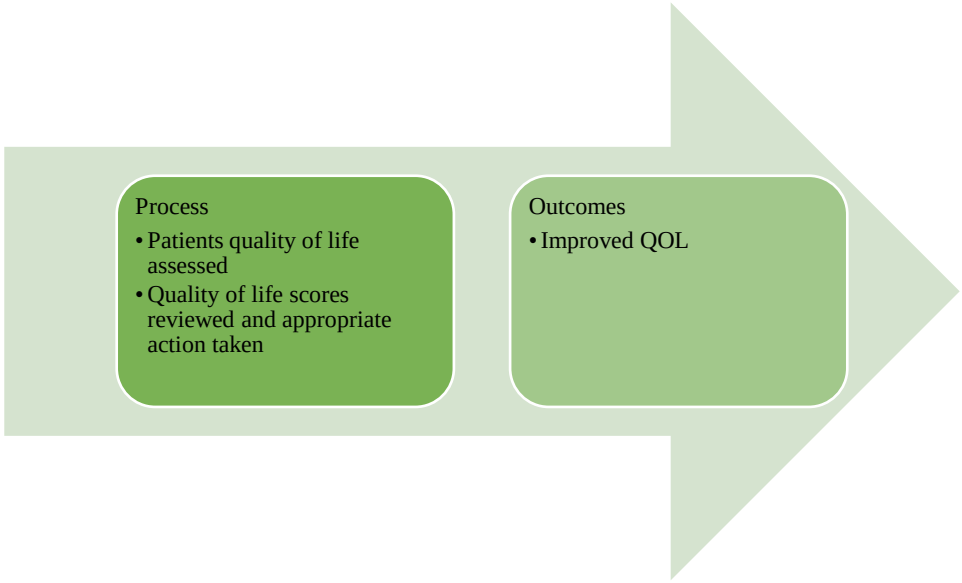
OR

CPT	99201-99205	Office or Other Outpatient Visit - New Patient (E/M Codes)
CPT	99211-99215	Office or Other Outpatient Visit - Established Patient (E/M Codes)
CPT	99241-99245	Office or Other Outpatient Consultation – New or Established Patient
AND		
ICD-9	345.00	Generalized nonconvulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.10	Generalized convulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy
ICD-9	345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
ICD-9	345.60	Infantile spasms, without mention of intractable epilepsy
ICD-9	345.70	Epilepsia partialis continua, without mention of intractable epilepsy
ICD-9	345.90	Epilepsy, unspecified, without mention of intractable epilepsy
ICD-10	G40.A09	Absence epileptic syndrome, not intractable, without status epilepticus
ICD-10	G40.109	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, not intractable, without status epilepticus

ICD-10	G40.209	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, not intractable, without status epilepticus
ICD-10	G40.309	Generalized idiopathic epilepsy and epileptic syndromes, not intractable, without status epilepticus OR G40.409 Other generalized epilepsy and epileptic syndromes, not intractable, without status epilepticus
ICD-10	G40.419	Other generalized
ICD-10	G40.822	Epileptic spasms, not intractable, without status epilepticus
ICD-10	G40.909	Epilepsy, unspecified, not intractable, without status epilepticus
AND 3 of the following anti-seizure medications within 2 years of office visit		
RxNorm		Brivaracetam
RxNorm		Carbamazepine
RxNorm		Carbamazepine-XR
RxNorm		Clobazam
RxNorm		Clonazepam
RxNorm		Divalproex Sodium
RxNorm		Divalproex Sodium-ER
RxNorm		Eslicarbazepine Acetate
RxNorm		Ethosuximide
RxNorm		Ezogabine
RxNorm		Felbamate
RxNorm		Gabapentin
RxNorm		Lacosamide
RxNorm		Lamotrigine
RxNorm		Levetiracetam
RxNorm		Levetiracetam XR
RxNorm		Oxcarbazepine
RxNorm		Oxcarbazepine XR
RxNorm		Perampanel
RxNorm		Phenobarbital
RxNorm		Phenytoin
RxNorm		Pregabalin
RxNorm		Primidone
RxNorm		Rufinamide
RxNorm		Tiagabine Hydrochloride
RxNorm		Topiramate
RxNorm		Topiramate XR
RxNorm		Valproic Acid
RxNorm		Vigabatrin
RxNorm		Zonisamide

Quality of Life Assessment for Patients with Epilepsy

Measure Title	Quality of Life Assessment for Patients with Epilepsy	
Description	Percentage of patients with age-appropriate condition-specific quality of life assessed at least once in the measurement period.	
Measurement Period	January 1, 20xx to December 31, 20xx	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient
	Ages	Aged 4 years and older
	Event	Office Visit
	Diagnosis	Epilepsy
Denominator	Patients aged 4 years and older diagnosed with epilepsy	
Numerator	Patients with age-appropriate condition-specific quality of life assessed* at least once in the measurement period. *Assessed is defined as completion of one of the following age appropriate, validated quality of life tool: Quality of Life in Epilepsy (QOLIE)-10(1), QOLIE-31(2), QOLIE- AD-48(3), Personal Impact of Epilepsy Scale (PIES)(4), Quality of Life in Childhood Epilepsy Questionnaire (QOLCE-55)(5), Global Assessment of the Severity of Epilepsy (GASE)(6), Child Health Questionnaire (CHQ)(7), PedsQL Epilepsy Module(8), and Epilepsy Surgery Inventory 55 Survey ESI-55(9). Other tools with reasonable correlation with quality of life scores may be used as an alternative (i.e., Seizure Severity Questionnaire (SSQ)(10), PROMIS-10(11), WHO Disability Assessment Schedule (WHODAS 2.0)(12)).	
Required Exclusions	None	
Allowable Exclusions	Patients who are unable or decline to complete the instrument and for these patients, a caregiver is not present to provide proxy report. For location via search term in a registry, the work group encourages providers to document this exclusion in following format: "Patient declines quality of life (or "QOL") assessment; no proxy available", "Patient unable to complete quality of life (or "QOL") assessment; no proxy available", or "Patient refuses quality of life (or "QOL") assessment; no proxy available".	
Exclusion Rationale	Patients need to be willing to complete the screening tool for performance scores to be valid, and if patients are unwilling and caregivers are not present to supplement information by proxy scores would not be valid.	
Measure Scoring	Percentage	
Interpretation of Score	Higher Score Indicates Better Quality	
Measure Type	Process	
Level of Measurement	Provider	
Risk Adjustment	Not Applicable	
For Process Measures Relationship to Desired Outcome	Assessments of health-related quality of life are considered a necessary requirement to implement a quality of life outcome measure that will inform about the quality of care for epilepsy patients.(13–16) Quality of Life (QOL) assessments in patients with epilepsy are associated with patient's general physical and mental health status.(17) Providers may use QOL	

