## CONTENTS

### ARTICLES

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>283</td>
<td>Control of Infections in Schools</td>
<td>Julia A. McMillan</td>
</tr>
<tr>
<td>290</td>
<td>Hemophilia: An Updated Review</td>
<td>Beverly Bell, David Canty, Michelle Audet</td>
</tr>
<tr>
<td>299</td>
<td>Developmental Dislocation of the Hip: A Clinical Overview</td>
<td>James F. Mooney, III and John B. Emans</td>
</tr>
<tr>
<td>306</td>
<td>Divorce: Consequences for Children</td>
<td>Robert E. Emery and Mary Jo Coiro</td>
</tr>
<tr>
<td>311</td>
<td>Quality Improvement: An ACQIP Exercise on the Management of Acute Asthma—Part 2</td>
<td>Shannon Smith-Ross, Lisa Honigfeld, Staff of Division of Quality Care</td>
</tr>
<tr>
<td>316</td>
<td>Consultation with the Specialist: Stabilization of the Very-Low-Birthweight Infant</td>
<td>Ronald L. Poland</td>
</tr>
<tr>
<td>318</td>
<td>Medical Record Review: Documentation of Migraine: The Pattern is in the History</td>
<td>Lawrence F. Nazarian</td>
</tr>
</tbody>
</table>

### POINT-COUNTERPOINT

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>304</td>
<td>Fluid Management of Children Who Have Diabetic Ketoacidosis</td>
<td></td>
</tr>
</tbody>
</table>

### COVER

Working in the medium of batik, Paul Nzalamba creates images that are drawn from his native country, Uganda, and that reflect the strength, struggle, and beauty of all people, especially children and adolescents. We chose to use his “At Play” (1988) to show a modern, indigenous artist’s work that illustrates the color and joy of such artists. Mr. Nzalamba’s works are on display at his studio in Los Angeles, California. Reproduced with permission.

### ANSWER KEY

PIR QUIZ

1. Which one of the following statements about the contagious periods of infections is correct?
A. Chickenpox is contagious only after the rash appears.
B. Children who have streptococcal pharyngitis are contagious as long as 48 hours following the institution of penicillin therapy.
C. Hepatitis A is most contagious during the icteric stage of the disease.
D. Measles is contagious during the prodromal stages.
E. Mumps is only contagious while the parotid gland is swollen.

2. Which one of the following mechanisms of spread is correct?
A. Hepatitis A is spread primarily by contact with infected blood.
B. Human immunodeficiency virus may be spread by respiratory secretions.
C. Measles is spread by direct contact with infected skin.
D. Neisseria meningitis is spread readily by casual contact in schools.
E. Varicella may be spread by aerosolized droplets.

3. An index case of which one of the following infections would be most likely followed by an epidemic in the school?
A. Chickenpox
B. H. influenzae type b infection
C. Hepatitis B
D. Measles
E. Mumps

4. Which one of the following regimens would be most likely to be effective when treating a susceptible 7-year-old child?
A. Hepatitis B immune globulin administered 6 days after exposure to hepatitis B.
B. Human immunoglobulin administered within 1 week of exposure to mumps.
C. Human immunoglobulin administered 10 days after exposure to measles.
D. Human immunoglobulin administered within 2 weeks of exposure to hepatitis A.
E. Varicella zoster immune globulin administered 5 days after exposure to measles.

5. Which one of the following is the most common complication associated with these childhood contagious diseases?
A. Acute liver failure and hepatitis A.
B. Deafness and mumps.
C. Rheumatic fever and streptococcal pharyngitis.
D. Skin infections and chickenpox.
E. Subacute sclerosing panencephalitis and measles.
HEMATOLOGY

Hemophilia

recombinant factor VIII. Hemophilia Information Exchange. Medical Bulletin #176, Chapter Advisory #179. June 7, 1993


PIR QUIZ

6. Studies of the inheritance patterns of hemophilia A indicate that:
A. All daughters of a female carrier will be carriers of the disease.
B. All daughters of a man who has hemophilia will be carriers.
C. All sons of a female carrier will have the disease.
D. Half of hemophilia patients have the disease through a spontaneous gene mutation.
E. Half of the sons of a man who has hemophilia will have the disease.

7. The most correct statement regarding diagnosis of hemophilia is:
A. It can be made prenatally by using DNA testing of samples obtained by chorionic villus biopsy.
B. Measurements of prothrombin time can be used to confirm the diagnosis.
C. The carrier status of female siblings of a male who has hemophilia cannot be detected by current techniques.
D. Vitamin K given routinely to all newborn infants invalidates tests for hemophilia in the newborn.

