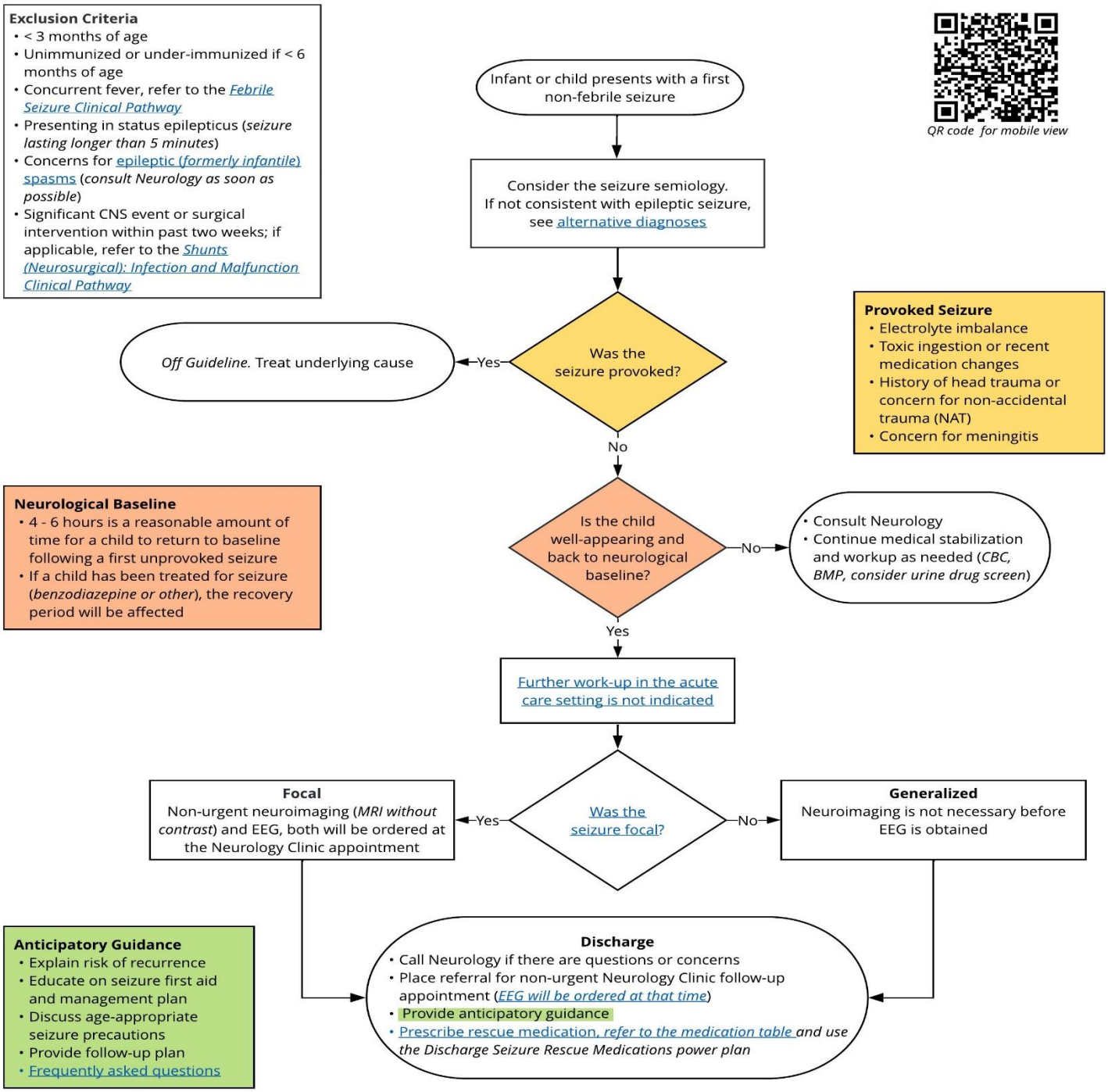
Seizure: First Non-Febrile Clinical Pathway Synopsis

Seizure: First Non-Febrile Algorithm



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Objective of Clinical Pathway

To provide care standards for the infant or child presenting to the acute care setting for a first non-febrile seizure. The Seizure: First Non-Febrile Clinical Pathway renders guidance regarding recommended assessment and treatment to minimize variation of care.

