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INTERPRETATION**

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Case Studies in POLYSOMNOGRAPHY INTERPRETATION

Edited by

Robert C. Basner MD

Pulmonary, Critical Care, and Allergy Division,
Columbia University College of Physicians and Surgeons,
New York, USA



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CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press

The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by
Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9781107015395

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First published 2012

Printed and Bound in the United Kingdom by the MPG Books Group

A catalogue record for this publication is available from the British Library

Library of Congress Cataloging-in-Publication Data

Case studies in polysomnography interpretation / [edited by] Robert C. Basner.
p. cm.
ISBN 978-1-107-01539-5 (Hardback)
1. Sleep disorders—Case studies. 2. Polysomnography—Case studies.
I. Basner, Robert C.
RC547.C3738 2012
616.8'498—dc23

2012020404

ISBN 978-1-107-01539-5 Hardback

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histories are drawn from actual cases, every effort has been made to disguise the identities of the
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Contributors

Robert C. Basner MD (cases 1–14)
Professor of Clinical Medicine in the Division of Pulmonary, Allergy, and Critical Care Medicine, Columbia University College of Physicians and Surgeons and Director of the Cardiopulmonary Sleep and Ventilatory Disorders Center, Columbia University Medical Center, New York, USA

Carl Bazil MD PhD (cases 15–19)
Professor of Clinical Neurology and Director of the Division of Epilepsy and Sleep, Columbia University College of Physicians and Surgeons, New York, USA

Lee J. Brooks MD (cases 28 and 29)
Professor of Pediatrics, University of Pennsylvania and Attending Physician at the Sleep Center of the Division of Pulmonary Medicine, The Children’s Hospital of Philadelphia, Philadelphia, PA, USA

Sean M. Caples DO (cases 20–22)
Consultant, Center for Sleep Medicine, Division of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, MN, USA

Kelly A. Carden MD (cases 23–27)
Center for Sleep, Sleep Medicine of Middle Tennessee, and Saint Thomas Health, Nashville, TN, USA

Ronald D. Chervin MD MS (cases 47 and 48)
Professor of Neurology, the Michael S. Aldrich Collegiate Professor of Sleep Medicine, and Director of the University of Michigan Sleep Disorders Center, Ann Arbor, MI, USA

Christopher Cielo DO (cases 28–31)
Fellow, Sleep Medicine and Pulmonology, Division of Pulmonary Medicine, The Children’s Hospital of Philadelphia, Philadelphia, PA, USA

David G. Davila MD (case 32)
Baptist Health – Medical Center, Sleep Center Little Rock, AR, USA

Katherine A. Dudley MD (cases 33–36)
Sleep Disorders Center, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA

Judy Fetterolf RPSGT REEGT (cases 102–104)
University of Michigan Health System Sleep Disorders Center, Ann Arbor, MI, USA

W. Ward Flemons MD FRCPC (cases 92 and 93)
Professor of Medicine, University of Calgary, Alberta, Canada

Neil Freedman MD (cases 37–46)
Division of Pulmonary and Critical Care Medicine, Department of Medicine, NorthShore University HealthSystem, Evanston, IL, USA

Christian Guilleminault MD DBiol. (cases 105–107)
Stanford Sleep Medicine Division, Department of Psychiatry, Stanford University School of Medicine, Redwood City, CA, USA

Fauziya Hassan MD (cases 47 and 48)
Clinical Lecturer, University of Michigan, Ann Arbor, MI, USA

Shelley Hershner MD (cases 49 and 50)
Assistant Professor of Neurology, University of Michigan, Ann Arbor, MI, USA

David M. Hiestand MD PhD (cases 51–54)
Assistant Professor of Medicine and Director of the University of Louisville Sleep Disorders Center, University of Louisville, Louisville, KY, USA

Mithri Junna MD (cases 55 and 56)
Instructor in Neurology, Center for Sleep Medicine, Departments of Neurology and Internal Medicine, Mayo Clinic, Rochester, MN, USA

Kristen Kelly-Pieper MD (case 57)
Assistant Professor of Clinical Pediatrics, Division of Pediatric Pulmonology, Columbia University College of Physicians and Surgeons, New York, USA

Douglas Kirsch MD (cases 58 and 59)
Clinical Instructor, Harvard Medical School and Regional Medical Director of the Sleep Health Centers, Brighton, MA, USA

Brian B. Koo MD (cases 60 and 61)
Department of Neurology, Case Western Reserve University School of Medicine, Cleveland, OH, USA

