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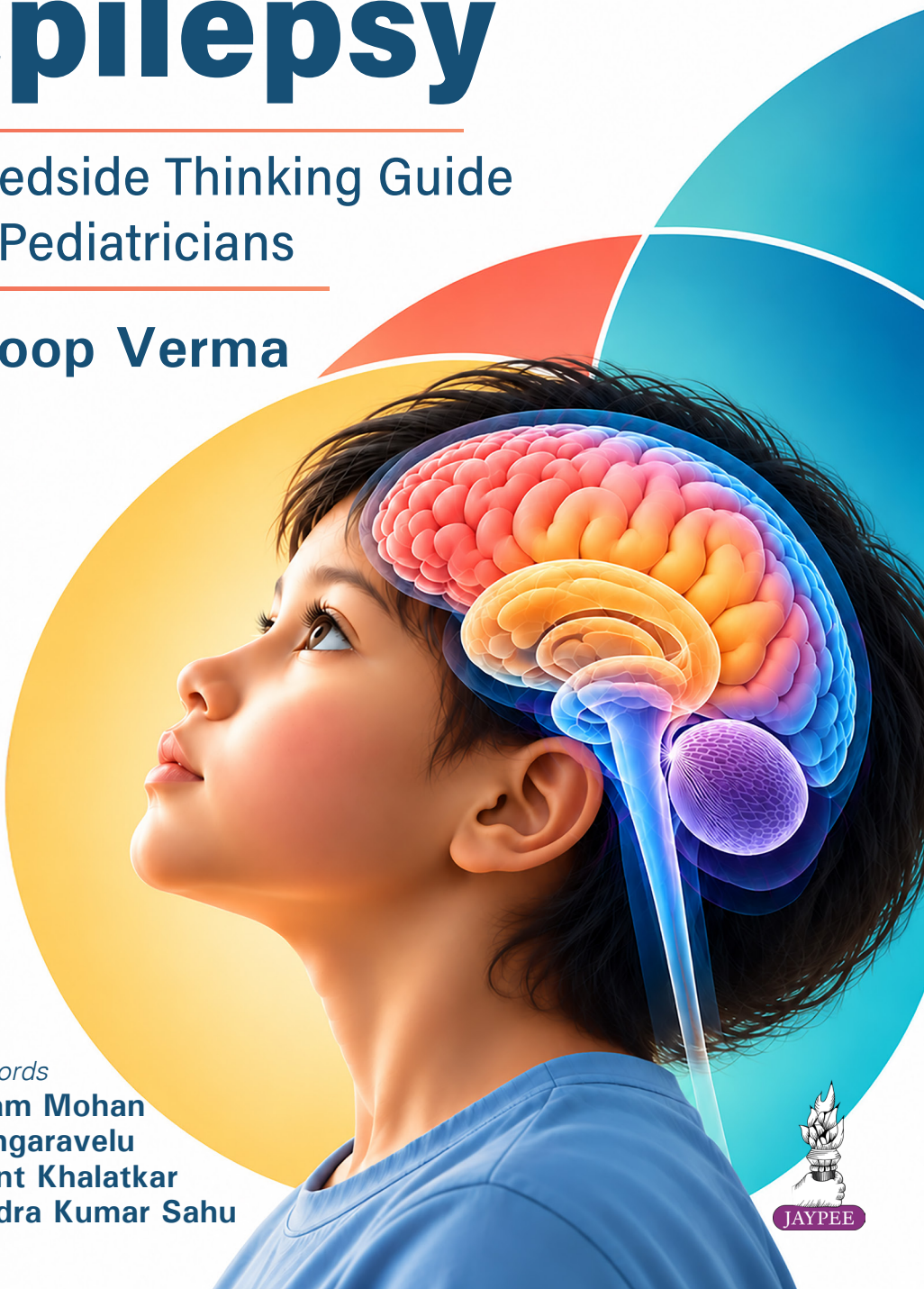
Practical Pediatric Epilepsy