	scores as a broad and dynamic measure of how seizures and seizure prophylaxis affects patient's life.(15,16,18–20) 
Opportunity to Improve Gap in Care	Many studies showing improvement in QOL occurs with decreased seizure frequency, treatment of depression.(21) Measurement of QOL allows patients and physicians to identify areas of concern / needed treatments. However, collection rates of patient reported outcomes in practice remains low. (17) The Work Group would like to emphasize the fact that QOL data is important for both, clinical and research purposes at the individual and at the population level. The QOL measures proposed are intended to improve clinical practice, irrespective of the type of measure chosen. For instance, patients living with epilepsy often report concerns that are often captured in several of the proposed QOL instruments, including medication side effects, driving/transportation.(13) In an office visit, the clinician may use QOL data to further investigate what is the component of the patient's life that has been affected (e.g., addressing medication side effects). Additionally, a clinician may look at individual trends over time to examine the impact of therapeutic decisions (e.g., an overtime improvement in QOL scores after optimizing anti-seizure medication doses to an individual might be used as pertinent patient-reported documentation of the benefit of that epilepsy-care intervention).
Harmonization with Existing Measures	No similar measures are currently available in the field. The AAN is in the process of developing a quality of life measure that will apply to all patients with a neurologic condition. Those specifications will be reviewed by this work group once available. The AAN's Axon Registry will implement a measure using PROMIS data in 2017.
References	1. Cramer JA, Perrine K, Devinsky O, et al. A Brief Questionnaire to Screen for Quality of Life in Epilepsy The QOLIE-10. Epilepsia 1996;37(6):577-582 2. Cramer JA, Perrine K, Devinsky Ok, et al. Development and cross-cultural translation of a 31-item quality of life questionnaire (QOLIE-31). Epilepsia 1998;39:81-88. 3. Cramer JA, Westbrook L, Devinsky O, et al. Development of a quality of life inventory for adolescents: The QOLIE-AD-48. Epilepsia 1999;40:1114-1121. 4. Fisher RS, Nune G, Roberts SE, et al. The Personal Impact of Epilepsy Scale (PIES). Epilepsy Behav 2015;42:140-146.

5. Goodwin SW, Lambrinos AI, Ferro MA, et al. Development and assessment of a shortened Quality of Life in Childhood Epilepsy Questionnaire (QOLCE-55). Epilepsia 2015;56(6): 864-872.
6. Chan CJ, Zou G, Wiebe S, et al. Global assessment of the severity of epilepsy (GASE) Scale in children: Validity, reliability, responsiveness. Epilepsia 2015;56(12):1950-1956.
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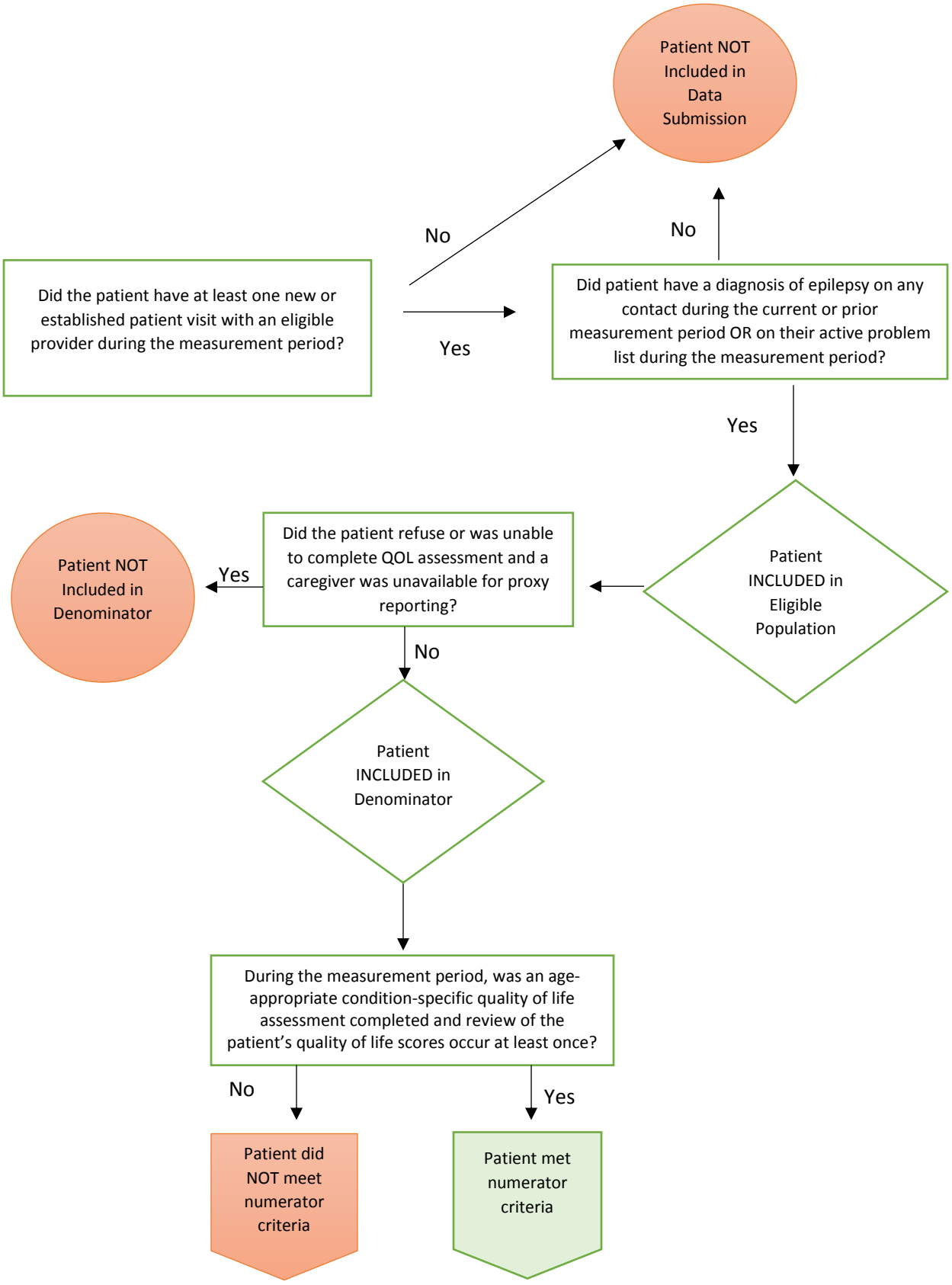
9. Devinsky O. Clinical use of the quality of life in epilepsy inventory. Epilepsia 1993;34:S39-44.
10. Cramer JA, Baker GA, Jacoby A. Development of a new seizure severity questionnaire: Initial reliability and validity testing. Epil Res. 2002; 48: 187-197.
11. Cella D, Riley W, Stone A, et al. Initial Adult Health Item Banks and First Wave Testing of the Patient-Reported Outcomes Measurement Information System (PROMIS™) Network: 2005-2008. J Clin Epidemiol. 2010;63(11):1179-1194.
12. Üstün TB, Chatterrji S, Kostanjsek N, et al. Developing the World Health Organization Disability Assessment Schedule 2.0. Bulletin of the World Health Organization 2010;88:815–823.
13. Martin R, Vogtle L, Gilliam F FE. What are the concerns of older adults living with epilepsy? Epilepsy Behav. 2005;7(2):297–300.
14. Fayers P, Machin D. Quality of Life: The Assessment, Analysis and Interpretation of Patient-reported Outcomes. 2nd ed. New York: John Wiley & Sons; 2013. 568 p.
15. Birbeck GL, Hays RD, Cui X, Vickrey BG. Seizure reduction and quality of life improvements in people with epilepsy. Epilepsia 2002;43(5):535–538.
16. Vickrey BG, Berg AT, Sperling MR, et al. Relationships Between Seizure Severity and Health-Related Quality of Life in Refractory Localization-Related Epilepsy. 2000;41(6):760–4.
17. Moura LMVR, Schwamm E, Moura Jr V., et al. Feasibility of the collection of patient-reported outcomes in an ambulatory neurology clinic. Neurology. 2016;87:1-8.
18. Choi H, Hamberger MJ, Munger Clary H, et al. Seizure frequency and patient-centered outcome assessment in epilepsy. Epilepsia 2014;55(8):1205–1212.
19. Moura LMVR, Carneiro TS, Thorn EL, et al. Patient perceptions of physician-documented quality care in epilepsy. Epilepsy Behav; 2016;62:90–96.
20. French JA, Kanner AM, Bautista J, et al. Efficacy and tolerability of the new antiepileptic drugs II: Treatment of refractory epilepsy - Report of the Therapeutics and Technology Assessment Subcommittee and Quality Standards Subcommittee of the American Academy of Neurology and the American Epil. Neurology 2004;62(8):1261–1273.
21. Patient-Reported Outcome Measurement Group, Oxford. A Structured Review of Patient-Reported Outcome Measures (PROMs) For Epilepsy: An Update 2009. Available at: http://phi.uhce.ox.ac.uk/pdf/PROMs_Oxford_Epilepsy_17092010.pdf Accessed on August 8, 2017.