8. The most correct statement related to the bleeding characteristics in hemophilia is:
A. Bleeding into large joints requires immediate treatment, even before the development of clinical signs such as swelling.
B. Frequent development of severe hematomas precludes immunization by injection.
C. Hematuria occurring spontaneously often is complicated by obstructive uropathy.
D. Hemorrhage into the skin indicates a severe form of hemophilia.
E. Intracranial hemorrhage seldom occurs spontaneously after the neonatal period.

9. In planning treatment for patients who have hemophilia, the most important concept to consider is:
A. Replacement therapy should be the safest and most specific for the patient’s diagnosis.
B. Fresh frozen plasma remains the treatment of choice for the majority of patients who have hemophilia.
C. Prophylactic treatment programs with clotting factor concentrates should be delayed until after the onset of adolescence.
D. The expense of treatment dictates that administration of clotting factor agents should follow development of active bleeding.
E. The synthetic analog of the antidiuretic hormone vasopressin is the treatment of choice for patients who are HIV-positive.

10. The diagnosis of hemophilia A has just been established in a 4-month-old boy. His parents request a discussion of the complications that may be encountered. A true statement related to complications in this disease is:
A. Development of inhibitors against factor VIII can be treated by immune tolerance induction.
B. Hemarthroses of the knee joints seldom cause permanent difficulty in simple walking and climbing of stairs.
C. Liver disease in patients who have hemophilia can be prevented by immunization against hepatitis B.
D. Reliable screening tests for determining the contamination of clotting factor products with HIV are not yet available.
PO I NT -COUNTERPOINT

Fluid Management of Children Who Have Diabetic Ketoacidosis


Two recent articles by Harris et al argue for a somewhat different plan of managing diabetic ketoacidosis than that presented in the article in Pediatrics in Review (Plotnick). The following is a summary with commentary of this different management.

RH

Diabetic ketoacidosis (DKA) is a potentially life-threatening metabolic state that complicates insulin-dependent diabetes mellitus. In the absence of sufficient insulin, glucose is unable to enter cells, and the concentration in plasma increases. When the renal threshold is exceeded (generally at a concentration of about 180 mg/dL), an osmotic diuresis occurs, leading to dehydration. Additional water is lost through hyperventilation (an attempt to compensate for metabolic acidosi), vomiting, and in some cases, diarrhea. Water is drawn from the intracellular space to the plasma to equilibrate the tonicity of the two compartments, bolstering the circulation but producing further intracellular dehydration. Fat is metabolized for fuel because glucose without adequate insulin is not available to cells; beta-hydroxybutyric acid and acetoacetic acid are produced in the process and contribute to acidosis.

Treatment consists of fluid and electrolyte replacement and insulin, with attention to detail and careful monitoring. Many regimens have been proposed and advocated. In the late 1970s, insulin dosage and route of administration were debated; this resolved with widespread acceptance of continuous intravenous “low-dose” insulin infusion. Currently, the vexing problem relates to rehydration—how to provide sufficient volume to restore and assure circulatory adequacy while avoiding the potential complication of cerebral edema. Fatal cerebral edema has been reported to occur in 3% to 8.5% of children who have DKA as a rapidly progressive, irreversible process, with risk factors not clearly defined. It is now recognized that cerebral edema is common, if not universal; what causes the cerebral edema to be fatal in some children still is not known. Despite the advances in intensive care and the standard use of low-dose insulin infusions, the death rate from cerebral edema among those who had DKA did not decline during the 1980s.

The traditional approach to fluid and electrolyte management of children who have DKA is to infuse 20 mL/kg of an isotonic solution (normal saline or Ringer lactate) intravenously in the first hour of treatment. If the patient still appears dehydrated at the end of the hour, a second infusion of 10 to 20 mL/kg of isotonic infusion is administered. The remainder of the deficit is replaced with half-normal saline; a number of alternative guidelines have been offered regarding rate and volume—half of the remaining deficit may be replaced over 8, 10, or 12 hours, and the rest of the deficit during the subsequent 14, 16, 24, or 36 hours. Fluid also must be provided to replace insensible and ongoing losses.

