3 • Readers’ Comments and Questions — Haggerty

5 • Oral Rehydration—Is It Really That Easy? — Holmes

6 • Acute Diarrhea — DeWitt

15 • Hypothyroidism in the Newborn — Sobel and Saenger

21 • Nephrolithiasis — Stapleton
CONTENTS

COMMENTARIES

3  Readers’ Comments and Questions
    Robert J. Haggerty

5  Oral Rehydration—Is It Really That Easy?
    Frederick C. Holmes

ARTICLES

6  Acute Diarrhea in Children
    Thomas G. DeWitt

15  Hypothyroidism in the Newborn
    Edna H. Sobel and Paul Saenger

21  Nephrolithiasis in Children
    F. Bruder Stapleton

ABSTRACTS

4  Diarrheal Disease in the Immunocompromised Host

13  Multiple Sclerosis in Childhood

14  Temporomandibular Joint Dysfunction

30  Normal Prepubertal Female Genitalia

31  Intravenous Infusions

Cover: Breton Girls Dancing, Pont Aven, by Paul GAUGUIN (Copyright, National Gallery of Art, Washington, DC; Collection of Mr. and Mrs. Paul Mellon.) Gauguin was a French Symbolist and lived from 1848 to 1903. He traveled the world as a seaman and pursued a career in banking in Paris and Copenhagen before concentrating on his skills as a painter and sculptor. He was determined to develop a new approach to painting through which to symbolically express a thought or mood, in contrast to the impressionist approach which sought to reproduce a scene through the exact recording of every nuance of color and light. Completed in 1888, Breton Girls Dancing, Pont Aven is one of Gauguin’s earliest works in this new style. The themes of friendship, community, exercise, and appreciation of nature depicted here are important elements in the total health and development of every child.

The printing and production of Pediatrics in Review is made possible, in part, by an educational grant from Ross Laboratories.
Pediatrics in Review

American Academy of Pediatrics

VOLUME 11
1989–1990

PEDIATRICS REVIEW AND EDUCATION PROGRAM
In this volume we have brought together all ten issues of the eleventh year of publication of Pediatrics in Review. These articles and abstracts were developed to help readers achieve educational objectives set for the Continuing Education Program of the American Academy of Pediatrics. We believe that they contain material of use to a wider readership than members of the Academy who subscribe to Pediatrics Review and Education Program (PREP) such as residents, nurses, family physicians, and other clinicians. We hope that you find them useful.

Robert J. Haggerty, MD
Editor
Commentary

Reader's Comments and Questions

"How do other fellows do on the self-assessment examinations?"

"Many PREP articles are hard to recall because the facts are hidden in a long, controversial discussion."

"My special thanks to Doctor MacIntosh for his splendid article on respiratory syncytial virus." [In a letter from a 79-year-old pediatrician living in Rome.]

I treasure comments such as these which readers send with their self-assessment sheets, because it is one of the few ways we have of knowing how well we serve them. I will be grateful if even more of you will send in your responses. But let me answer a few of the questions raised by readers:

Are the articles in Pediatrics in Review too long, too short, too complicated, too simple? Such questions are not easy to answer. We seek to provide a mixture of articles. Abstracts, which some readers believe are too short and simple because they do not explain the complexities of most of modern medicine, are used to address specific educational objectives, usually developed as part of the Recent Advances objectives. Long review articles, which some readers believe are too complex, long, and difficult from which to retrieve the information, are used to address broad Topics Educational Objectives. We find about the same number of readers responding positively as do negatively about each approach. However, we can and will strive to make even the long and complex review articles clearer in the future. As we prepare for the recertification exams in the 1990s, we will develop a shorter version of the review article to cover more objectives.

Regarding how Fellows do on the self-assessment exam as compared with others, I have no answer. The whole purpose of the self-assessment exam in Pediatrics in Review is educational. There is no "passing" level, and each pediatrician must determine for himself or herself areas in which each needs more education as a result of taking the test. The goal is to help readers determine whether they learned the most important points that the author made. Therefore, the answer to the question "how am I doing compared with others?" is not one that we can answer.

Regarding explanation of answers: Many readers write asking why answer A would not be as appropriate as B in any given question. It would be nice if we could answer these inquiries, but such individualized response is beyond the capacity of our limited staff to deal with the more than 20,000 subscribers to Pediatrics in Review. When clear errors have been made in our questions, we print a "Department of Correction" notice.

I urge pediatricians to join together in their hospital or group practice to discuss articles and answers by way of improving understanding and knowledge. We are pleased to send tables of contents of future issues of Pediatrics in Review to anyone who asks. Several hospitals have organized continuing educational programs on the basis of these topics to coincide with the appearance of the articles in Pediatrics in Review. Within such a formal teaching program, discussion of the questions and answers with other pediatricians can be a much more effective learning tool than reading alone.

Finally, do keep sending us your reactions to articles, self-assessment questions, and the entire PREP program. It is one of the few ways we have of knowing whether or not we are meeting your needs.

R.J.H.

Self-Evaluation Quiz—CME Credit

As an organization accredited for continuing medical education, the American Academy of Pediatrics certifies that completion of the self-evaluation quiz in this issue of Pediatrics in Review meets the criteria for two hours of credit in Category I of the Physician's Recognition Award of the American Medical Association and two hours of PREP credit.

The questions for the self-evaluation quiz are located at the end of each article in this issue. Each question has a SINGLE BEST ANSWER. To obtain credit, record your answers on your quiz reply cards (which you received under separate cover), and return the cards to the Academy. On each card is space to answer the questions in five issues of the journal: CARD 1 for the July through November issues and CARD 2 for the December through April issues. To receive credit you must currently be enrolled in PREP or a subscriber to Pediatrics in Review—and we must receive both cards by June 30, 1989.

Send your cards to: Pediatrics in Review, American Academy of Pediatrics, 141 Northwest Point Blvd, PO Box 927, Elk Grove Village, IL 60009-0927.

The Correct answers to the questions in this issue appear on the inside front cover.
be considered a purging mechanism for ridding the intestines of the causative pathogens, the use of any anti-diarrheal agent is not indicated in most acute diarrheal episodes. Because the increased motility of many of the pathologic processes described earlier are mediated by prostaglandins, prostaglandin inhibitors tend to be effective anti-diarrheal agents. Bismuth subsalicylate has effective antiprostaglandin activity and also binds bile salts which may contribute to the diarrheal process. However, it can cause elevated serum salicylate levels which raises concern about Reye syndrome. Loperamide also has principally antiprostaglandin activity and, because it does not contain salicylate, may be a reasonable choice. Agents with narcotic substances as the active agent should be avoided because they may prolong the excretion and pathologic process of some bacterial agents. Binding substances such as kaolin and pectin are only modestly effective but, unlike the narcotic-based anti-diarrheal agents, have less of an impact on the course of the pathologic processes.

Finally, the most effective management for all infectious diarrheas is prevention. Good sanitation and careful hand washing, particularly in situations such as day care, are critical in decreasing the spread of diarrheal diseases. Although vaccines for Rotavirus have been developed and are currently being tested clinically, there is less progress on vaccines for other causative agents. Such vaccines may ultimately be the best treatment for the majority of pediatric diarrheal illnesses.

**SUMMARY**

Acute diarrhea is a common problem in children. Understanding the different pathologic processes that cause diarrhea, and the agents that are associated with those processes, can aid the clinician in predicting the etiology of the diarrhea in an individual patient. Small bowel involvement, most commonly caused by Rotavirus, produces a high incidence of vomiting, often before the onset of diarrhea, and large, watery, and relatively infrequent stools. Large bowel involvement, usually due to Campylobacter, Salmonella, or Shigella produces frequent, often bloody stools containing leukocytes. Treatment of diarrhea should be focused on correcting dehydration, principally with oral rehydration solutions containing appropriate concentrations of electrolytes and carbohydrates. Early refeeding, avoiding foods containing lactose, should be considered for most pediatric patients with acute diarrhea. Antimicrobial therapy should be reserved primarily for parasitic infectious, pseudomembranous enterocolitis, and the early stages of a Campylobacter dysentery. The etiology of acute pediatric diarrhea can be predicted in most patients and early, appropriate treatment can be instituted.  

**SUGGESTED READING**


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**Self-Evaluation Quiz**

1. Which of the following would be expected after administration of lactose to a patient with lactose malabsorption?
   A. Normal stool pH.
   B. No reducing substances in stool.
   C. Positive breath hydrogen test result.
   D. Poor α-xylose absorption.
   E. Reducing substances in urine.

2. A 2-year-old girl has diarrhea and a temperature of 38°C. Which of the following would suggest that she has viral, rather than a bacterial, enteritis?
   A. Stool leukocytes.
   B. Mucus in stools.
   C. Blood in stools.
   D. Vomiting before onset of diarrhea.
   E. Frequent, mildly watery, small-volume stools.

3. Which of the following statements is least likely to be true?
   A. Use of oral hydration solutions represents a great advance in the treatment of diarrhea.
   B. Oral hydration solutions should have a glucose concentration of approximately 2%.
   C. Oral hydration solutions used for initial fluid resuscitation should have a sodium content of 70 to 90 mEq/L.
D. Children who are fed during their diarrheal illness lose more weight and recover more slowly.
E. Lactose-containing foods (except breast milk) should be avoided during acute diarrheal illness.