Background

The first seizure is a life-changing event for families and caregivers that can have socioeconomic, cultural, and emotional impact (Nowacki & Jirsch, 2017; Sansevere et al., 2017). When an infant or child presents to the emergency department, urgent care center, or ambulatory clinic following a first seizure, the provider is tasked to determine if the event was truly characteristic of a seizure, and then classify the seizure type (Fisher et al., 2017). It is through a thorough history and clinical examination that an accurate diagnosis and appropriate classification can be made, thereby informing management and prognosis (Fisher et al., 2017; Nowacki & Jirsch, 2017; Sansevere et al., 2017).

In the event of a first non-febrile seizure, the American Academy of Neurology (AAN) guidelines provide evidence-based recommendations for evaluating and treating patients from one month to 21 years of age (Hirtz et al., 2000, 2003). While unchanged from the original publication, each set of guidelines was reaffirmed by the AAN. *Practice Parameter: Evaluating a First Nonfebrile Seizure in Children* (Hirtz et al., 2000) was reaffirmed on October 21, 2023 (AAN, 2023). *Practice Parameter: Treatment of the Child with a First Unprovoked Seizure* (Hirtz et al., 2003) was reaffirmed on September 18, 2021 (AAN, 2023). The guidelines aim to clarify indications for laboratory testing, diagnostic procedures, and treatment with antiepileptic medications following a first non-febrile, unprovoked seizure (Hirtz et al., 2000, 2003). General guidance, which was substantiated by supplemental research, suggests that laboratory testing or diagnostic procedures beyond a thorough history and clinical examination are circumstantial (Hirtz et al., 2000; Lateef et al., 2008; Michelson et al., 2017; Strobel et al., 2015; Zuccarelli & Hall, 2016). However, an electroencephalogram (EEG) is advised for all infants and children following the first non-febrile seizure to be scheduled on a non-urgent basis to assist in determining seizure classification and predicting recurrence risk (Hirtz et al., 2000). The Seizure, First Non-Febrile Clinical Pathway guides healthcare providers caring for infants and children presenting for a first non-febrile seizure by providing evidence-based recommendations for assessment and treatment.

Target Users

- Physicians (Emergency Medicine, Urgent Care, Hospital Medicine, Fellows, Resident Physicians)
- Nurse Practitioners
- Nurses
- Pharmacy

Target Population

Exclusion Criteria

- < 90 days of age
- Unimmunized or under-immunized infant < 6 months of age
- Concurrent fever, refer to the *Febrile Seizure Clinical Pathway*
- Presenting in status epilepticus (seizure lasting longer than 5 minutes)
- Concerns for epileptic, formerly infantile, spasms (*consult Neurology as soon as possible*)
- Significant central nervous system (CNS) event or surgical intervention within the past two weeks; if applicable, refer to the *Shunts (Neurosurgical): Infection and Malfunction Clinical Pathway*

AGREE II

Two American Academy of Neurology (AAN) national guideline(s) provided guidance to the Seizure: First Non-Febrile Clinical Pathway committee (Hirtz et al., 2000, 2003). See Table 1 and Table 2 for AGREE II.

Table 1

AGREE II[a] Summary for the AAN Evaluation Guideline (Hirtz et al., 2000)

Domain	Percent Agreement	Percent Justification^
Scope and purpose	97%	The aim of the guideline, the clinical questions posed and target populations **were** identified.

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Stakeholder involvement	71%	The guideline **was developed** by the appropriate stakeholders, except for patients and/or their families, and represents the views of its intended users.
Rigor of development	61%	The process used to gather and synthesize the evidence **were** explicitly stated. The guideline developers **did not** provide how the recommendations were formulated nor how the guidelines will be updated.
Clarity and presentation	89%	The guideline recommendations **are** clear, unambiguous, and easily identified; in addition, different management options are presented.
Applicability	33%	The guideline **did not** address implementation barriers and facilitators, utilization strategies, nor resource costs associated implementation.
Editorial independence	33%	It is **unclear** if the recommendations were biased by competing interests.
Overall guideline assessment	64%	
See Practice Recommendations		

Note: Four EBP Scholars completed the AGREE II on this guideline.
^Percentage justification is an interpretation based on the Children's Mercy EBP Department standards.