A different approach advocates more gradual rehydration, with attention to “matching” the osmolality of the infusate with the osmolality of the patient’s serum. This approach was demonstrated to be effective and safe in a study of 231 episodes of DKA in 149 patients ages 10 months to 20 years managed in three tertiary care hospitals. In the first hour, patients received 10-mL/kg infusions of isotonic fluid only if signs of circulatory compromise were present. The calculated fluid deficit (minus any emergency phase fluids) was then designed to be infused at a constant hourly rate over 48 hours. The serum sodium concentration of the infusate was adjusted to reflect the patient’s osmolality. For children and adolescents, the initial concentration of sodium was approximately 125 mEq/L, reduced to 75 mEq/L (eg, half-normal saline) after 12 to 18 hours. For infants, the initial concentration of...
sodium was approximately 100 mEq/L, reduced to 50 to 75 mEq/L. Careful attention was directed to the “corrected” concentration of sodium during treatment. (This calculated value ‘corrects’ for the effect of hyperglycemia on the measurement of sodium concentration by increasing the sodium concentration 1.6 mEq/L for each 100 mg/dL of glucose over a base value of 100 mg/dL.) If the serum sodium did not rise predictably as the serum glucose fell, the patient was considered at risk for cerebral edema. Hypertonic mannitol was administered to six patients who had signs compatible with increasing intracranial pressure: obtundation, headache, combativeness, or agitation. In 98% of patients, intravenous fluids were not required beyond 24 hours.

**Comment:** Most patients who have DKA have lost 5% to 10% of their body weight as fluid. The traditional approach to treatment provides a rapid expansion of the extracellular space with 20 ml/kg (2% of body weight); the newer approach reserves such expansion for those who have evidence of circulatory compromise and advocates a more modest volume—10 ml/kg (1% of body weight). Both emphasize repeating the expansion infusion for patients who have persistent circulatory compromise.

After the emergency phase of treatment, the two approaches differ both in the volume/rate of fluid administration and the concentration of sodium in the fluid. The traditional approach is comparable to regimens for treating isotonic dehydration; the more recent approach is closer to the regimen advocated for treating hypertonic (hypernatremic) dehydration.

The report of 231 episodes treated with careful attention to fluid rate/volume and sodium concentration is encouraging in that there were no deaths, but it also demonstrates that no regimen can be administered without careful monitoring. Despite meticulous attention to detail, six children (2.6%) developed mental status changes and received hypertonic mannitol, comparable to the 3% of children who had fatal cerebral edema in some reports. Whatever regimen is selected needs to be implemented in a setting in which the staff can monitor the child and the serial laboratory values and respond to worrisome changes in either.

*Kenneth B. Roberts, MD*

*Editorial Board*
The prediction of long-term effects is far from simple. The long-term prognosis may depend on the child’s gender and subsequent changes in the family’s economic well-being and marital status. For example, boys tend to show more acting out behaviors than girls, and some of these problems may persist for several years after the divorce. Girls, on the other hand, tend to recover quickly from the divorce, but then in adolescence or early adulthood may show a reemergence of problems, particularly with heterosexual relationships. Furthermore, if the divorced mother remarries, boys’ difficulties often decrease (perhaps because of the beneficial effects of an adult male in the household), while girls generally react poorly to the presence of a stepfather.

Race also may be a protective factor in children’s adjustment to divorce. Research suggests some racial differences in adults’ adjustment to divorce; for example, African-American women may benefit from increased support from extended family following divorce. However, little is known about racial differences in children’s adjustment to divorce.

One long-term outcome, the so-called intergenerational transmission of divorce, has received considerable attention from both researchers and policymakers. Evidence indicates that children whose parents divorce are more likely to divorce themselves. There is some evidence of greater intergenerational transmission of divorce among European-Americans than African-Americans. The intergenerational transmission of divorce is not predetermined, however, because the increased risk is only several percentage points above base rates for divorce, which already are quite high. Moreover, the intergenerational transmission could be explained by several factors, including more troubled relationships with the opposite sex, more accepting attitudes toward divorce, or less careful selection of a mate.

In sum, the answer to the question “Are effects of divorce still apparent several years later?” is far from simple. The adjustment difficulties seen immediately after the divorce certainly lessen in severity, and many children display remarkable resilience in the face of family disruption. However, individual characteristics of the children and later changes in family form both play important roles in determining the long-term prognosis for children of divorce. Still, our basic conclusion is positive: Children typically are resilient in the face of divorce, and following a divorce, parents can do much to promote resilience over risk.

**SUGGESTED READING**


**SELF-HELP BOOKS**

There are many self-help books about divorce. Two that we have found particularly helpful are:
