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全国高等学校教材　英文版

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儿科学

Textbook of Pediatrics

主　编　Chief Editors

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人民卫生出版社
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策划编辑／王　赫
责任编辑／刘兴攀
封面设计／代珊珊
版式设计／魏红波

人民卫生出版社 PEOPLE'S MEDICAL PUBLISHING HOUSE P M P H 第次再版

ISBN 978-7-117-08960-9
9 787117 089609 >
定　价：33.00 元

全国高等学校教材英文版

供基础、临床、预防、口腔医学类专业用

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人民卫生出版社

图书在版编目（CIP）数据

儿科学/王卫平等主编. —北京：人民卫生出版社，2007.8

ISBN 978-7-117-08960-9

Ⅰ.儿… Ⅱ.王… Ⅲ.儿科学 Ⅳ.R72

中国版本图书馆CIP数据核字（2007）第104372号

儿 科 学

主　　编：王卫平　朱建幸
出版发行：人民卫生出版社（中继线 010－67616688）
地　　址：北京市丰台区方庄芳群园3区3号楼
邮　　编：100078
网　　址：http://www.pmph.com
E－mail：pmph @ pmph.com
购书热线：010－67605754　010－65264830
印　　刷：湘河印业有限公司
经　　销：新华书店
开　　本：787×1092　1/16　　印张：18.5
字　　数：484千字
版　　次：2007年8月第1版　2007年8月第1版第1次印刷
标准书号：ISBN 978－7－117－08960－9/R·8961
定　　价：33.00元

全国高等学校临床医学专业规划教材
“英文版”出版说明

2001年8月，教育部制定并下发《关于加强高等学校本科教学工作提高教学质量的若干意见》（教高[2001]4号），指出：按照“教育面向现代化、面向世界、面向未来”的要求，为适应经济全球化和科技革命的挑战，本科教育要创造条件使用英语等外语进行公共课和专业课教学。对高新技术领域的生物技术、信息技术等专业，更要先行一步，力争三年内，外语教学课程达到所开课程的5%～10%。2005年1月，又印发了《关于进一步加强高等学校本科教学工作的若干意见》（教高〔2005〕1号），指出：高等学校要全面推广和使用大学英语教学改革的成果，要提高双语教学课程的质量，继续扩大双语教学课程的数量。要加强教材建设，确保高质量教材进课堂。

双语教育是提高学生英语水平的一个途径，尽管我国高等医学院校双语教学探索已有若干年，但教材的跟进始终显得滞后。没有合适的教材是目前双语教学面临的困难之一。2006年初，为推进双语教学的发展，经全国高等医药教材建设研究会和卫生部教材办公室审议，决定根据国家、地方和学生未来发展的需要，组织国内专家结合双语教学的经验，编写出版一套适应当前双语教学现状的教材。

此套教材的特点在于：

- 汇集名师。各教材主编均由卫生部规划的五年制、八年制教材的主编担任。
- 适合国情。教材的编写内容和体系主要参考我国医学院校长期使用并多次修订的五年制、八年制规划教材，更符合我国的教学模式。
- 语言纯正。根据引进的经典英文原版教材改编，聘请国外作者或编辑参与审校工作。
- 篇幅适中。由于双语教学的课时数有限，因此在编写时只选取各门学科需要重点掌握的内容（占中文教材内容的1/2～2/3）进行编写，也可减轻学生的负担。
- 丰富的教辅资源。教辅资源一直是外版教材的核心资源，因此，在本套教材编写的同时，我社引进了国外畅销的系列案例教材《Case Files》，以配合教学使用。
- 制作精美。为满足广大读者的阅读需要，全套教材采用双色印刷，图文并茂，版式清新美观。

本套教材共16种，全部为卫生部“十一五”规划教材。全套教材将于2007年秋季和2008年春季分两批出版发行。可供各医学院校针对五年制、七年制、八年制等不同层次学生开展双语教学使用。