A Bedside Thinking Guide for Pediatricians

Anoop Verma



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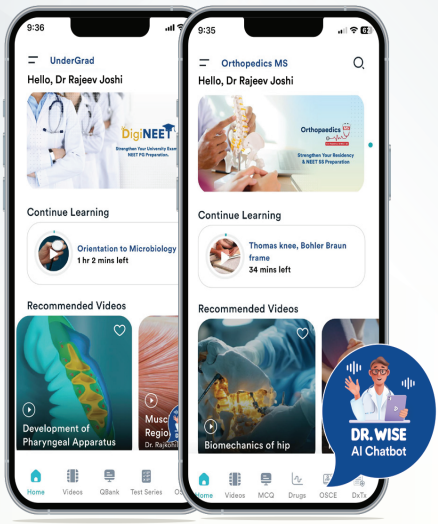

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A Bedside Thinking Guide for Pediatricians

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Forewords

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Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians

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Foreword



It gives me immense pleasure to write the foreword to *Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians* by Dr Anoop Verma. It is also a privilege that I value deeply, because this book represents much more than the compilation of scientific information—it reflects decades of clinical observation, teaching, experience and, above all, a genuine passion for making pediatric neurology understandable and relevant to the practicing pediatrician.

I have known Dr Anoop Verma not merely through his professional accomplishments, but through the academic spirit that he has consistently brought to the Indian Academy of Pediatrics (IAP). Many of us have looked forward to his regular case-based communications—often a brief clinical vignette, an interesting image or a video, followed by a question that makes one pause, think and revisit an important clinical lesson. In an era in which we are surrounded by enormous volumes of information, his approach has remained refreshingly simple: teach through the patient, stimulate curiosity, and make learning memorable.

Epilepsy is among the most important neurological disorders encountered in childhood, yet its management can be challenging for the general pediatrician. The first challenge often begins even before treatment: Was the event truly a seizure? If so, what type of seizure was it? Does the child have epilepsy? What is the underlying etiology? When is an EEG useful? When is neuroimaging required? Which child can be managed by the pediatrician, and which child needs early referral to a pediatric neurologist?

Modern pediatric epilepsy has witnessed tremendous advances in electroencephalography, neuroimaging, genetics, syndrome recognition and classification. Yet technology can never substitute for sound clinical judgment. One of the strengths of this book is precisely this emphasis. Dr Verma reminds the reader that classification should facilitate clinical thinking rather than become an end in itself. He addresses several common pitfalls of everyday practice—prematurely labeling a child as having epilepsy, treating an abnormal EEG rather than the child, overlooking focal onset, failing to recognize age-specific manifestations, continuing antiseizure medication without periodic reassessment, or delaying referral in drug-resistant epilepsy.

This is what makes the book particularly relevant to the pediatrician. It does not seek to transform every pediatrician into a pediatric neurologist.

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Rather, it seeks to make every pediatrician more confident, thoughtful and systematic when faced with a child with a possible seizure.

I particularly appreciate the emphasis on the clinical context and on learning from real-life situations. The "*Clinical Pitfalls and Practice Pearls*" at the end of the chapters are an excellent educational concept. The organization of the book also reflects its practical intent. It can therefore serve several purposes: a ready reference in the outpatient clinic, a bedside companion during ward rounds, a teaching resource for postgraduate students and workshops, and even a means for experienced clinicians to reassess some of their established practices.

Perhaps what I admire most about Dr Anoop Verma is the humility with which he has pursued his academic journey. Working from Raipur, Chhattisgarh, through sheer interest, perseverance and passion for clinical neurology, he has demonstrated that meaningful academic contribution is not defined by geography or institutional boundaries. What matters is curiosity, disciplined observation, willingness to share and an enduring commitment to one's patients and colleagues and I sincerely applaud Dr Anoop Verma for the enormous effort, discipline and dedication that must have gone into bringing together his clinical experience and educational insights in this form.

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Foreword



Epilepsy is among the most common neurological disorders encountered in childhood, yet its management often presents difficult questions to the practicing pediatrician. Is the event truly a seizure? How should it be classified? When is an EEG necessary? Which child requires neuroimaging? When should anti-seizure medication be initiated, and when is referral warranted? The answers require not only knowledge but also sound clinical judgment.

Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians has been conceived with precisely this clinical need in mind. Rather than overwhelming the reader with theoretical detail, the book attempts to translate contemporary concepts in childhood epilepsy into a practical approach applicable to the outpatient clinic, emergency room, and bedside.

He brings to this work more than three decades of experience in pediatrics and a long-standing special interest in pediatric neurology. His involvement in teaching and academic activities in pediatric neurology is reflected throughout the book in its emphasis on observation, clinical reasoning, and avoidance of common diagnostic and therapeutic pitfalls.

A particular strength of this book is its pediatrician-centered approach. Importantly, the book reminds us that successful epilepsy care extends beyond achieving seizure freedom. The child's development, cognition, behavior, schooling, family concerns, treatment burden, and quality of life deserve equal attention. Equally important is knowing when a child can be managed by the pediatrician and when timely referral to a specialist epilepsy service is necessary.

I believe this book will serve as a useful companion for practicing pediatricians, postgraduate students, teachers, and clinicians with an interest in childhood epilepsy. It has the potential to help bridge the distance between evolving epilepsy science and everyday pediatric practice.

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I congratulate Dr Anoop Verma on bringing together his clinical experience and teaching into this practical volume and wish *Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians* every success. I hope it will encourage its readers not merely to recognize and treat seizures, but to understand the child behind the seizure.

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Foreword



A seizure in a child is an alarming event for every family and often a challenging clinical situation for the pediatrician. The first questions are simple but crucial: Was it truly a seizure? Does this child have epilepsy? What should be investigated, when should treatment begin, and when should the child be referred?

Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians addresses these questions with a refreshingly practical approach.

Drawing upon more than three decades of clinical experience and his long-standing interest in pediatric neurology, Dr Anoop Verma has attempted to translate the rapidly evolving science of childhood epilepsy into clear bedside decision-making. The emphasis throughout is not merely on classification and treatment, but on clinical observation, rational investigation, appropriate therapy, recognition of red flags, and avoidance of common pitfalls.

I particularly appreciate the book's focus on the pediatrician as the first point of contact. Its algorithms, clinical pearls, practical tables, emergency guidance, and parent-counseling messages should make it a useful companion in everyday practice.

Importantly, the book reminds us that epilepsy care extends beyond seizure control. The child's development, cognition, schooling, emotional well-being, and the concerns of the family deserve equal attention.

I congratulate Dr Anoop Verma for bringing together his clinical experience and teaching into this practical resource. I am confident that pediatricians, postgraduate students, and young clinicians will find it useful in approaching childhood epilepsy with greater clarity and confidence.

"Treat the seizure with science, but care for the child with understanding."

I wish the author and this book every success.

Vasant Khalatkar
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National President
Indian Academy of Pediatrics (2025)

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Foreword



It gives me great pleasure to write the foreword for *Practical Pediatric Epilepsy: A Bedside Thinking Guide for Pediatricians* by Dr Anoop Verma.

Epilepsy is among the most common chronic neurological conditions of childhood, and in India the large majority of children with seizures is first seen, and often followed for years, by general pediatricians rather than pediatric neurologists. The quality of their care therefore depends, to a very large extent, on the clinical reasoning of the pediatrician in the outpatient clinic, the emergency room, and the ward. It is this reality that makes Dr Verma's book both timely and necessary.

The past decade has brought remarkable progress in our field. The ILAE 2017 classification and the subsequent syndrome definitions, wider access to EEG and MRI, and the rapid expansion of genetic testing have reshaped how we understand epilepsy in children. Yet these advances have also widened a gap that many of us observe in daily practice: The gap between knowing a framework and applying it wisely to the individual child. Dr Verma addresses this gap directly. His book does not seek to replace the ILAE classification; it translates it into bedside reasoning, reminding the reader that classification should inform decisions, not dictate them.