Table 2
AGREE II[a] Summary for the AAN Treatment Guideline (Hirtz et al., 2003)

Domain	Percent Agreement	Percent Justification^
Scope and purpose	92%	The aim of the guideline, the clinical questions posed and target populations **were** identified.
Stakeholder involvement	74%	The guideline **was developed** by the appropriate stakeholders, except for patients and/or their families, and represents the views of its intended users.
Rigor of development	74%	The process used to gather and synthesize the evidence **were** explicitly stated. The guideline developers **did not** provide how the recommendations were formulated nor how the guidelines will be updated.
Clarity and presentation	92%	The guideline recommendations **are** clear, unambiguous, and easily identified; in addition, different management options are presented.
Applicability	38%	The guideline **did not** address implementation barriers and facilitators, utilization strategies, nor resource costs associated with implementation.
Editorial independence	33%	It is **unclear** if the recommendations were biased by competing interests.
Overall guideline assessment	67%	
See Practice Recommendations		

Note: Four EBP Scholars completed the AGREE II on this guideline.
^Percentage justification is an interpretation based on the Children's Mercy EBP Department standards.

Practice Recommendations

Please refer to the American Academy of Neurology (Hirtz et al., 2000, 2003) practice parameters for full evaluation and treatment recommendations.

Additional Questions Posed by the Clinical Pathway Committee

No clinical questions beyond the scope of the parent guideline (Hirtz et al., 2000, 2003) were posed for formal literature review.

Updates from Previous Versions of the Clinical Pathway

- The previous version centered on evaluation occurring in the Emergency Department, whereas the updated Seizure: First Non-Febrile Clinical Pathway addresses the care process for any acute care setting
- The previous version considered a focal seizure to be outside the scope for guidance, whereas the updated Seizure: First Non-Febrile Clinical Pathway includes decision support for a focal seizure

- The updated version provides much more detailed guidance on rescue medications to prescribe for home
- The updated version clarifies the logistics of obtaining an outpatient EEG and, if indicated, neuroimaging
- The previous version focused on anticipatory guidance through patient and family education before discharge, whereas the updated Seizure: First Non-Febrile Clinical Pathway includes information regarding rescue medications, discharge instructions specific to first non-febrile seizure, and provider education for first non-febrile seizure

Recommendation Specific for Children's Mercy

No deviations were made from the AAN practice parameters (Hirtz et al., 2000, 2003) regarding practice recommendations, but logistical processes specific to Children's Mercy were added.

- Placing the referral for non-urgent Neurology Clinic follow-up at time of discharge
- Prescribing seizure rescue medication at time of discharge
- Ordering the EEG and non-urgent imaging (if indicated) at the Neurology Clinic appointment

Measures

- Utilization of the Seizure: First Non-Febrile Clinical Pathway
- Utilization of the Seizure: First Non-Febrile order sets
- Utilization of the Provider Education for First Non-Febrile Seizure (video resource)

Value Implications

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families and reducing costs and resource utilization for healthcare facilities.

- Decreased risk of unnecessary diagnostic interventions
- Decreased frequency of admission
- Decreased unwarranted variation in care
- Increased effectiveness of medical staff communication with patients and families

Organizational Barriers and Facilitators

Potential Barriers

- Variability of acceptable level of risk among providers
- Challenges with follow-up faced by some families
- Wait time for subspeciality follow-up in some cases
- Inconsistencies in communication from medical staff to families regarding this diagnosis

Potential Facilitators

- Collaborative engagement across care continuum settings during clinical pathway development
- High rate of use of clinical pathways and order sets at this institution
- Updated, standardized order set for Urgent Care Clinic, Emergency Department, and Hospital Medicine
- Updated and expanded patient/family education materials
- New educational video for medical staff on effective communication with patients and families about first, non-febrile seizures

Diversity/Equity/Inclusion

Our aim is to provide equitable care. These issues were discussed with the Committee, reviewed in the literature, and discussed prior to making any practice recommendations.