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前　言

检讨近年来医学本科教育中的不足，学生的专业外语交流能力较差是缺憾之一。这种先天不足将影响学生今后直接从国际儿科学界汲取丰富学术营养的能力，关系到我国儿科学界将来能否跻身世界学术先进行列的前景。根据国情妥善解决这个问题的办法有赖于双语教学的逐步推进，本教材编写的目的正是为了顺应此项任务的需要。

此教材适用于医学本科五年制教学中的双语教育。本书基本按照医学本科五年制教材中文版的大纲编写，章节顺序与其完全对应，选取各章节中最基本、最重要的部分，从相关的英文版医学教材中摘取相应的内容编纂而成。因此既符合现行的五年制教学大纲和计划，又不失英语的规范和精纯。

尽管语言文字摘自英语版教材，但是有关流行病学统计资料、临床评价的标准、实验室检验的正常值等都采用我国的数据和规范，避免某些其他国家的数据和标准误导学生对中国国情的理解。

为方便学生使用本教材，各章节内容都设置了重要词汇的索引，以利于迅速找到相关的内容。此外还列出相关的参考文献和网站，供有兴趣的学生做进一步的研究。

本教材是首次按中文版教材框架搭建英语内容，在“洋为中用”的过程中可能有疏漏或错误之处，希望能得到教师和学生的批评、指教，使我们能不断获得经验并改进质量。

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2007年4月6日

Contents

Chapter 1 General Profile of Pediatrics

Part 1 The Field of Pediatrics

Pediatrics is concerned with the physical, mental, and psychological health of infants, children and adolescents. It is about their health and the factors that affect their health; it is about the education of pediatricians and about research. The field of pediatrics is about the prevention and treatment of diseases from conception to maturity. Growth and development, nutrition, and genetics remain critical components of pediatrics.

Although much of the field of pediatrics has not changed since 1910s, the practice of pediatrics is dramatically different. Universal immunization has reduced the incidence of many infectious diseases. As a result, pediatrics has become more about prevention. Today, on one hand, the need to diagnose and treat childhood diseases is still the priority of pediatric practice in most countries. On the other hand, preventive services such as immunization, screening, and counseling, now have become the cornerstone of pediatric practice in the developed countries and districts.

New technologies have had a major effect on pediatric practice. The discovery of new antibiotics and the development of new vaccines continue to reduce the influence of infectious diseases on modern children and their families. Genetic innovations place pediatricians at the frontier of modern medicine.

A by-product of the successes of modern medicine has been the creation of an increasing population of children with chronic illness, disability, and other special needs. An increase in psychosocial and behavioral problems confronts the pediatrician, despite a marked shortage of pediatric psychiatrists. The increase of autism in children, the poor prognosis associated with maternal mental depression, and increase of children with attention deficit hyperactivity disorder (ADHD) all must be addressed by pediatricians. Pediatricians are necessarily concerned with the impact of these conditions on both the child's and the family's psychological health, knowing full well that families are the single greatest and most enduring influence on children. Caring for children provides many unique rewards and challenges. The interplay between environmental influences and factors intrinsic to the child becomes evident in many aspects of pediatric health and development.

In addition to gender, age, and practice characteristics, the racial and ethnic diversity of the pediatrician workforce is an important consideration for specialty of pediatrics. Related to any discussion of race and ethnicity is the need for all pediatricians to provide culturally effective pediatric care. Pediatricians work not only through the health care delivery system, but also with patients and their families. In pediatrics, the therapeutic alliance must necessarily include both the child and the family; the importance of establishing a trusting longitudinal relationship cannot be overemphasized.

Pediatricians believe in the inherent worth

of all children. They are our most enduring and vulnerable legacy. The field of pediatric medicine has devoted itself to this most vulnerable and precious segment of the population. Success, for pediatricians, is to ensure a healthy, productive future for the population served. This is a significant yet enticing challenge.

Part 2 The Features of Development in Children at Various Ages

From conception to maturity, development makes changes not only in physical size and appearance, but also in physiological, psychological and immunological characteristics. Such change is a continuous process, but the rate of a child's growth is not constant and normally varies with age.