Carin Lamm MD (case 57)
Associate Clinical Professor of Pediatrics, Division of Pediatric Pulmonology, Director, Pediatric Sleep Disorders Center, Columbia University College of Physicians and Surgeons, New York, USA

- Raman Malhotra MD (cases 62–65)**
Co-Director, SLU Care Sleep Disorders Center, Sleep Medicine Fellowship Director, and Assistant Professor of Neurology, Saint Louis University School of Medicine, St. Louis, MO, USA
- Meghna P. Mansukhani MBBS (case 66)**
Center for Sleep Medicine, Mayo Clinic, Rochester, MN, USA
- Carole L. Marcus MBBCh (cases 30 and 31)**
Professor of Pediatrics, University of Pennsylvania and Director of the Sleep Center, The Children’s Hospital of Philadelphia, Philadelphia, PA, USA
- B. Marshall RPSGT (case 32)**
Baptist Health – Medical Center, Sleep Center Little Rock, AR, USA
- Jean K. Matheson MD (cases 33, 67, and 68)**
Associate Professor of Neurology, Division Head, Sleep Medicine, Department of Neurology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA
- Timothy I. Morgenthaler MD (cases 55, 56, 66, and 86)**
Associate Professor of Medicine, Center for Sleep Medicine, Mayo Clinic, Rochester, MN, USA
- Gökhan M. Mutlu MD (cases 69–77)**
Associate Professor of Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL, USA
- Irina Ok MD (cases 78–84)**
City University of New York (CUNY), New York, USA
- Vidya Pai MD (case 85)**
Fellow in Sleep Medicine, Center for Pediatric Sleep Disorders, Children’s Hospital, Boston, MA, USA
- Winnie C. Pao MD (case 86)**
Center for Sleep Medicine, Mayo Clinic, Rochester, MN, USA
- Sairam Parthasarathy MD (cases 87–91)**
Associate Professor of Medicine, Director, Center for Sleep Disorders, University of Arizona, Tucson, AZ, USA
- Shalini Paruthi MD (cases 62–65)**
Clinical Assistant Professor of Pediatrics and Internal Medicine, Saint Louis University School of Medicine and Director of the Pediatric Sleep and Research Center, St. Louis, MO, USA
- Nimesh Patel DO (cases 87–91)**
Fellow in Pulmonary and Critical Care Medicine, University of Arizona, Tucson, AZ, USA

- Sachin R. Pendharkar MD MSc FRCPC (cases 92 and 93)**
Assistant Professor of Medicine, University of Calgary, Calgary, Canada
- Ravi K. Persaud MPH (cases 1–14)**
Chief Technologist, Cardiopulmonary Sleep and Ventilatory Disorders Center, Columbia University Medical Center, New York, USA
- Bharati Prasad MD (case 94)**
Assistant Professor of Medicine, University of Illinois at Chicago, Chicago, IL, USA
- Stuart F. Quan MD (cases 95 and 96)**
Gerald E. McGinnis Professor of Sleep Medicine, Division of Sleep Medicine, Harvard Medical School, Boston, MA, USA
- Satish C. Rao MD MS (case 51)**
Medical Director of Neurosciences Services, Floyd Memorial Hospital, New Albany, IN, USA
- Patti Reed RPSGT (case 32)**
Baptist Health – Medical Center, Sleep Center Little Rock, AR, USA
- Alcibiades Rodriguez MD FAASM (cases 78–84)**
Medical Director, New York Sleep Institute, Divisional Director of Sleep Disorders, Department of Neurology, Assistant Professor of Neurology, NYU School of Medicine, New York, USA
- Dennis Rosen MD (cases 85, 97, and 98)**
Assistant Professor of Pediatrics, Harvard Medical School and Associate Medical Director of the Center for Pediatric Sleep Disorders, Children’s Hospital, Boston, MA, USA
- Vijay Seelall MD (cases 99 and 100)**
Director of Sleep Medicine, Beth Israel Medical Center, Assistant Professor, Albert Einstein College of Medicine, New York, NY, USA
- Anita Valanju Shelgikar MD (case 101)**
Clinical Instructor of Neurology, Program Director, and Sleep Medicine Fellow, University of Michigan, Ann Arbor, MI, USA
- Jeffrey J. Stanley MD (cases 102–104)**
Assistant Professor, University of Michigan Health System, Ann Arbor, MI, USA
- Kingman Strohl MD (cases 60, 61, and 111)**
Department of Neurology, Case Western Reserve University School of Medicine, Cleveland, OH, USA