Flow Chart Diagram: Quality of Life for Patients with Epilepsy



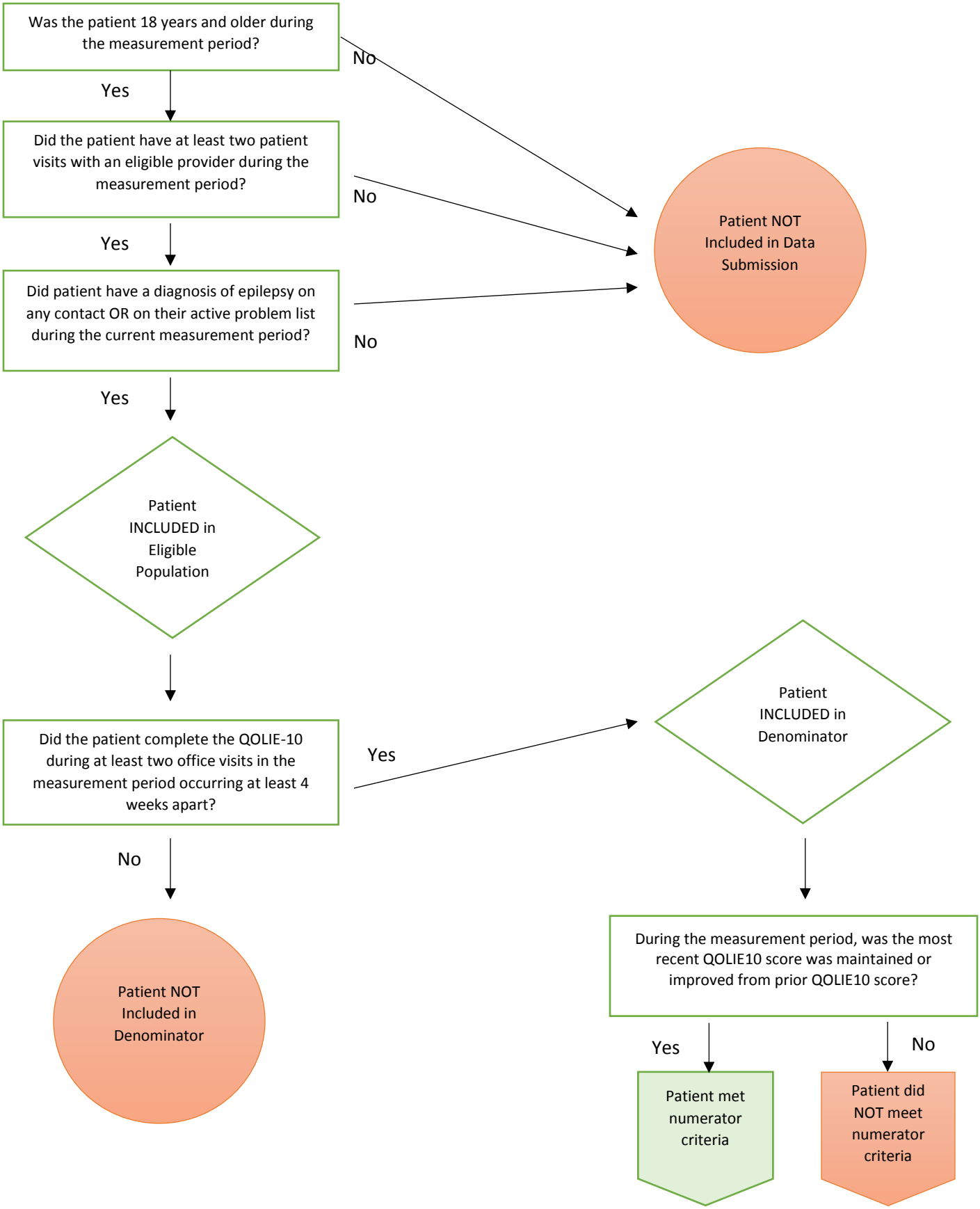
Code System	Code	Code Description
CPT	99201-99205	Office or Other Outpatient Visit - New Patient (E/M Codes)
CPT	99211-99215	Office or Other Outpatient Visit - Established Patient (E/M Codes)
CPT	99241-99245	Office or Other Outpatient Consultation – New or Established Patient
ICD-9	345.00	Generalized nonconvulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.01	Generalized nonconvulsive epilepsy, with intractable epilepsy
ICD-9	345.10	Generalized convulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.11	Generalized convulsive epilepsy, with intractable epilepsy
ICD-9	345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy
ICD-9	345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy
ICD-9	345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
ICD-9	345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy
ICD-9	345.60	Infantile spasms, without mention of intractable epilepsy
ICD-9	345.61	Infantile spasms, with intractable epilepsy
ICD-9	345.70	Epilepsia partialis continua, without mention of intractable epilepsy
ICD-9	345.71	Epilepsia partialis continua, with intractable epilepsy
ICD-9	345.90	Epilepsy, unspecified, without mention of intractable epilepsy
ICD-9	345.91	Epilepsy, unspecified, with intractable epilepsy
ICD-10	G40.A09	Absence epileptic syndrome, not intractable, without status epilepticus
ICD-10	G40.A11	Absence epileptic syndrome, intractable with status epilepticus
ICD-10	G40.A19	Absence epileptic syndrome, intractable, without status epilepticus
ICD-10	G40.109	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, not intractable, without status epilepticus
ICD-10	G40.119	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable, without status epilepticus
ICD-10	G40.209	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, not intractable, without status epilepticus
ICD-10	G40.219	Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable, without status epilepticus
ICD-10	G40.309	Generalized idiopathic epilepsy and epileptic syndromes, not intractable, without status epilepticus OR G40.409 Other generalized epilepsy and epileptic syndromes, not intractable, without status epilepticus
ICD-10	G40.319	Generalized idiopathic epilepsy and epileptic syndromes, intractable, with status epilepticus
ICD-10	G40.419	Other generalized
ICD-10	G40.822	Epileptic spasms, not intractable, without status epilepticus
ICD-10	G40.824	Epileptic spasms, intractable, without status epilepticus
ICD-10	G40.909	Epilepsy, unspecified, not intractable, without status epilepticus
ICD-10	G40.919	Epilepsy, unspecified, intractable, without status epilepticus