What distinguishes this book is its honesty about the thinking traps that lead care astray: Labeling epilepsy too early, treating the EEG rather than the child, missing focal onset in dramatic seizures, overlooking age-specific seizure expressions, continuing medications without reassessment, and delaying referral in drug-resistant epilepsy. These are not failures of knowledge but of reasoning, and they occur among experienced clinicians as often as among trainees. By closing each chapter with an authentic case under "*Clinical Pitfalls and Practice Pearls*," Dr Anoop Verma turns these errors into durable lessons, presented with the humility of a clinician who has learned from his own practice.

The book is equally attentive to what lies beyond seizure control. Its emphasis on development, behavior, quality of life, emergency management, timely referral, and parent counseling reflects a mature understanding that pediatric epilepsy care is ultimately about protecting a developing brain and supporting families through uncertainty.

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I am confident that this book will serve as a valuable companion for practicing pediatricians, postgraduate students, and all who care for children with epilepsy. I congratulate Dr Verma on this thoughtful contribution and commend it warmly to its readers, with the hope that it helps each of us pause before labeling, listen before prescribing, and think before escalating treatment.

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Preface

Epilepsy in children is not merely a disorder of recurrent seizures; it is a condition that unfolds at the intersection of brain development, behavior, cognition, family dynamics, and long-term life trajectory. While advances in electroencephalography, neuroimaging, genetics, and classification systems have transformed our understanding of epilepsy, the most decisive factor in pediatric epilepsy care remains unchanged: Clear clinical thinking at the bedside.

This book was written to bridge a widening gap seen in daily practice—the gap between classification and care, between guidelines and judgment, and between investigations and interpretation.

Over the years, the International League Against Epilepsy (ILAE) has provided increasingly refined frameworks for seizure classification, epilepsy types, syndromes, and etiologies. The ILAE 2017 classification, in particular, marked an important shift—encouraging clinicians to think beyond seizure labels and toward etiology, syndrome recognition, and developmental context. However, many practicing pediatricians struggle not with knowing the classification, but with using it meaningfully in real-world practice.

This book does not attempt to replace the ILAE classification. Instead, it aims to translate it into practical clinical reasoning—showing how classification should inform decisions, not dominate them.

A recurring theme throughout this book is simple but vital:
"Classification should guide thinking, not replace it".

Why this Book was written?

In routine pediatric practice, many long-term problems in epilepsy care do not arise from lack of resources or medications, but from *early conceptual errors*:

- Labeling epilepsy too soon
- Treating EEG abnormalities instead of children
- Missing focal onset because seizures look dramatic
- Ignoring age-specific seizure expressions
- Continuing medications endlessly without reassessment
- Delaying referral in drug-resistant epilepsy
- Focusing on seizure counts while overlooking development, behavior, and quality of life

These are not errors of negligence—they are thinking traps that even experienced clinicians can fall into.

This book is an attempt to make those thinking traps visible.

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The Role of "*Clinical Pitfalls and Practice Pearls*"

A distinctive feature of this book is the inclusion of one carefully chosen, authentic clinical case at the end of every chapter, presented under the heading:

Clinical Pitfalls and Practice Pearls

These cases are not meant to expose mistakes, but to illuminate learning. Each case reflects a situation that "could have happened to any of us"—where good intentions, incomplete information, or cognitive bias led care astray.

Each case concludes with a *Practice Pearl*—a concise, memorable clinical truth intended to stay with the reader long after the chapter is closed.

"Experience is not what happens to us, but what we learn from what happens to us".

Use of Quotes and Adages

Medicine is both science and wisdom. Throughout the book, *short quotes and adages* are used not as decoration, but as anchors for thinking—to slow the reader down, provoke reflection, and reinforce enduring principles.

These are deliberately placed:

- At the end of chapters
- Alongside Clinical Pitfalls
- At conceptual turning points

Their purpose is not to impress, but to clarify and humanize clinical decision-making.

How to Use this Book?