Embryonic and Fetal Stage

Intrauterine life may be divided into two principle phases: embryonic and fetal. The embryonic period is usually considered to be the first 8 weeks of growth, during which the fertilized ovum differentiates rapidly into an organism that has most of the gross anatomic features of the human form. Organogenesis continues beyond 8 weeks in some systems, so that some prefer to designate the embryonic period as the first trimester of pregnancy, or the first 12 weeks. The period after 12th week of gestation and through the 40th week is distinguished by rapid growth and elaboration of function. The mortality rate during the embryonic period is probably higher than at any other time of life. Causes include abnormalities of genes and chromosomes and alterations of maternal health, and these may at times be interrelated. Morbidity during the fetal period may result from a variety of intrauterine factors. These include interference with oxygenation of the fetus through disturbances of the placenta or umbilical cord, infections, injury by radiation or chemicals, immunologic disorders, or maternal nutritional disturbances, etc.

Neonatal Stage

This stage is the period from birth to 28 days of age, in which both physical and physiological development of the newborn infants differentiates it sharply from older infants, children, or adults. The transition from intrauterine to extrauterine life imposes upon the infant the need to activate a number of functions which have been dormant. There are delays in the development of certain enzymatic, haemostatic, and immunologic functions, so that infants may temporarily be subject to increased risk when exposed to infection or when given certain drugs that are able to metabolize only some weeks after birth.

Infantile Stage

This stage is the period from birth to 12 months of age, in which infants undergo a rapid process of physical and physiological development. With the establishment of effective emotional and social bonds with their mothers, with comfortable reciprocal interaction, and adequate nutrition, infants make rapid developmental progress in the first 6 months of life, and then the rate of growth starts to decelerate. Infants during the period may be subject to infections because the level of gamma globulin falls to a low level. There is reason to feel that the sense of security of the infant will be optimally fostered when care is given by mother during this period in a prompt, loving, and confident manner. Both consistency and promptness seem important in the responses of the caretakers to the behavior of infant.

Toddler's Stage

This stage is the period from 1 year to 3 years

of age. During the period of life there is a further deceleration in the rate of growth. The child becomes highly imitative, and increasingly aware of and responsive to other persons. The need for children to submit growing control of their bodies and their environments to social and cultural pressures often produces frustration and anger. Temper tantrums, breath-holding spells and less dramatic outbursts are common consequences. These episodes respond best to management by a firm and loving parent who is able to set the necessary limits for the child.

Preschool Stage

This stage is the period from 3 years to 6 or 7 years of age. During the period of life gains in weight and height are relatively steady. With increasing awareness that they are destined to become larger children and adults, children in this period begin to seek adequate models by which to learn and play their future roles. A child of 4, 5, or 6 years assumes those habits of thought, feeling, and action that surround his or her growing perception or fantasy as to the future. Changing patterns of parent-child interaction and of other relations in and out of the home often leave elements of hostility or aggression in the child's behavior, thoughts, and fantasies. Anxieties may be expressed as nightmares, fears of separation, etc.

School Stage

This stage is the period from 6 or 7 years of age to adolescence. This is a period of relatively steady growth in a preadolescent growth spurt about the age of 10 in girls and about 12 in boys. With the removal of a large portion of the child's life from the home to the school environment, children begin increasingly to live independently and to look outside the home for goals and for standards of behavior. This shifting of interests is often anxiety-provoking for parents. If earlier problems between parent and child have not been adequately resolved, adjustments to forces outside the home are apt to be difficult. A large responsibility of the school years is the creation in the child of the senses of duty, of responsibility, and of realistic accomplishment.

Adolescent Stage

Adolescence is the period of 10 to 20 years, during which sexual maturation occurs and the body takes final adult form. Medical problems of adolescence include overnutrition and undernutrition, fatigue, accidents and increasing emotional burden, etc.