Quality of Life Outcome for Patients with Epilepsy

Measure Title	Quality of Life Outcome for Patients with Epilepsy	
Description	Percentage of patients whose quality of life assessment results are maintained or improved during the measurement period.	
Measurement Period	January 1, 20xx in Year 1 to December 31, 20xx in Year 2	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient
	Ages	Age 18 years and older
	Event	Office Visit
	Diagnosis	Epilepsy
Denominator	Patients aged 18 years and older diagnosed with epilepsy who had two office visits during the two-year measurement period which occurred at least 4 weeks apart.	
Numerator	Patients whose most recent QOLIE-10-P score is maintained or improved from the prior QOLIE-10-P score^ obtained in the measurement period. ^For patients who have more than two QOLIE-10-P scores in a calendar year, the last score recorded in the calendar year will be compared to the first score recorded in the calendar year.	
Required Exclusions	None	
Allowable Exclusions	None	
Exclusion Rationale	Not Applicable	
Measure Scoring	Percentage	
Interpretation of Score	Higher Score Indicates Better Quality	
Measure Type	Outcome	
Level of Measurement	Provider	
Risk Adjustment	*See Appendix A AAN Statement on Comparing Outcomes of Patients* *This measure is being made available in advance of development of a risk adjustment strategy. Individuals commenting on the measures are encouraged to provide input on potential risk adjustment or stratification methodologies. The work group identified the following potential data elements that may be used in a risk adjustment methodology for this measure:* • Seizure frequency • Co-morbid anxiety and mood disorders • 3 or more comorbid medical conditions	
Desired Outcome	The QOLIE-10 has been validated for patients with epilepsy (1) and directly assesses quality of life from the patient perspective. Measuring quality of life allows patients and providers to identify areas of concern and develop appropriate treatment plan adjustments as needed.	
Opportunity to Improve Gap in Care	Collecting quality of life data via the QOLIE-10-P in a neurology ambulatory setting is feasible.(2) The QOLIE-10-P has been demonstrated to be responsive to changes in epilepsy treatment, although concern has been raised on the strong influence of mood on QOLIE scores.(3) By monitoring quality of life scores, providers may be able to offer interventions to improve patients quality of life, such as medication interventions, surgical interventions, co-morbid conditions, including behavioral health needs, or motivational interviewing.(3-5)	

	The work group chose the QOLIE-10-P for several reasons (i.e., the brief questionnaire reduces likelihood of respondent fatigue, ease of access for providers to obtain right to use the tool (6), and prior use in the field). The work group will revisit this decision during future updates to the measurement set evaluating the use of the QOLIE-10-P as well as possible similar measures for adolescent and child populations. The QOLIE-10-P requires respondents to provide input on their feelings during the past 4 weeks. The work group incorporated this time frame as a result. The measurement period for this measure is two years allowing for individuals who see their physician yearly for monitoring to be included in the measurement base.
Harmonization with Existing Measures	There are no known similar measures applicable to patients with epilepsy. The AAN is in the process of developing a quality of life measure that will apply to all patients with a neurologic condition. Those specifications will be reviewed by this work group once available.
References	1. Cramer JA, Perrine K, Devinsky O, et al. A Brief Questionnaire to Screen for Quality of Life in Epilepsy The QOLIE-10. Epilepsia 1996;37(6):577-582 2. Moura LMVR, Schwamm E, Moura Jr V., et al. Feasibility of the collection of patient-reported outcomes in an ambulatory neurology clinic. Neurology. 2016;87:1-8. 3. Patient-Reported Outcome Measurement Group, Oxford. A Structured Review of Patient-Reported Outcome Measures (PROMs) For Epilepsy: An Update 2009. Available at: http://phi.uhce.ox.ac.uk/pdf/PROMs_Oxford_Epilepsy_17092010.pdf Accessed on August 2, 2017. 4. Wassenaar M, Leijten FSS, Sander JW, et al. on behalf of the OPPEC study group. Anti-epileptic drug changes and quality of life in the community. Acta Neurol Scand 2016; 133:421-426. 5. Hosseini N, Mokhtari S, Momeni E, et al. Effect of motivational interviewing on quality of life in patients with epilepsy. Epilepsy & Behavior 2016;55:70-74. 6. QOLIE Development Group. QOLIE-10 Permission for Academic and Commercial Use. Available at: http://www.epilepsy.com/sites/core/files/atoms/files/permission%20to%20use%20QOLIE-10-P%20web.pdf

Flow Chart Diagram: Quality of Life for Patients with Epilepsy



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ICD-10	G40.419	Other generalized
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ICD-10	G40.909	Epilepsy, unspecified, not intractable, without status epilepticus
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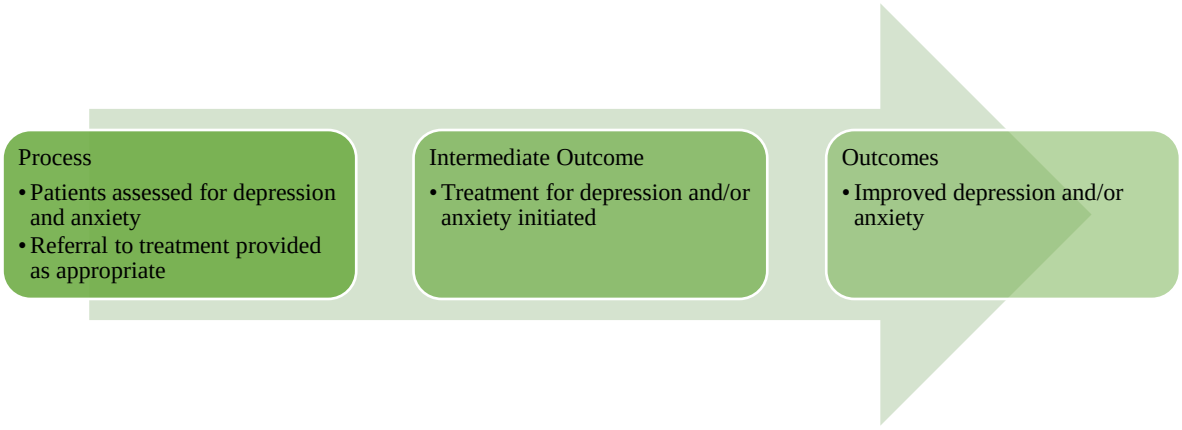
Depression and Anxiety Screening for Patients with Epilepsy