This book is not designed to be read only from cover to cover. It is meant to function as:

- A *thinking companion* in outpatient clinics
- A *bedside reference* during ward rounds
- A *teaching aid* for workshops and postgraduate training
- A *reflection tool* for experienced clinicians reassessing practice

Suggested approach:

- Part I builds conceptual foundations
- Parts II and III sharpen seizure recognition and classification
- Part IV integrates EEG and neuroimaging into clinical reasoning
- Part V focuses on rational treatment decisions
- Parts VI and VII address complex situations, counseling, and long-term outcomes

What this Book Is—and Is Not?

This book is:

- Practical
- Clinically grounded

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- Syndrome-aware
- Developmentally sensitive
- Aligned with ILAE thinking
- Honest about uncertainty

This book is not:

- An EEG atlas
- A drug compendium
- A purely guideline-driven manual
- A substitute for clinical judgment

A Final Thought

Pediatric epilepsy care is not about suppressing seizures alone. It is about *protecting a developing brain*, *preserving childhood*, and *supporting families through uncertainty*.

If this book helps the reader pause before labeling, listen more carefully before prescribing, and think more clearly before escalating treatment, it will have served its purpose.

"In pediatric epilepsy, the most powerful tool is not the EEG, the MRI, or the drug—it is thoughtful clinical reasoning."

Anoop Verma

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Acknowledgments

A book may carry one author's name on its cover, but it is rarely the work of one person alone. *Practical Pediatric Epilepsy* has grown from years of clinical experience, teaching, discussion, encouragement, and, above all, the generosity of colleagues, friends, and family who gave me their time, wisdom, and support. It is my privilege to acknowledge them with gratitude.

I express my profound gratitude to Dr Neelam Mohan, National President, Indian Academy of Pediatrics (IAP) 2026; Dr M Singaravelu, National President, IAP 2027; and Dr Vasant Khalatkar, National President, IAP 2025, for their generous encouragement, blessings, and appreciation of this academic endeavor through their gracious forewords. Their words have added both distinction and inspiration to this book.

I remain deeply grateful to Dr Jitendra Kumar Sahu, National Chair 2026, Academy of Pediatric Neurology (AOPN), whose academic support has always been readily available whenever sought. His encouragement has been a valuable strength during the development of this work.

My sincere thanks to Dr Sanjeev Joshi, Past National Chairperson, AOPN, and State President, IAP Maharashtra 2026, for his whole-hearted support, guidance, and encouragement throughout this journey.

I owe special thanks to Dr Lokesh Lingappa, Past National Chair, AOPN, President, AOCN 2026, for generously reviewing the academic content and providing valuable corrections, suggestions, and guidance. His critical inputs have helped strengthen the scientific quality and clinical relevance of the book.

My sincere appreciation goes to Dr Vinit Wankhede, Secretary General, AOPN 2025–2026, for his thoughtful feedback and valuable inputs. I also gratefully acknowledge all members of the Executive Board of AOPN 2026 for their constant encouragement and support. The academic fraternity of AOPN has remained an important part of my professional journey in pediatric neurology.

To my Family:

No academic work of this magnitude is possible without the quiet sacrifices of one's family.

My heartfelt thanks go to my son, Dr. Shantanu Verma, Pediatrician and Neonatologist, who willingly took additional responsibilities upon himself and gave me something more precious than assistance—the uninterrupted time and peace of mind to think, read, write, and complete this project.

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To my wife, Rashmi Verma, I owe a gratitude that is difficult to express adequately in words. Her patience, understanding, encouragement, and unwavering companionship have sustained me not only through the writing of this book but also throughout my professional journey. She accepted without complaint the many hours that this manuscript borrowed from our personal time and quietly ensured that I could pursue this academic endeavor with a peaceful mind. Her contribution is not written on these pages, but it is present behind every one of them.

Special thanks to Dr Soumya Saxena, Nephrologist, my daughter in law, for her silent support, feedback and interest shown.

To my Publishers:

I extend my sincere appreciation to the team at M/s Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India, particularly Shri Jitendar P Vij (Managing Director); Mr. Sabyasachi Hazra (Director—PG and PNR Content); Ms Aarti Kushwah (Development Editor); and Ms Nikita Chauhan (Publishing Manager), for their timely response, professional guidance, and support at every stage of transforming a manuscript into a book. Their accessibility and willingness to help have made the publication journey reassuring and rewarding.