Cambridge University Press
978-1-107-01539-5 - Case Studies in: Polysomnography Interpretation
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List of contributors

Shannon S. Sullivan MD (cases 105–107)
Stanford Sleep Medicine Division, Department of Psychiatry,
Stanford University School of Medicine, Redwood City, CA, USA

Kevin A. Thomas RPSGT (cases 52–54)
Technical Director, Pediatric Sleep Laboratory,
University of Louisville, Louisville, KY, USA

Robert Thomas MD MMedSc (cases 34–36)
Assistant Professor of Medicine, Harvard Medical School,
Beth Israel Deaconess Medical Center, Boston, MA, USA

John R. Wheatley MB BS(Hons) PhD FRACP (cases 108–110)
Professor of Medicine, University of Sydney and Director of
Respiratory and Sleep Medicine, Westmead Hospital,
Sydney, Australia

Lisa Wolfe MD (cases 69–77)
Division of Pulmonary and Critical Care Medicine,
Northwestern University Feinberg School of Medicine,
Chicago, IL, USA

Peter J.-C. Wu MB BS (Hons) BSc(Med) FRACP (cases 108–110)
Staff Specialist, Department of Respiratory and Sleep
Medicine, Westmead Hospital, Sydney, Australia

Motoo Yamauchi MD (case 111)
Visiting Fellow, UH Case Medical Center, Cleveland,
OH, USA

Preface

This volume began as a series of workshops in polysomnogram interpretation and is intended to afford the reader a unique opportunity to match her/his own expertise and interest in interpreting polysomnograms with national and international expert polysomnographers. The authors, experts in adult and pediatric sleep medicine, offer examples of important polysomnograms and clinical cases directly from their own sleep laboratories: not idealized or touched up, these are the “real life” tracings as they were recorded.

The authors have provided detailed descriptions of their interpretative thought processes as well as relevant references, such that the reader is able to, in a sense, sit with these experts as they work through their own interpretations. By design, many of the incorrect choices the reader is offered look appealing and plausible, and often the precise answer turns on a master point of view rather than any hard and fast “rule.” The authors do not, however, claim that theirs is the only possible interpretation of the tracings and data which appear here: polysomnogram interpretation is an art as well as a science. It is also stressed that the terms “correct” and “incorrect,” which accompany each case in this volume, refer to a specific expert author’s interpretation of the polysomnogram displayed in the clinical setting in which it was created. The reader may well have an explanation that differs from the author’s as presented here, and to the extent that it is a rational and justified interpretation, this volume will have done its job: encouraging expert and refined consideration and analysis of vital aspects of polysomnography.

Because we have stressed the reader’s ability to form her/his own interpretation of the polysomnogram tracing in the context of the case, we have not provided a traditional format of topics and chapters. Rather, we have arranged cases in alphabetical order of the first author and have provided a table of contents with a short title for each case history. In this way, we expect that as the reader works through a specific authors’ cases and polysomnogram examples (arranged in alphabetical order), she/he will come to the cases and polysomnogram examples with the challenge of the interpretation intact, without a prior knowledge regarding whether the case primarily depicts a respiratory, cardiac, neurologic, circadian, or parasomnia disorder, although there will be certain natural clustering of cases from some authors. The reader will also be able to consult the index to pursue a specific type of abnormality if she/he prefers that style of working through these cases.

The reader is encouraged to form her/his own answer prior to checking the authors’ interpretation of correct and incorrect answers, which appear in the second part of the book (pp. 137–206).

The interpretations and clinical suggestions herein are strictly the opinion of the authors; such interpretations may not necessarily apply to a specific patient of the reader’s, and the intent here is expressly not treatment but polysomnogram interpretation, although it is important that the context of the interpretation be fully understood and accounted for.

Further, this volume is not specifically designed as a “board review” of sleep medicine. Nevertheless, it is expected that the reader who is able to work through the correct and incorrect interpretations of the polysomnograms displayed in these cases in a thorough and reasoned fashion will have gone far in attaining important and relevant expertise in all of these aspects of sleep medicine, and should be able to bring enhanced and indeed commanding skills to any examination situation, as well as to the interpretation of polysomnograms in her/his own practice.

I thank each of the authors, who contributed their expertise, time, and devotion to teaching and polysomnographic reasoning to create this volume, and the publishers, particularly Jane Seakins and Nicholas Dunton, whose insight, collaboration, and hard work was invaluable in bringing this text to the form in front of you.