Measure Title	Depression and Anxiety Screening for Patients with Epilepsy	
Description	Percentage of patients with a diagnosis of epilepsy who were screened for depression and anxiety.	
Use	Quality Improvement. Measure will not be submitted for use in accountability programs.	
Measurement Period	January 1, 20xx to December 31, 20xx	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient
	Ages	Age 12 and older
	Event	Office Visit
	Diagnosis	Epilepsy
Denominator	Patients age 12 and older diagnosed with epilepsy	
Numerator	Patients with epilepsy who were screened for both depression* and anxiety^ at every office visit. *Depression Screening is use of the following age appropriate validated tool: • Patient Health Questionnaire 2 Questions (PHQ-2) (1), • Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) (2), • Patient Health Questionnaire 9 Questions (PHQ-9) (3, 4), • Patient Health Questionnaire for Adolescents (PHQ-A) (5), • Beck Depression Inventory (BDI) (6), • BDI II (7), • Strengths and Difficulties Questionnaire (SDQ) (8), • Emotional Thermometer (ET4 and ET7) (9, 10). ^Anxiety Screening is use of the following age appropriate validated tool: • Generalized Anxiety Disorder – 2 Scale (GAD-2) (11) • Generalized Anxiety Disorder – 7 Scale (GAD-7) (11) • Strengths and Difficulties Questionnaire (SDQ) (8), • State-Trait Anxiety Inventory (STAI) (13), • STAI- Short Form (14), • Emotional Thermometer (ET 4 and ET7) (9, 10). **The work group recommends use of the PHQ-2 and GAD-2 for measurement purposes,** but have provided other tools allowing providers to identify the tools that best meet their practice needs. The work group discussed more and less prescriptive ways to select these tools, eventually determining that multiple tools should be offered to allow providers to determine which tool best meets their individual practice needs. In some cases, tools may be subject to copyright and require licensing fees. For location via search term in a registry, the work group encourages providers to document this screening in the following format: "Patient screened with validated depression and anxiety tools". Documentation of validated tool scores will meet measure. (e.g., "Patient screened with NDDI-E score 23 and GAD-7 score 15.")	
Required Exclusions	None	
Allowable Exclusions	Patients who are unable or decline to complete epilepsy specific screening tool. For location via search term in a registry, the work group encourages providers to document this exclusion in the following format: "Patient declines assessment", "Patient unable to complete assessment", or "Patient refuses assessment". Patient has a diagnosis of depression or anxiety on active problem list.	

Exclusion Rationale	Patients need to be willing to complete the screening tool for performance scores to be valid and those with an active depression or anxiety concern recorded on the problem list do not need further screening. Lack of further screening should not signify lack of treatment, as it is assumed once diagnosed treatment would be initiated for the patient.
Measure Scoring	Percentage
Interpretation of Score	Higher Score Indicates Better Quality
Measure Type	Process
Measure Purpose	Quality improvement. This measure will not be submitted to accountability programs for their consideration.
Level of Measurement	Provider
Risk Adjustment	Not Applicable
For Process Measures Relationship to Desired Outcome	People with epilepsy have high rates of psychiatric disorders, with approximately 20% of patients having comorbid depression or anxiety.(11) Such comorbidities result in substantive morbidity and place patients with epilepsy at higher risk for poor quality of life (12, 13), poor adherence to medication (14, 15) and potentially increased risk of suicide.(16) Anti-seizure medications can place patients at risk for mood related changes and suicidality.(17) Symptoms of depression and anxiety can be screened for effectively using a number of different psychometrically validated, reliable screening instruments with validity in the epilepsy population.(2, 13, 18,19) Screening for symptoms of anxiety and depression in patients with epilepsy is imperative to identify high risk patients in need of evaluation and treatment for such comorbidities. Adherence to screening for psychiatric needs has been associated with better seizure control.(20) 
Opportunity to Improve Gap in Care	There is a need to improve the frequency of screening for depression and anxiety in people with epilepsy and ongoing assessment of adherence to such screening. Comorbid depression and anxiety amongst people with epilepsy can often be undiagnosed and therefore untreated. International consensus statement guidelines recommend screening for depression and anxiety disorders as an integral step in identification and diagnosis of such patients with comorbidity, in order to then evaluate and initiate appropriate treatment.(21) Current evidence, however, suggests low adherence (41%) to the recommendation for screening people with epilepsy for psychiatric and behavioral disorders.(20)
Harmonization with Existing Measures	The work group noted multiple measures exist for depression screening in the field (See below), and reviewed these concepts identifying additional need for anxiety screening in this population. The work group developed a measure addressing the anxiety needs as a result. MIPS Measure #134 Preventive Care and Screening: Screening for Clinical Depression and Follow-up Plan