Finally, I acknowledge my teachers, colleagues, students, patients, and their families. Every child with a seizure has taught me something that no textbook could; every anxious parent has reminded me that knowledge becomes meaningful only when it can be explained with clarity and compassion. Much of what I have attempted to share in this book has been learnt at their bedside.

To everyone who questioned, corrected, encouraged, supported, or simply gave me the time and space to write—this book carries a little of each of you.

And perhaps the entire journey of this book can be expressed in one thought: "Knowledge may begin with one mind, but it becomes wisdom through many hands—and finds its true purpose only when it helps a child."

Anoop Verma

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Contents

PART I: Foundations of Pediatric Epilepsy

1. What is Epilepsy in Children? 3
2. Acute Symptomatic Seizures versus Epilepsy 8

PART II: Clinical Approach and Seizure Semiology

3. First Encounter with a Child with Seizures 17
4. Seizure Semiology: See Before You Label 22
5. Age-specific Seizure Patterns 27

PART III: Etiology and Classification of Epilepsy

6. Making ILAE Classification Work at the Bedside 33
7. Etiology and Classification of Epilepsy in Children 37

PART IV: Seizure Types and Electroclinical Syndromes

8. Focal Seizures in Children 47
9. Generalized Seizures 51
10. Childhood Epilepsy Syndromes: Recognizing the Pattern 56
11. Seizure Mimics in Children: The Great Imitators 62

PART V: Electroencephalography and Neuroimaging in Practice

12. Electroencephalography: How to Use it Wisely? 71
13. Common Electroencephalogram Patterns Every Pediatrician Must Know 75
14. Neuroimaging in Epilepsy 80
15. Electroencephalogram and Neuroimaging Together: A Practical Integrative Approach *(Making Tests Serve Clinical Judgment)* 85

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PART VI: Management of Pediatric Epilepsy

16. Principles of Antiseizure Medication Use 93
17. Commonly Used Antiseizure Medications in Children 97
18. Treatment According to Epilepsy Syndrome 108
19. Drug-resistant Epilepsy 114

PART VII: Special and High-risk Situations

20. Epilepsy in Neonates and Infants 123
21. Epilepsy with Developmental Delay 129
22. Epilepsy and Behavior/Cognition 136
23. Epilepsy in Adolescents 143
24. Status Epilepticus: Practical Protocols 149

PART VIII: Counseling, Prognosis and Long-term Care

25. Counseling Parents and Families 157
26. When and How to Stop Antiseizure Medications 164
27. Quality of Life in Pediatric Epilepsy 169

Epilogue 177

Appendices: Tools for the Clinic, OPD, and Emergency Room 179

Bibliography (Textbook-based, Chapter-wise) 187

Index 193

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CHAPTER 6

Making ILAE Classification Work at the Bedside

INTRODUCTION

Classification of epilepsy is not merely an academic exercise; it is a clinical tool that helps the pediatrician understand the nature of seizures, select appropriate investigations, choose antiseizure medications, anticipate prognosis, and counsel families.

The International League Against Epilepsy (ILAE) introduced a structured framework in 2017 for classifying seizures and epilepsies. Although scientifically comprehensive, its terminology and multiple diagnostic levels may appear complex to pediatricians working in busy outpatient departments and emergency settings.

In everyday practice, the challenge is not simply to assign a diagnostic label, but to translate classification into meaningful decisions. Is the seizure focal or generalized? Does the child have a recognizable epilepsy syndrome? What is the likely underlying cause? Will the classification influence treatment or referral?

This chapter simplifies the ILAE 2017 framework into five practical bedside steps, beginning with careful clinical observation and progressing through seizure classification, epilepsy type, syndrome recognition, etiological assessment, and periodic reclassification.

The objective is not to complete every level of classification at the first visit, but to achieve the most accurate and clinically useful diagnosis possible with the available information.

Clinical Pearl
Classification should clarify clinical decisions, not complicate them.