We welcome your comments and suggestions regarding this format and the topics and interpretations herein. Good interpretation, and good health to your patients.

Robert C. Basner, MD
 Columbia University College of Physicians and Surgeons
 New York City, USA

FURTHER READING

American Academy of Sleep Medicine. *International Classification of Sleep Disorders, Diagnostic and Coding Manual*, 2nd edn. Westchester, IL: American Academy of Sleep Medicine, 2005.

Iber C, Ancoli-Israel S, Chesson A for the American Academy of Sleep Medicine. *The AASM Manual for the Scoring of Sleep and Associated Events: Rules, Terminology, and Technical Specifications*. Westchester, IL: American Academy of Sleep Medicine, 2007.

Abbreviations

A1	left mastoid (ear) referential EEG	F4 (F4-M, F4-A)	right frontal referential EEG
A2	right mastoid (ear) referential EEG	FLOW	airflow derived from pressure signal
Abd/Abdo (ABD, ABDO, ABDOMEN, ABDM, Abdm8)	abdominal respiratory inductance plethysmography	Fz-Cz	midline frontal, central EEG
AHI	apnea hypopnea index	HR	heart rate
AASM	American Academy of Sleep Medicine	ICSD	International Classification of Sleep Disorders
AV	atrioventricular	IPAP	inspiratory positive airway pressure
BMI	body mass index	L Leg (LLEG, Lleg)	left pretibial EMG
C2 (C2-M, C2-A)	right central referential EEG	LAT	left anterior tibialis EMG
C3 (C3-M, C3-A)	left central referential EEG	LEOG	left eye referential EOG
C4 (C4-M, C4-A)	right central referential EEG	LOC	left eye referential EOG
CFLOW	airflow derived from pressure signal	MRI	magnetic resonance imaging
CHEST	thoracic respiratory inductance plethysmography	MSLT	multiple sleep latency test
Chest/Abd	thoracic and abdominal respiratory inductance plethysmography	MWT	maintenance of wakefulness test
Chin, CHN	submental EMG	N/O	oronasal thermistor
CO2 wave	end-tidal partial pressure CO2 (ETco2)	NAF	nasal pressure transducer
COPD	chronic obstructive pulmonary disease	Nasal Press (NPress, Nasal P)	nasal pressure transducer
CPAP	continuous positive airway pressure	NPRE	nasal pressure transducer
CPRESS	positive airway pressure signal (positive deflection upwards)	NREM	non-rapid eye movement
Cz-Oz	midline central, occipital EEG	O1 (O1-M, O1-A)	left occipital referential EEG
E1 (E1-M)	left referential EOG	O2 (O2-M, O2-A)	right occipital referential EEG
E2 (E2-M)	right referential EOG	OSA	obstructive sleep apnea
ECG/EKG	electrocardiogram	OSAT	O2 saturation by oximetry (Spo2)
ECGL-ECGR	precordial ECG	Paco2	partial pressure of CO2 arterial
EEG	electroencephalography/electroencephalogram	Pao2	partial pressure of O2 arterial
EMG Tib	right and left leg EMG	PAP flow	airflow derived from pressure signal
EMG	electromyography/electromyogram	PAP	positive airway pressure
EOG	electro-oculography/electro-oculogram	PFlow (PFLOW, PFLO)	nasal air pressure transducer
EPAP	expiratory positive airway pressure	PLM	periodic limb movement
ETco2	end-tidal partial pressure CO2	PSG	polysomnography/polysomnogram
F3 (F3-M, F3-A)	left frontal referential EEG	PTAF	nasal pressure transducer
		Pulse	pulse rate from pulse oximetry
		R Leg (RLEG, Rleg)	right pretibial EMG
		RAT	right anterior tibialis EMG
		RBD	REM sleep behavior disorder
		REM	rapid eye movement
		RERA	respiratory effort-related arousal
		REOG	right eye referential EOG
		ROC	right eye referential EOG
		RLS	restless leg syndrome

List of abbreviations

Snore (SNORE, Snore5, PSnore, SNOR)	snoring channel	TCCo ₂	transcutaneous CO ₂
Sono	snoring channel	Therm (THERM, Therm6)	airflow via oronasal
SOREM	sleep-onset REM sleep	Tho (THO, THOR, Thorax7)	thermistor
SpO ₂ (Sao ₂)	O ₂ saturation by oximetry		thoracic respiratory
SSRI	selective serotonin reuptake inhibitor		inductance plethysmography
Sum (sum, SUM)	summation of abdominal and thoracic respiratory inductance plethysmography		