	MIPS Measure #371: Depression Utilization of the PHQ-9 Tool MIPS Measure #370: Depression Remission at Twelve Months MIPS Measure #411: Depression Remission at Six Months
References	1. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire- 2: validity of a two-item depression screener. Med Care 2003;41:1284–1292. 2. Gilliam FG, Barry JJ, Hermann BP, et al. Rapid detection of major depression in epilepsy: a multicentre study. Lancet Neurol 2006;5:399–405. 3. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001;16:606–613. 4. Rathore JS, Jehi LE, Fan Y, et al. Validation of the Patient Health Questionnaire-9 (PHQ-9) for depression screening in adults with epilepsy. Epilepsy Behav. 2014;37:215-220. 5. Johnson JG, Harris ES, Spitzer RL, Williams JBW: The Patient Health Questionnaire for Adolescents: Validation of an instrument for the assessment of mental disorders among adolescent primary care patients. J Adolescent Health 2002;30:196–204. 6. Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. Arch Gen Psychiatry 1961;4:561–571. 7. Beck AT, Steer RA, Brown GK. BDI-II: Beck Depression Inventory Manual. 2nd ed. San Antonio: Psychological Corporation; 1996. 8. Goodman R. The Strengths and Difficulties Questionnaire: A Research Note. J Child Psychol. Psychiat 1997;38(5):581-586. 9. Rampling J, Mitchell AJ, Von Oertzen T, et al. Screening for depression in epilepsy clinics. A comparison of conventional and visual-analog methods. Epilepsia. 2012; 53(10):1713-1721. 10. Gur-Ozmen S, Leibetseder A, Cock HR, et al. Screening of anxiety and quality of life in people with epilepsy. Seizure. 2017;45:107-113. 11. Kroenke K, Spitzer RL, Williams JBW, et al. Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. Ann Intern Med 2007, 146: 317–325. 12. Spielberger CD, Gorsuch RL, Lushene RE. Manual for the state-trait anxiety inventory. Consulting Psychological Press, Palo Alto; 1970. 13. Marteau T, Bekker H. The development of a six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI) British Journal of Psychology. 1992;31(3):301–306. 14. Pham T, Sauro KM, Patten SB, et al. The prevalence of anxiety and associated factors in persons with epilepsy. Epilepsia 2017 Jun 9. [epub ahead of print] doi: 10.1111/epi.13817. 15. Baca CB, Vickrey BG, Caplan R, et al. Psychiatric and Medical Comorbidity and Quality of Life Outcomes in Childhood-Onset Epilepsy. Pediatrics. 2011;128(6):e1531-1543. 16. Gur-Ozmen S, Leibetseder A, Cock HR, et al. Screening of anxiety and quality of life in people with epilepsy. Seizure 2017;45:107-113. 17. DiMatteo MR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment: meta-analysis of the effects of anxiety and depression on patient adherence. Arch Intern Med. 2000;160(4):2101-2107. 18. Guo Y, Ding XY, Lu RY, et al. Depression and anxiety are associated with reduced antiepileptic drug adherence in Chinese patients. Epilepsy Behav. 2015;50:91-95. 19. Mula M. Depression in epilepsy. Curr Opin Neurol. 2017; 30(2):180-186. 20. Mula M, Kanner AM, Schmitz B, et al. Antiepileptic drugs and suicidality: an expert consensus statement from the Task Force on Therapeutic Strategies of the ILAE Commission on Neuropsychobiology. Epilepsia 2013; 54(1):199-203. 21. Gill SJ, Lukmanji S, Fiest KM, et al. Depression screening tools in persons with epilepsy: A systematic review of validated tools. Epilepsia 2017;58(5):695-705. 22. Micoulaud-Franchi JA, Bartolomei F, McGonigal A. Ultra-short screening instruments for major depressive episode and generalized anxiety disorder in epilepsy: The NDDIE-2 and the GAD-SI. J Affect Disord. 2017;210:237-240.

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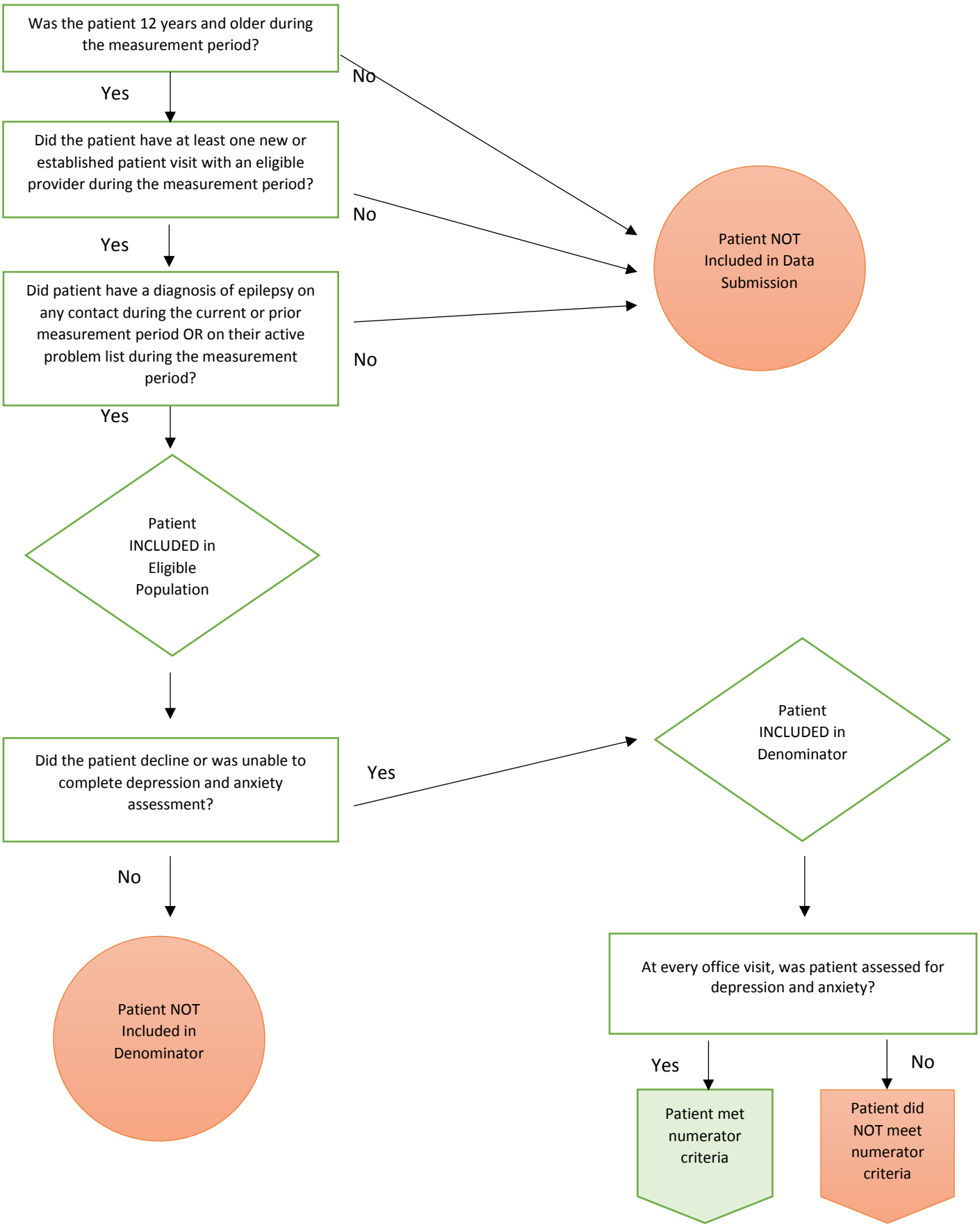
Flow Chart Diagram: Depression and Anxiety Screening for Patients with Epilepsy



Code System	Code	Code Description
CPT	99201-99205	Office or Other Outpatient Visit - New Patient (E/M Codes)
CPT	99211-99215	Office or Other Outpatient Visit - Established Patient (E/M Codes)
CPT	99241-99245	Office or Other Outpatient Consultation – New or Established Patient
ICD-9	345.00	Generalized nonconvulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.01	Generalized nonconvulsive epilepsy, with intractable epilepsy
ICD-9	345.10	Generalized convulsive epilepsy, without mention of intractable epilepsy
ICD-9	345.11	Generalized convulsive epilepsy, with intractable epilepsy
ICD-9	345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy
ICD-9	345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy
ICD-9	345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy
ICD-9	345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy
ICD-9	345.70	Epilepsia partialis continua, without mention of intractable epilepsy
ICD-9	345.71	Epilepsia partialis continua, with intractable epilepsy
ICD-9	345.90	Epilepsy, unspecified, without mention of intractable epilepsy
ICD-9	345.91	Epilepsy, unspecified, with intractable epilepsy
ICD-10	G40.A09	Absence epileptic syndrome, not intractable, without status epilepticus
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ICD-10	G40.309	Generalized idiopathic epilepsy and epileptic syndromes, not intractable, without status epilepticus OR G40.409 Other generalized epilepsy and epileptic syndromes, not intractable, without status epilepticus
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ICD-10	G40.419	Other generalized
ICD-10	G40.822	Epileptic spasms, not intractable, without status epilepticus
ICD-10	G40.824	Epileptic spasms, intractable, without status epilepticus
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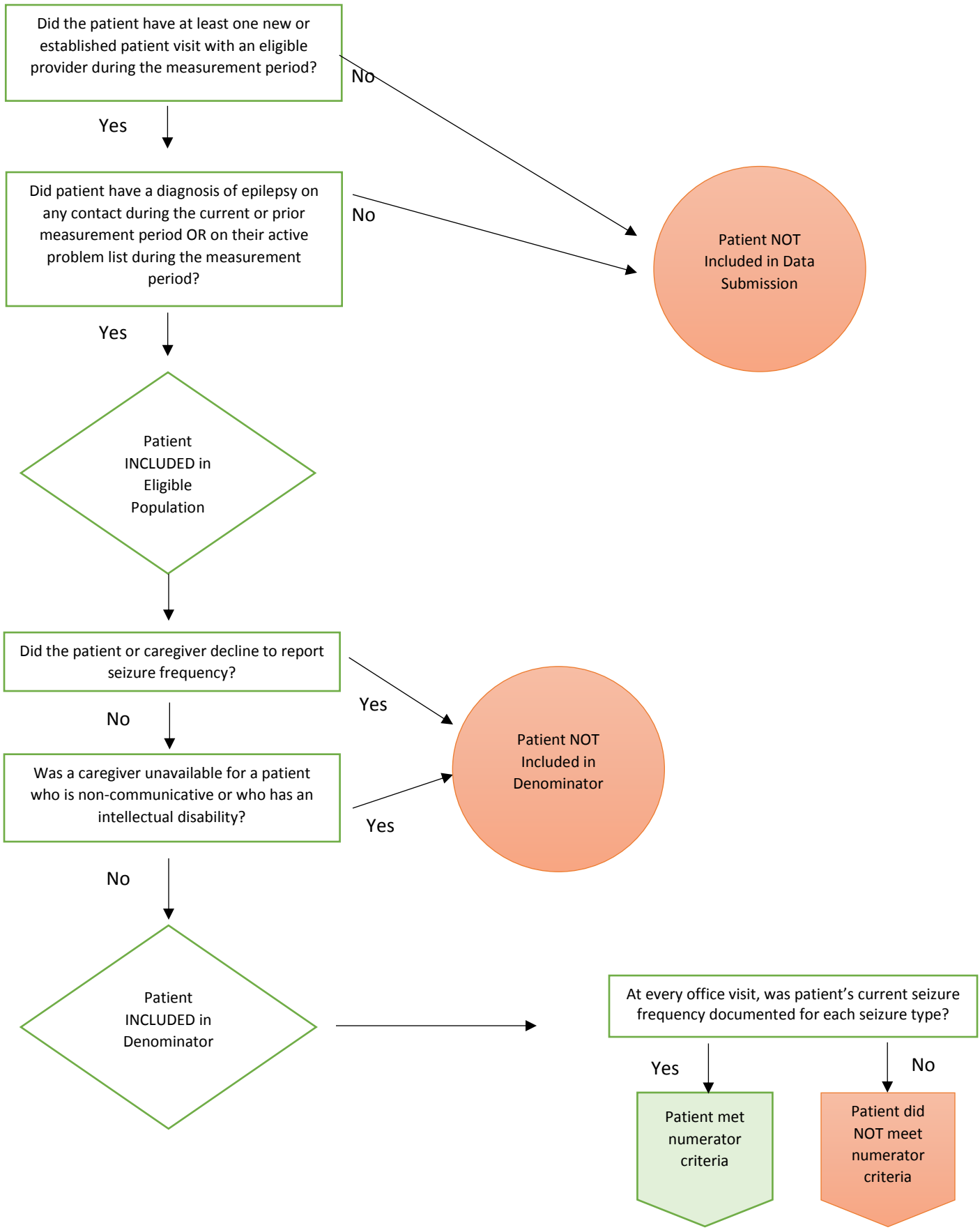
ICD-10	G40.919	Epilepsy, unspecified, intractable, without status epilepticus

Seizure Frequency for Patients with Epilepsy

Measure Title	Seizure Frequency for Patients with Epilepsy	
Description	Percentage of all visits for patients with a diagnosis of epilepsy where seizure frequency of each seizure type was documented.	
Measurement Period	January 1, 20xx to December 31, 20xx	
Eligible Population	**Eligible Providers**	Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Advanced Practice Registered Nurse (APRN)
	Care Setting(s)	Outpatient
	Ages	All
	Event	Office Visit
	Diagnosis	Epilepsy
Denominator	All visits for patients with a diagnosis of epilepsy.	
Numerator	Patient visits with current seizure frequency* documented for each seizure type. *Current seizure frequency: A record of the exact number of seizures gathered from patient records, journal, or calendar OR the average or typical recent seizure frequency, often expressed as the average daily, weekly, or monthly seizure frequency since the last visit.	
Required Exclusions	None	
Allowable Exclusions	• Caregiver is unavailable for a patient who is non-communicative or has an intellectual disability. • Patient or caregiver declines to report seizure frequency.	
Exclusion Rationale	For accuracy in reporting a patient or caregiver must be willing to provide data.	
Measure Scoring	Percentage	
Interpretation of Score	Higher Score Indicates Better Quality	
Measure Type	Process	
Measure Purpose	Quality improvement. This measure will not be submitted to accountability programs for their consideration.	
Level of Measurement	Provider	
Risk Adjustment	Not Applicable	
For Process Measures Relationship to Desired Outcome	The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure: • The seizure type(s) and epilepsy syndrome, aetiology, and co-morbidity should be determined, because failure to classify the epilepsy syndrome correctly can lead to inappropriate treatment and persistence of seizures.(1) • When a patient with epilepsy receives follow-up care, then an estimate of the number of seizures since the last visit and assessment of drug side-effects should be documented. (Level D 1+/ Primary)2 • If a patient is thought to have a diagnosis of epilepsy then the diagnosis should include a best estimation of seizure types. (Level C 2+/Secondary)(2) The main objective in treating epilepsy is to reduce the frequency of seizures and achieve seizure freedom without side effects. In order to determine whether a patient is seizure-free the seizure frequency must be known. Seizure freedom is associated with improvement in health-related quality of life.	