PRACTICAL USE OF ILAE 2017 CLASSIFICATION IN PEDIATRIC PRACTICE

From Terminology to Bedside Decision-Making

WHY PEDIATRICIANS FIND ILAE CLASSIFICATION DIFFICULT

The International League Against Epilepsy (ILAE) 2017 classification is scientifically robust, but in daily pediatric practice, it often feels:

- Too theoretical
- Too layered
- Disconnected from immediate decisions

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The common questions pediatricians ask are:

- "How do I actually classify this child?"
- "Do I need an electroencephalogram (EEG) first or a clinical diagnosis first?"
- "Will this classification change my treatment?"

This section simplifies ILAE 2017 into a *stepwise, clinically usable approach*.

ILAE CLASSIFICATION IN ONE LINE

ILAE classification asks three sequential questions:

1. What type of seizure is this?
2. What type of epilepsy does the child have?
3. What is the likely etiology?

You do *not* need to answer all three at the first visit.

Step 1—Classify the Seizure Type (Clinical First)

Ask: "What Happened During the Event?"

Use *semiology only*—not EEG.

Broad seizure types (ILAE):

- Focal onset
- Generalized onset
- Unknown onset

Practical outpatient department (OPD) rule:

- Asymmetry → *Focal*
- Sudden bilateral involvement → *Generalized*
- Poor description → *Unknown (temporary label)*

Never delay classification waiting for EEG.

Step 2—Identify the Epilepsy Type (Pattern Recognition)

After ≥2 unprovoked seizures, ask:
"Do these seizures follow a pattern?"

Epilepsy types:

- Focal epilepsy
- Generalized epilepsy
- Combined generalized and focal epilepsy
- Unknown epilepsy

Pediatric shortcut:

- Multiple seizure types + abnormal EEG → think *combined*
- Typical absences → *generalized*
- Recurrent similar focal events → *focal*

Epilepsy type guides antiseizure medication (ASM) choice.

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Step 3—Think in Terms of Syndrome (When Possible)

Now ask:
"Does this look like a known childhood epilepsy syndrome?"
You do NOT need a syndrome diagnosis in every child.

When syndrome recognition is essential:
- Infantile onset
- Developmental regression
- Multiple seizure types
- Characteristic EEG pattern

When syndrome recognition is optional:
- Single focal seizure type
- Normal development
- Good treatment response

Syndrome recognition refines prognosis and duration of treatment.

Step 4—Assign Etiology (can be more than one)

ILAE etiologies:
- Genetic
- Structural
- Metabolic
- Infectious
- Immune
- Unknown

Practical pediatric approach:
- Normal magnetic resonance imaging (MRI) + typical pattern → *Genetic*
- Focal seizures + lesion → *Structural*
- Regression + early onset → *Metabolic/genetic*
- Post-central nervous system (CNS) infection → *Infectious*

Etiology explains "why," not just "what."

Step 5—Revisit and Reclassify Over Time

ILAE classification is *dynamic*, not fixed.

Reclassify when:
- New seizure type appears
- EEG pattern evolves
- Development changes
- Drug resistance emerges

A child's epilepsy classification may mature as the brain matures.

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HOW ILAE CLASSIFICATION DIRECTLY CHANGES PRACTICE

Drug Selection

- Generalized epilepsy → avoid carbamazepine
- Focal epilepsy → carbamazepine/oxcarbazepine reasonable
- Encephalopathy → consider non-ASM therapies

Investigations

- Focal epilepsy → MRI
- Developmental regression → EEG + metabolic/genetic workup
- Typical absence → MRI often unnecessary

Counseling

- Self-limited syndromes → reassurance
- Genetic generalized epilepsies → long-term planning
- Encephalopathies → realistic expectations

COMMON MISUSES OF ILAE CLASSIFICATION (WHAT NOT TO DO)

- ☒ Classify based on EEG alone
- ☒ Use "generalized epilepsy" for all generalized tonic–clonic seizure (GTCS)
- ☒ Label epilepsy after first seizure
- ☒ Ignore age-specific patterns
- ☒ Treat classification as permanent

A SIMPLE BEDSIDE FLOW (FOR OPD WALL)

- Describe the seizure.
- Decide focal versus generalized.
- Look for age-specific pattern.
- Use EEG to support, not dictate.
- Choose ASM accordingly.
- Reassess over time.