Part 3 Evidence Based Medicine Applied in Pediatrics

Research Designs

When reviewing a clinical study there are at least four questions to be asked: Who is being studied and are the results relevant to one's own patients? What kind of study design is used and what effect should that have on interpreting the findings of the study? Are the conclusions of the study valid? How will the results affect one's practice?

There are three types of designs: (a) Experimental designs: an intervention or maneuver is applied to one group in an attempt to change the rate of the occurrence of an outcome. Randomized controlled trials (RCTs) are the gold standard when considering the validity of a study. (b) Observational studies: authors examine the relationship (or association) between an exposure and an outcome. Studies can be designed prospectively in which subjects are followed over time, retrospectively in which data are collected about past events, or using a combination of the two approaches. The research

designs include the cohort study, the case control study, and cross-sectional studies. (c) Descriptive studies: experimental studies, or randomized controlled trials, with an intervention group and a control group, are considered the most powerful of the research designs and are used frequently to test new medications and interventions. Single case reports or case series may describe a new disease, interesting features of a patient or group of patients, or the natural history of a disease.

Evaluation of Diagnostic Tests

Studies evaluating screening or diagnostic tests are designed with two groups: those with the outcome or disease and those without. To determine the accuracy of a test, the investigator compares the results of the test in the two groups. The sensitivity of a test is defined as the capability of a test to detect the disease or outcome when the disease is actually present (a/(a+c)). When the test is negative, but the disease is present, a false-negative has occurred and the false-negative rate is represented as 1-sensitivity. Specificity is defined as the capability of a test to detect the absence of a disease when the disease is not present (d/(b+d)). If the test is positive, but the disease is not present, one has a false-positive and the false-positive rate is represented as 1-specificity.

Two other important characteristics of a test provide information about the likelihood of the occurrence of the disease when the test is positive or negative. The positive predictive value is defined as the ratio of subjects with a positive test and disease (a) to all subjects with a positive test (a+b): (a/(a+b)). The negative predictive value is defined as the proportion of subjects with a negative test who do not have the disease (d) to all subjects with a negative test (c+d): (d/(c+d)). If the test being examined were perfect in distinguishing between diseased and nondiseased subjects, the sensitivity, specificity, and predictive values would be 100%.

In some studies of diagnostic testing, the investigators aim to determine the best demarcation or cutoff for a test that does not have a discrete positive or negative result. An example of such a test might be a continuous variable such as the WBC in predicting bacteremia. The investigators can determine the best demarcation for the WBC by developing a Receiver Operating Characteristic (ROC) curve. To develop this curve, the investigators choose a series of demarcations for the WBC (eg, 12,500, 15,000, 17,500, 20,000) and plot the sensitivity versus 1-specificity for each WBC value. The demarcation that maximizes sensitivity and minimizes 1-specificity can then be chosen from the curve that is developed. An alternative demarcation might be chosen if the goal is to maximize sensitivity regardless of 1-specificity.

Reading the Medical Literature

Current journals are read for a variety of reasons—keeping abreast of current knowledge, learning about controversies, finding relevant information about a recent patient, or even recognizing an article by a colleague. Although individualized approaches to scanning the current literature are developed, a helpful approach in deciding what to read might focus on questions such as: Is the topic of interest? Are the patients in the study similar to one's practice? Is this the optimal research? Are there important biases suits? Are the findings clinically meaningful? Is there an editorial to place the results in context? When are there side effects of the intervention? What are the costs of changing practice?

A second approach to reading is to focus on a specific clinical problem or question related to patient care and to read the relevant literature. Although this scientific approach to answer

questions has been used for some time, recent attention to evidence-based medicine has emphasized critical examination and synthesis of relevant articles that use methodologically sound research designs. When reading about a problem, several types of articles are available, from those that use different research designs to those that attempt to summarize or synthesize current knowledge. Four general approaches have been used: (a) generalized clinical reviews, which summarize what is known and which provide advice about diagnosis and management; (b) meta-analyses; (c) methodologic reviews; and (d) practice guidelines.