4. In general, soft drinks and fruit juices do not make good oral hydration solutions because they contain:
   A. Too much sugar, too little sodium
   B. Too much sugar, too much sodium
   C. Too little sugar, too little sodium.
   D. Too little sugar, too much potassium
   E. Too little sugar, too little potassium.

5. Each of the following is true about Cryptosporidium enteritis except:
   A. A common cause of diarrhea in day-care setting.
   B. Too much sugar, too much sodium
   C. Diagnosis by Gram stain of fresh stool.
   D. Erythromycin is the antibiotic of choice.
   E. Primarily a dysenteric diarrheal process.

Multiple Sclerosis in Childhood


Multiple sclerosis (MS) usually has its onset in early adult life (between 25 and 30 years). Occasional cases occur in the adolescent period and rare cases are reported in the first decade of life. In a recent Canadian series approximately 3% of cases were diagnosed in children younger than 16 years of age. The first symptoms of the disease often remit spontaneously and may not even come to a physician’s attention. This makes the diagnosis particularly elusive. It is the very nature of MS, with symptoms appearing at different times and with different anatomic locales, that should make the physician consider the diagnosis.

MS is more frequent in girls and women than boys and men. Women make up two thirds of all patients. In children, the female preponderance appears even higher. There is a slightly increased chance, about 10%, that an immediate family member will be affected, and extremely rare cases of twins with MS have been detailed. The disease is strikingly more frequent in cold weather climates in both northern and southern hemispheres. It is only reported in equatorial regions when the patient has migrated from cooler environs.

Sensory symptoms, such as numbness and dysesthesias, are often stated to be the most frequent initial findings, perhaps accounting for the low early diagnostic rate, but ocular symptoms (visual blurring and transient blindness, diplopia), motor symptoms (limb paralysis and gait disturbance), and cerebellar symptoms (trouble with coordination and gait) are also reported. The combination of optic neuritis with transverse myelitis, seen in about 5% of patients with MS, is known as Devic syndrome.

When presented with any single symptom or sign, particularly when previous symptoms have not been reported, the diagnosis is elusive, and MS may become a diagnosis of exclusion. Depending on the locale of the symptoms, trauma, tumor, infection, vasculitis, and degenerative disease may need to be ruled out. Formerly, the best way to establish the diagnosis on a laboratory basis was to find an elevated γ-globulin fraction in the CSF (about 50% of cases) or oligoclonal bands in the CSF (a 70% yield in adults but lower in children). In this decade, newer techniques (including optic and brainstem-evoked potentials, and particularly magnetic resonance imaging [MRI], which clearly shows areas of demyelination in the brain and spinal cord), have considerably improved diagnostic accuracy and yield.

Treatment of MS remains controversial and difficult. Steroids and other immunosuppressant therapies, including systemic drugs and even total body irradiation aimed at suppressing abnormal lymphocytes (thought responsible for the disease), are of equivocal value. Fortunately, many symptoms remit spontaneously, and in the one quarter of patients with continuous progressive disease, the course is often protracted. (M. R. Koenigsberger, MD, New Jersey Medical School)
Hypothyroidism

appears to be higher in infants than in older individuals. It is not wise to try to normalize TSH by ever increasing T4 doses into the toxic range, which could lead to advanced skeletal maturation.

In cases of questionable diagnosis, treatment should be stopped for 6 weeks after 3 years of age, when it will be safe, and repeat thyroid function tests should be performed. If T4 levels are low, a thyroid scan should be performed. The finding of low T4 levels and increased TSH concentration after this interval confirms the permanent nature of the disease and the requirement for lifelong therapy.

To improve the outlook further and prevent neurodevelopmental defects more reliably, screening must eventually shift to prenatal diagnosis. A simple fetal test such as α-fetoprotein for neural tube defects would be desirable. Fetal therapy is already possible by injection of L-thyroxine into the amniotic fluid or by fetal intramuscular injection.

MONITORING PROGRESS

Physical findings cannot be relied upon in early months because many hypothyroid babies seem normal even without treatment. Subtle physical signs can be helpful: unduly cool extremities, excess placidity, motting of skin. Most physicians will want to measure TSH at bimonthly intervals, when the child is seen for well-baby care, and recalculate the T4 dose based on test results. Assessment of skeletal maturation is advisable at 1 year of age and at 1- or 2-yearly intervals thereafter. Assessment of hearing should be carried out as soon as possible, because the incidence of decreased hearing is higher than in euthyroid children.

CENTRAL HYPOTHYROIDISM

Assessment of other endocrine functions, especially corticotropin and human growth hormone, will be necessary. For these, help from a pediatric endocrinologist will be useful. For patients with central hypothyroidism, laboratory assessment of dose (and of compliance) is more difficult. One must rely on T4 concentration and not be misled by what seems to be too high a number (eg, 15 to 20 μg/mL). T3 is more useful for assessing the possibility that the dose is too large.