Power Plans

- EDP First Non-Febrile Seizure Pathway
- Discharge Seizure Rescue Medications

Associated Policies

- Seizure Precautions (Pediatric) Clinical Skills - Patient Care Policy

Education Materials

- First Non-Febrile Seizure – Discharge Instructions
  - Intended to be discussed and provided to the patient and family at the time of discharge
  - Found in Cerner Depart process or the Seizure: First Non-Febrile Clinical Pathway website page
  - Available in English and Spanish
- Neurology Educational Videos for Patients and Families
  - Intended to share with patients and families following a first seizure
  - Provides a resource for learning about epilepsy and seizures and how they can be treated and managed
  - Found in Cerner Depart process or when using the QR code provided on the First Non-Febrile Seizure – Discharge Instructions handout
  - Available in English and Spanish
- Provider Education for First Non-Febrile Seizure
  - Intended to be an audiovisual resource for providers on discussing first non-febrile seizure with patients and families

Clinical Pathway Preparation

The clinical pathway was prepared by the Evidence Based Practice (EBP) Department in collaboration with the Seizure, First Non-Febrile Clinical Pathway Committee composed of content experts at Children's Mercy Kansas City. The development of this clinical pathway supports the Quality Excellence and Safety Division's initiative to promote care standardization that is evidenced by measured outcomes. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

Seizure, First Non-Febrile Clinical Pathway Committee Members and Representation

- Julie (Gianakon) Kostreva, MD | Pediatric Neurology Fellow | Committee Co-Chair
- Jean-Baptiste (J.B.) Le Pichon, MD, PhD, FAAP | Neurology | Committee Co-Chair
- Ara Hall, MD | Neurology | Committee Co-Chair
- James Hubbard, MD | Urgent Care | Committee Member
- Jonathan Ermer, MD | Pediatric Hospital Medicine Fellow | Committee Member
- Christine Scoby, DO | Hospital Medicine | Committee Member
- Amy D'Angelo, MD, FAAP | Emergency Medicine | Committee Chair/Member
- Audrey Kennedy, PharmD, BCPS, CPPS | Clinical Pharmacy Specialist, Neurology | Committee Member
- Jill Vickers, MSN, RN-BC, CPN | Clinical Practice and Quality | Committee Member
- Susana Chavez-Bueno, MD | Infectious Diseases | Contributor

Patient/Family Committee Member

- Allen Hall | Committee Member

EBP Committee Members

- Kathleen Berg, MD, FAAP | Hospitalist, Evidence Based Practice
- Kelli Ott, OTD, OTR/L | Evidence Based Practice

Clinical Pathway Development Funding

The development of this clinical pathway was underwritten by the following departments/divisions: Neurology, Urgent Care, Hospital Medicine, Emergency Medicine, Clinical Pharmacy, Clinical Practice and Quality, Patient and Family Engagement, Infectious Diseases, and Evidence Based Practice.

Conflict of Interest

The contributors to the Seizure, First Non-Febrile Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

Approval Process

- The clinical pathway was reviewed and approved by the Seizure, First Non-Febrile Clinical Pathway Committee, Content Expert Departments/Divisions, and the EBP Department; after which it was approved by the Medical Executive Committee.

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- Clinical pathways are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

Review Requested

Department/Unit	Date Obtained
Neurology	January 2024
Urgent Care	January 2024
Hospital Medicine	January 2024
Emergency Medicine	January 2024
Clinical Pharmacy	January 2024
Clinical Practice and Quality	January 2024
Infectious Diseases	November 2023
Evidence Based Practice	January 2024

Version History

Date	Comments
June 2016	Version one – (developed clinical pathway algorithm and power plan)
February 2024	Version two – (revised clinical pathway algorithm, associated EDP power plan, and associated Seizure Precautions (Pediatric) Clinical Skills – Patient Care Policy; developed Discharge Seizure Rescue Medications power plan, clinical pathway synopsis, discharge instructional handout, and provider education for first non-febrile seizure [video resource])

Date for Next Review

- February 2027

Implementation & Follow-Up

- Once approved, the pathway was presented to appropriate care teams and implemented. Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur
- Education tools were reviewed for health literacy
- Order sets/power plans consistent with recommendations were created or updated for each care setting
- The associated policy was updated. This details the seizure precautions clinical skills process for nursing staff This policy will be submitted to the Nursing Practice Council Patient Care Policy Committee for approval
- Education was provided to all stakeholders:
  Department of Emergency Medicine, Neurology, Urgent Care, and Hospital Medicine
- Additional institution-wide announcements were made via email, hospital website, and relevant huddles
- Metrics will be assessed and shared with appropriate care teams to determine if changes need to occur

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the power plan(s) that accompany the clinical pathway.

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