COUNSELING LINE THAT WORKS

"This classification helps us choose the safest and most effective treatment today—and we may refine it as your child grows".

TAKE-HOME MESSAGES

- ILAE classification is a *tool*, not a test.
- Clinical observation comes before EEG.
- You do not need to "finish" classification at the first visit.
- Classification should change management.
- Reclassification is a sign of good care, not failure.

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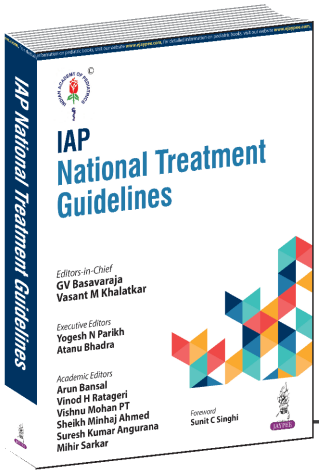

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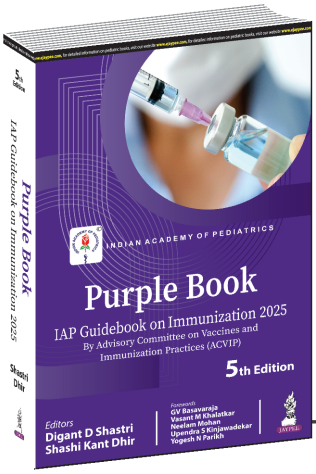

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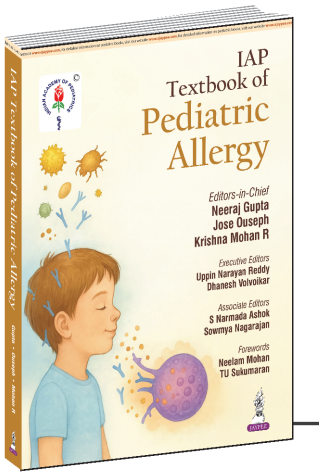

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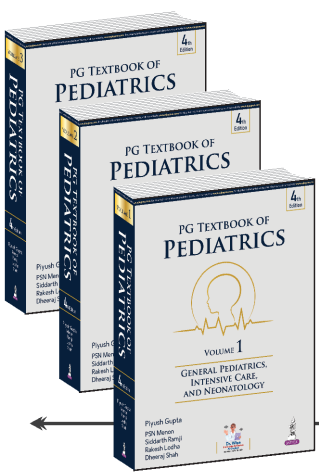

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Anoop Verma MD FIAP FIAMS FCGP FAOPN, currently associated with Swapnil Children Nursing Home, Raipur, Chhattisgarh, India, is a Consulting Pediatrician with over 38 years of clinical experience and a special interest in pediatric neurology, particularly childhood epilepsy. He served as National Chair of the Association of Pediatric Neurology (AOPN) from 2008 to 2012 and presently serves as its National Coordinator of AOPN. He was instrumental in initiating the AOPN Fellowship Programme in India in 2013 and was conferred the Honorary Fellowship of AOPN by the then Union Health Minister Dr Harsh Vardhan at its National Conference in New Delhi.

He is a recipient of the prestigious Professor PAM Kunju Oration at National Neuro-PEDICON, Guwahati, Assam (2025). An accomplished Author and Editor, he served as an Editor-in-Chief of both editions of the *IAP Textbook of Pediatric Neurology*, authored *Spotters in Pediatrics*, and was an Editor-in-Chief of the *PAI Textbook of Pediatrics*. His teaching emphasizes practical, bedside-oriented pediatric neurology. An active Teacher and Academician, he has been involved in numerous national and state conferences, teaching programs, workshops, and professional educational initiatives. His teaching has consistently sought to make *pediatric neurology practical*, understandable, and applicable at the bedside, particularly for the practicing pediatrician.

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