Opportunity to Improve Gap in Care	Provider performance may improve as seizure frequency is not gathered effectively.(3-5) This measure will help assess the gap and inform quality improvement efforts. For example, after implementation of an epilepsy quality measure checklist in an epilepsy clinic without any other intervention, documentation of compliance with this measure increased from 65% to 75%, illustrating that the measure has the intended consequence of increasing compliance.(6)
Harmonization with Existing Measures	There are no known similar measures.
References	1. National Institute of Clinical Health and Excellence. The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care (update). 2012. Clinical guideline 137. Available at: http://www.nice.org.uk/nicemedia/live/13635/57779/57779.pdf Accessed on February 18, 2014. 2. Pugh MJ, Berlowitz DR, Montouris G, et al. What constitutes high quality of care for adults with epilepsy? Neurology 2007;69:2020-2027. 3. Fountain NB, Van Ness PC, Swain-Eng R, et al. Quality improvement in neurology: AAN epilepsy quality measures. Neurology 2011;76:94-99. 4. Wasade VS, Spanaki M, Iyengar R, et al. AAN Epilepsy Quality Measures in clinical practice: a survey of neurologists. Epilepsy Behav. 2012;24(4):468-473. 5. Wicks P, Fountain NB. Patient assessment of physician performance of epilepsy quality-of-care measures. NeurolClinPract 2012;2(4):335-342. 6. Cisneros-Franco JM, Díaz-Torres MA, Rodríguez-Castañeda JB, et al. Impact of the implementation of the AAN epilepsy quality measures on the medical records in a university hospital. BMC Neurology 2013;13:112. Available at: http://www.biomedcentral.com/1471-2377/13/112. Accessed on February 18, 2014.

Flow Chart Diagram: Seizure Frequency for Patients with Epilepsy



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Appendix A AAN Statement on Comparing Outcomes of Patients

Why this statement: Characteristics of patients can vary across practices and differences in those characteristics may impact the differences in health outcomes among those patients. Some examples of these characteristics are: demographics, co-morbidities, socioeconomic status, and disease severity. Because these variables are typically not under the control of a clinician, it would be inappropriate to compare outcomes of patients managed by different clinicians and practices without accounting for those differences in characteristics among patients. There are many approaches and models to improve comparability, but this statement will focus on risk adjustment. This area continues to evolve (1), and the AAN will revisit this statement regularly to ensure accuracy, as well as address other comparability methods (2) should they become more common.

AAN quality measures are used primarily to demonstrate compliance with evidence-based and consensus-based best practices within a given practice as a component of a robust quality improvement program. The AAN includes this statement to caution against using certain measures, particularly outcome measures, for comparison to other individuals/practices/hospitals without the necessary and appropriate risk adjustment.

What is Risk Adjustment: Risk adjustment is a statistical approach that can make populations more comparable by controlling for patient characteristics (most commonly adjusted variable is a patient's age) that are associated with outcomes but are beyond the control of the clinician. By doing so, the processes of care delivered and the outcomes of care can be more strongly linked.

Comparing measure results from practice to practice: For process measures, the characteristics of the population are generally not a large factor in comparing one practice to another. Outcome measures, however, may be influenced by characteristics of a patient that are beyond the control of a clinician.(3) For example, demographic characteristics, socioeconomic status, or presence of comorbid conditions, and disease severity may impact quality of life measurements. Unfortunately, for a particular outcome, there may not be sufficient scientific literature to specify the variables that should be included in a model of risk adjustment. When efforts to risk adjust are made, for example by adjusting socioeconomic status and disease severity, values may not be documented in the medical record, leading to incomplete risk adjustment.

When using outcome measures to compare one practice to another, a methodologist, such as a health researcher, statistician, actuary or health economist, ought to ensure that the populations are comparable, apply the appropriate methodology to account for differences or state that no methodology exists or is needed.

Use of measures by other agencies for the purpose of pay-for-performance and public reporting programs: AAN measures, as they are rigorously developed, may be endorsed by the National Quality Forum or incorporated into Centers for Medicare & Medicaid Services (CMS) and private payer programs. 14

It is important when implementing outcomes measures in quality measurement programs that a method be employed to account for differences in patients beyond a clinicians' control such as risk adjustment.

References and Additional Reading for AAN Statement on Comparing Outcomes of Patients

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3. National Quality Forum. Risk Adjustment for Socioeconomic Status or Other Sociodemographic Factors. August 2014. Available at: http://www.qualityforum.org/Publications/2014/08/Risk_Adjustment_for_Socioeconomic_Status_or_Other_Sociodemographic_Factors.aspx Accessed on January 8, 2015.

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Appendix B Disclosures

Work Group Member	Disclosures
Anup Patel, MD	Research Funding: Pediatric Epilepsy Research Foundation (PERF), Upsher-Smith, LivaNova, and Greenwich Biosciences Consulting: Greenwich Biosciences, Supernus, LivaNova Scientific Advisory Board: UCB Pharma
S. Andrew Josephson, MD, FAAN (non-voting work group member)	No relevant disclosures for this project.
Christine Baca, MD, MSHS (non-voting work group member)	Research Funding: Epilepsy Foundation/American Epilepsy Society
Gary Franklin, MD, MPH, FAAN	No disclosures.
Susan Herman, MD, FAAN	Dr. Herman serves as Vice President of the National Association of Epilepsy Centers; Research Funding: Neuropace, Inc., Sage Therapeutics, Acorda Therapeutics, UCB Pharma, and NIH/NINDS.
Inna Hughes, MD, PhD	No disclosures.
Lisa Meunier	No disclosures.
Lidia Moura, MD, MPH	Dr. Moura is the recipient of a Career Development Award sponsored by the American Academy of Neurology to study predictors of treatment adherence and outcomes in geriatric epilepsy.
Heidi Munger-Clary, MD, MPH	No disclosures.
Brandy Parker-McFadden	No disclosures.
Mary Jo Pugh, PhD, RN	No disclosures.
Rebecca Schultz, PhD, RN, CPNP	Royalties from UpToDate on topic of Rett Syndrome; HRSA-13-244 -The State and Regional Approaches to Improving Access to Services for Children and Youths with Epilepsy.
Marianna Spanaki, MD, PhD, MBA	No disclosures.

[i] Quality and Safety Subcommittee. American Academy of Neurology Quality Measurement Manual 2014 Update. 21p. January 2015. Available at: https://www.aan.com/uploadedFiles/Website_Library_Assets/Documents/3.Practice_Management/2.Quality_Improvement/1.Quality_Measures/2.About_Quality_Measures/2015%2002%2011%20Process%20Manual%20Final.pdf Accessed on July 21, 2016.

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