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SIXTH EDITION

SURVEY
OF
CLINICAL
PEDIATRICS

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Library of Congress Cataloging in Publication Data

Wasserman, Edward.

Survey of clinical pediatrics.

In earlier editions Slobody's name appeared
first on title pages.

Bibliography: p.

1. Pediatrics. I. Slobody, Lawrence Boris,
date joint author. II. Title. [DNLM: 1. Pedi-
atrics. WS100 S634s 1974]
RJ45.W36 1974 618.9'2 73-14561
ISBN 0-07-068430-8

SURVEY OF CLINICAL PEDIATRICS

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3 4 5 6 7 8 9 0 K P K P 7 9 8 7 6 5 4

This book was set in Century Expanded
by Monotype Composition Company, Inc.

The editors were Paul K. Schneider and Sally Barhydt Mobley;
the designer was Anne Canevari Green;
and the production supervisor was Leroy A. Young.
Kingsport Press, Inc., was printer and binder.

MEDICAL BOOKS
FOR
CHINA SURVEY
OF
CLINICAL
PEDIATRICS

McGraw-Hill Book Company

A Blakiston Publication

New York St. Louis San Francisco
Düsseldorf Johannesburg Kuala Lumpur
London Mexico Montreal
New Delhi Panama Paris São Paulo
Singapore Sydney Tokyo Toronto

Dedicated to N.F.W. and E.T.S.

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PREFACE

Survey of Clinical Pediatrics is designed as just that—a survey of pediatrics—and is not intended to replace the excellent larger and more detailed textbooks that are available to both student and physician. This text focuses on the highlights and relationships of pediatrics. To aid in this focalization and reinforce learning, questions are supplied at the end of each chapter.

The rapid increase in knowledge in the subspecialties necessitates a delineated core of material common to the pediatric generalist and subspecialist. Such core material is not a static body of knowledge, nor is it identical for all pediatric practitioners. The generalist in a large urban area will not be called upon to treat low-birth-weight infants in an intensive care nursery. In many such nurseries the neonatologist does not permit the generalist to practice. In a low-density-population setting the generalist usually is also the neonatologist. Consequently, defining core material requires a personal judgment, and we hope we have achieved a degree of success in this difficult but necessary effort. One technique used to select core material was to have chapters written by generalists with an interest in specific areas of pediatrics.

This edition, the sixth, is the most complete revision of the *Survey of Clinical Pediatrics*. Every topic in the book has been carefully brought up to date. For example, since the last edition, the fetus and its environment have become areas of increased interest to pediatricians. Fetal monitoring, prenatal diagnosis, and genetic counseling are topics of rapidly expanding knowledge. Consequently a new chapter on the fetus has been added. The section on adolescence has been enlarged to reflect the growing realization that this age group has been neglected in the past. The chapter on infectious diseases has been rewritten with increased emphasis placed on viral diseases to present a better balance between viral and other infections. The chapter on respiratory diseases also portrays more accurately the role of viral diseases.

All the material presented has been used with the student in actual work at the bedside, in seminars, and in conference. The integration with the basic sciences, e.g., physiology, pathology, psychology, and biochemistry, has not been presented here in detail but should be constantly kept in mind as the various areas are studied. Finally, comprehensive consideration of the child, mother, and family as a unit—the understanding that physical, mental, emotional, and social aspects are indivisible—requires continual emphasis.

We should like to thank Mrs. Barbara Salamy, Miss Mary Prior, Mrs. Ramona Vega, and Miss Elizabeth Szilagyi for their editorial help.

Edward Wasserman
Lawrence B. Slobody

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1 GROWTH AND DEVELOPMENT

Pediatrics is the practice of medicine concerned with the growth and development of the child from conception through adolescence. The objective is to care for the child in disease, but more importantly to help the child to achieve his full potential physically, mentally, emotionally, and socially during the various stages of development and to become ready for productive adulthood. The pediatrician is also becoming increasingly concerned with family counseling and planning and with the preventive and community aspects of medicine.

The study of growth and development is basic to understanding pediatrics, and its importance cannot be overemphasized. For example, the child's stage of development affects the diagnosis, treatment, and course of an illness, and the disease itself can influence development in the near future or later on. Growth and development starts with the

fertilization of the ovum. The two are intimately interwoven and cannot be separated, but growth usually is considered an increase in size, and development is considered an acquisition of skills and function.

The life of the child may be divided into the following periods: prenatal, neonatal (first 4 weeks), infancy (1 month to 1 year), preschool or early childhood (1 year to 6 years), prepuberal or late childhood (6 years to 10 years), and adolescence (10 years to 18 years in girls, 12 years to 20 years in boys). Although considerable variation exists in these groups and although the characteristics of one stage blend into the next, the general pattern of each is sufficiently distinctive to require separate evaluation. It is essential to know what is normal within each period and therefore what can be expected as the sum of growth processes at any particular later period.

In order to recognize the abnormal, a thorough knowledge of the normal and its variations are necessary. Data for such evaluation of the individual child have been obtained from studies of large groups of healthy subjects.

The physician is responsible for the supervision of the health of the child. This requires periodic examinations and evaluations of the child's progress and consultations with the child's parents. The rate and progress of growth and development over a period of time give more information than a single evaluation. Marked deviations from the norm that cannot be explained adequately by factors in the history require more special studies such as roentgenograms, laboratory tests, and psychometric examinations. A diagnosis is then made and therapy instituted wherever possible.

FACTORS INFLUENCING GROWTH AND DEVELOPMENT

The normal child has his own schedule of growth and development which falls within the predictable pattern for all normal children. The individual pattern is determined by an interplay of hereditary and environmental factors.

Hereditv

1. Race: Orientals tend to be short.
2. Nationality: Scandinavians tend to be taller than Italians.
3. Family: Some families tend to be short.
4. Age: The greatest rates of growth are during fetal life, the first year, and adolescence.
5. Sex: Females mature earlier, starting adolescence at about 10 years of age, while males start at about 12 years.
6. Chromosomal abnormalities: Down's syndrome is associated with short stature.
7. Inborn errors of metabolism: Metabolic errors, e.g., phenylketonuria and galactosemia, affect growth adversely.

Environment

1. External factors
 - a. Socioeconomic factors: Poverty is associated with poor nutrition and surroundings.
 - b. Physical surroundings: Lack of sunshine and poor hygiene may affect rate of growth.
 - c. Season: The greatest increase in height occurs during the spring and the least in the fall, while weight gain is usually greatest in the fall and least in the spring.
 - d. Psychologic factors: Interrelationships with parents, teachers, and others may affect growth and development.
2. Exercise and stimulation: Activity promotes growth.
3. Nutrition: Dietary intake, quantitative and qualitative, influences growth and development prenatally and postnatally.
4. Disease: Chronic illnesses and congenital malformations, e.g., chronic nephritis, celiac disease, or congenital heart disease, may cause retardation of physical growth.
5. Endocrine factors: Hormonal imbalance such as occurs in hypothyroidism and hypopituitarism cause retardation of growth.

NORMS IN GROWTH

From birth to adolescence, growth proceeds in biologically predetermined cycles that fall into four distinct periods: (1) a rapid period from birth to 2 years of age, (2) a slow period from 2 years of age to pubescence, (3) a rapid period from pubescence to 15 or 16 years of age, and (4) a sharp deceleration from 15 or 16 years to maturity.

Since the growth of a child proceeds at an individual rate, the studies of individual children will reveal wide variations from the standard or average weight and height tables. However, base lines are essential in the study of the child's growth so that marked deviations can be identified and investigated.

STATISTICAL METHODS

In the evaluation of some measurable aspect of the growth and development of the individual child, e.g., weight, cardiac rate, gross motor performance, red cell count, it is essential to know the normal variations that occur within a group of comparable children, for instance, of the same age or sex. From such data one can estimate the adequacy of the individual child's measurement or performance and, in the case of some of the measurements, it may be possible to predict his future pattern of development.

It is important to know the degree of dispersion of the observations about the mean, the standard deviation. The mean value ± 1 standard deviation includes approximately 67 percent of the total number of