Part 4 Pediatric Ethics

In many situations, physicians will need to follow their professional ethics, which may impose obligations beyond legal requirements. From a legal perspective, pediatricians need only obtain the authorization of the parent or guardian of a child. However, professional ethics requires pediatricians to provide pediatric patients information about their condition and care in ways that are developmentally appropriate and also to try to obtain the assent of children for care. Furthermore, ethical standards require pediatricians to act with compassion and integrity.

The pediatrician's patient is the child, and the pediatrician's main ethical obligations are to the child. The pediatrician should be guided primarily by the child's best interests. Pediatricians also should treat children with respect, compassion, and honesty. To the extent it is developmentally appropriate, doctors should provide children with information about their condition and care, obtain their assent or consent, offer them realistic choices regarding their care, and respect their privacy.

Children depend on their parents to seek medical attention and to follow dietary, lifestyle, and pharmaceutic regimens. In the vast majority of cases, the interests of children and the actions of parents coincide. However, when the parent's decisions and actions seriously compromise the well-being of the child, the physician's role is to promote the best interests of the child. Advocacy by pediatricians is essential because children cannot represent themselves. Usually it is better for pediatricians to try to work with the parents in providing health care, making recommendations, and arranging in-home assistance as needed. The alternatives of imposing treatment over the parent's objections or taking the child away from the family often are unsatisfactory.

As children develop, they gain the capacity to make informed decisions about their care. Physicians can foster and respect such maturation by providing information to adolescents in terms they can understand, helping them deliberate about decisions, and respecting their informed preferences. Adolescents' requests for confidentiality should be respected if possible.

Giving an "informed consent" to medical treatment means that the person agreeing to treatment for him or herself understands the nature of the proposed treatment, why it is necessary, the risks and benefits of the therapy proposed, and what alternatives might be available. In urgent as well as nonurgent cases a patient has the right to know what will happen if nothing is done.

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Chapter 2 Growth and Development

Monitoring growth and development is fundamental to pediatric health supervision. Knowledge of both normal patterns and common individual variations gives the pediatrician a framework from which to provide reassurance and guidance to parents as well as to identify potential problems.

Part 1 Normal Pattern of Growth and Development

Changes in physical size and appearance are a visible manifestation of the complex morphologic, biochemical, and physiological changes taking place during childhood. Although such change is a continuous process, the rate of a child's growth is not constant and normally varies with both age and organ system(Figure 2-1). Postnatally, two periods of rapid growth are observed: during infancy and at puberty. A decreased but steady rate of growth characterizes the intervening period. The growth of most body tissues and organs parallels this pattern, with several notable exceptions. Brain growth remains rapid throughout the first 6 years of life, with minimal change in head size after age 10. Lymphoid tissue volume increases rapidly before puberty and then declines steadily until adult levels are achieved. Growth of the reproductive organs remain slow until puberty.

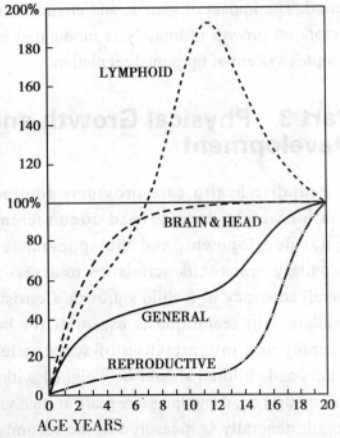

Figure 2-1. Postnatal growth curves of four major organ systems

All values are calculated in terms of size attained at 20 years. General type includes body as a whole, respiratory and digestive organs, kidney, spleen, musculature, and skeleton. SOURCE: Tanner J M. Growth at adolescence. Oxford: Blackwell, 1962, with permission.

Part 2 The Factors Influencing Growth and Development

Both normal and pathologic growth patterns are determined by a complex interaction among genetic, environmental, and hormonal factors. Parental size and patterns of growth are strongly predictive of both absolute size and the timing of growth spurts in their offspring. A variety of environmental