COMPLIANCE

Reassurance of the family may assist in obtaining compliance. If there is any doubt, measurement of TSH will resolve the issue except for those infants with central hypothyroidism.

SUGGESTED READING

Dussault JH, Bernier D. 123I uptake by FRTL5 cells: a screening test to detect pregnant women at risk of giving birth to hypothyroid infants. Lancet. 1985;1029–1031
LaFranchi S. Diagnosis and treatment of hypothyroidism in children. Compr Ther. 1987;13:20–30

Self-Evaluation Quiz

6. Congenital hypothyroidism is most commonly due to:
   A. Inborn errors of metabolism.
   B. Aplasia of the thyroid.
   C. Hypoplasia of a thyroid gland in the normal position.
   D. Inadequate function in an ectopic thyroid gland.
   E. Medication given the mother during pregnancy.

   For each of the findings (A-D) on a neonatal thyroid screening test carried out on the third day of life, select the one that is most suggestive of each of the following conditions (2–5).

<table>
<thead>
<tr>
<th>T4</th>
<th>TSH</th>
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<tbody>
<tr>
<td>A.</td>
<td>low</td>
</tr>
<tr>
<td>B.</td>
<td>normal</td>
</tr>
<tr>
<td>C.</td>
<td>low</td>
</tr>
<tr>
<td>D.</td>
<td>low</td>
</tr>
</tbody>
</table>

7. TBG deficiency.

8. Secondary hypothyroidism.


10. Primary hypothyroidism.

11. Among the following, the most useful tool in monitoring the adequacy of therapy in congenital hypothyroidism is:
   A. T4 level.
   B. TSH level.
   C. Clinical assessment.
   D. Radiologic examination of epiphyses.
Nephrolithiasis


12. The most common symptom/sign of urolithiasis in children is:
A. Hematuria.
B. Abdominal pain.

13. The least common “cause” for pediatric urolithiasis is:
A. Infection.
B. Anomalies of urinary tract.
C. Hyperparathyroidism.
D. Hypercalciuria.
E. Idiopathic.

14. Renal colic and hematuria in a 4-year-old boy with a history of recurrent urinary tract infections. He passes a urinary stone. Evaluation for a metabolic cause is least likely to be indicated if the stone is:
A. Not recovered.
B. Struvite.
C. Calcium oxalate.

15. Each of the following is indicated when evaluating essentially any child with suspected or proven urolithiasis, except:
A. Urinalysis.
B. Flat plate of abdomen.
C. Crystallographic analysis of stone (if stone is available).
D. Collect and strain each voided urine until stone passed.
E. Oral calcium challenge test.

16. Extracorporeal shockwave lithotripsy is most likely to be indicated in the management of:
A. Lower ureteral calculi.
B. Upper urinary tract calculi.
C. Staghorn calculi.
D. Urinary calculi in small infants.
E. Urinary calculi in patients with bleeding disorders.

94. The pediatrician should have the appropriate ability to recognize signs of sexual abuse upon examining the prepubertal female genitalia (Recent Advances, 89/90).

987;80:203–208.


The precise incidence of childhood sexual abuse is unknown, but several authors estimate that more than 300,000 cases occur annually. Conservatively, 25% of girls and 9% of boys are sexually abused before the age of 18 years. The magnitude of this problem is compounded by the fact that the majority of sexually abused children have no overt physical findings. Little information has been available until recently to guide the physician in assessing normal prepubertal female genitalia.

Herman-Giddens et al at Duke University reviewed their experience with more than 375 cases of girls referred for evaluation of possible sexual assault, and their findings emphasized several important points. Clinicians who examine female patients for alleged sexual assault should become comfortable with using knee-chest and frog leg positions, which are preferred methods for atraumatic genital examination in a child. Normal hymenal anatomy is variable, and the authors diagrammatically illustrated many variants that may to the untrained observer appear traumatized. They identified a horizontal hymenal orifice of greater than 5 mm as suspicious for vaginal penetration, but they also underscored the fact that sexual abuse often occurs without any physical evidence. The hymen is a slack, stretchable tissue that may persist even after digital or penile penetration. Jenny et al studied more than 1100 female newborns and found that congenital absence of the hymen is extremely rare. By early adolescence, the average vaginal opening is about 1 cm in horizontal diameter.

Enos' group reviewed their experience with 162 cases throughout 16 years from a forensic viewpoint. They stressed that, when dealing with a possible victim of sexual abuse, a thorough history should be obtained and detailed attention should be directed to all physical signs of trauma (eg, lacerations, bruises, secretions, and sphincter tone). These findings should be carefully described, sketched, or photographed when possible as future evidence. This overview of fine points of the examination and proper collection of evidence and specimens was comprehensively elaborated in explicit detail.

Physicians who deal with sexually abused children need to be comfortable when