Journal of Nurse Life Care Planning

is the official publication of the American Association of Nurse Life Care Planners. Articles, statements, and opinions contained herein are those of the author(s) and are not necessarily the official policy of the AANLCP or the editors, unless expressly stated as such. The Association reserves the right to accept, reject, or alter manuscripts or advertising material submitted for publication.

Journal of Nurse Life Care Planning is published quarterly in Spring, Summer, Winter, and Fall, or as needed. Members of AANLCP receive the Journal subscription electronically as a membership benefit. Back issues will be made available in electronic (PDF) format on the association website. Please forward all email address changes to AANLCP marked “Journal-Notice of Address Update.”

Contents and format copyright by the American Association of Nurse Life Care Planners. All rights reserved. For permission to reprint articles, graphics, or charts from this journal, please request to AANLCP headed “Journal-Reprint Permissions” citing the volume number, article title, and author and intended reprinting purpose.

Neither the Journal nor the Association guarantees, warrants or endorses any product or service advertised in this publication nor do they guarantee any claims made by any product or service representative.
Editor’s Note

Many Nurse Life Care Planners choose not to do work with the pediatric/adolescent age range for a variety of reasons. Sometimes they come from an adult nursing background, sometimes they prefer working with a catastrophic-injury population in the worker’s compensation or other liability arena, and perhaps some just don’t feel as if they can work in such a specialized field.

This issue includes practical information that can help the working Nurse Life Care Planner begin working with pediatric/adolescent cases. You will find a survey article about how developmental testing gives the Nurse Life Care Planner a base for choosing interventions and services for the child with developmental challenges from childhood through adolescence to adulthood. A reprint on evidence-based practice and outcomes in pediatric spinal cord injury also includes information on adults who sustained SCI as children. A comprehensive survey of orthotics for children and case study looking at some pricing issues for a child with cerebral palsy are followed by a brief article on issues in hygiene that offers the Nurse Life Care Planner a solution for a problem that may be easy to overlook.

Many thanks to Mariann Cosby, the contributing editor for this issue, who took time out from her own journalistic pursuits to help bring you this excellent content. Her efforts and those of the peer reviewers on your behalf were stellar.

Cordially,

Wendie Howland
Editor, Journal of Nurse Life Care Planning
whowland@howlandhealthconsulting.com

American Association of Nurse Life Care Planners
3267 East 3300 South #309
Salt Lake City, UT 84109
Phone: 888-575-4047
Fax: 801-274-1535
Website: www.aanlcp.org
Email: info@aanlcp.org

2010 AANLCP Executive Board
President
Barbara Bate RN CCM CNLCP LNCC MSCC
President Elect
Jackie Morris RN BSN CRRN CNLCP CLNC
Treasurer
Chris Daniel RN BSHS CCM CNLCP MSCC LNC
Secretary
Bonnie Robb RN BSN CCM CNLCP
Past President
Karen Apy-Cebulko BSN RN CNLCP LNCC

The American Association of Nurse Life Care Planners (AANLCP) promotes the unique qualities the Registered Nurse delivers to the Life Care Planning process. We support education, research, and standards related to the practice of Nurse Life Care Planning.
Information for Authors

AANLCP invites interested nurses and allied professionals to submit article queries or manuscripts that educate and inform the Nurse Life Care Planner about current clinical practice methods, professional development, and the promotion of Nurse Life Care Planning within the medical-legal community. Submitted material must be original. Manuscripts and queries may be addressed to the Editorial Committee. Authors should use the following guidelines for articles to be considered for publication. Please note capitalization of Nurse Life Care Plan, Planning, etc.

Text

Manuscript length: 1500 – 3000 words

- Use Word® format only (.doc)
- Submit only original manuscript not under consideration by other publications
- Put the title and page number in a header on each page (using the Header feature in Word)
- Set 1-inch margins
- Use Times, Times New Roman, or Arial font, 12 point
- Use double-spacing, using the Word formatting feature
- Place author name, contact information, and article title on a separate title page, so author name can be blinded for editorial review
- Use APA style (Publication Manual of the American Psychological Association)

Art and Figures

All photos, figures, and artwork should be in TIFF, EPS, or JPG format. Line art should have a minimum resolution of 1000 dpi, halftone art (photos) a minimum of 300 dpi, and combination art (line/tone) a minimum of 500 dpi.

Each table, figure, photo, or art should be on a separate page, labeled to match its reference in text, with credits if needed (e.g., Table 1, Common nursing diagnoses in SCI; Figure 3, Time to endpoints by intervention, American Cancer Society, 2003)

Editing and Permissions

The author must accompany the submission with written release from:
- any recognizable identified facility or patient/client, for the use of their name or image
- any recognizable person in a photograph, for unrestricted use of the image
- any copyright holder, for copyrighted materials including illustrations, photographs, tables, etc.
- All authors must disclose any relationship with facilities, institutions, organizations, or companies mentioned in their work.
- All accepted manuscripts are subject to editing, which may involve only minor changes of grammar, punctuation, paragraphing, etc. However, some editing may involve condensing or restructuring the narrative. Authors will be notified of extensive editing. Authors will approve the final revision for submission.
- The author, not the Journal, is responsible for the views and conclusions of a published manuscript.
- Submit your article as an email attachment, with document title articlename.doc, e.g. wheelchairs.doc

All manuscripts published become the property of the Journal. Manuscripts not published will be returned to the author. Queries may be addressed to the care of the Editor at: whowland@howlandhealthconsulting.com

Manuscript Review Process

Submitted articles are peer reviewed by Nurse Life Care Planners with diverse backgrounds in life care planning, case management, rehabilitation, and the nursing profession. Acceptance is based on manuscript content, originality, suitability for the intended audience, relevance to Nurse Life Care Planning, and quality of the submitted material. If you would like to review articles for this journal, please contact the Editor.

AANLCP Journal Committee for this issue

Kathy Pouch RN CCM CNLCP LNCC
Editorial Committee Chair
Wendie Howland RN MN CRRN CCM CNLCP
Journal Editor
Shelly Kinney RN MSN CCM CNLCP
Newsletter Editor
Mariani Cosby MPA MSN RN PHN CEN NE-BC LNCC CCM
MSCC Contributing Editor
Barbara Bate RN CCM CNLCP LNCC MSCC
Linda Husted MPH RN CNLCP LNCC CCM CDMS CRC MSCC
Cheryl Mathis RNC CLNC CNLCP
Danielle Mayer RN LNC MSCC CNLCP
Kevin Orlowski RN LNCC MSCC
Victoria Powell RN CCM LNCC CNLCP MSCC CEAS
Contributing To this Issue

Barbara Greenfield RN BSN CCM ("Determining Costs for a Pediatric Patient with Cerebral Palsy") has been a nurse for over 30 years. She began her nursing career as an LVN, then ADN RN working in a Post Surgical Intensive Care unit. Later she worked as a Cardiac Rehabilitation nurse and a Biofeedback Therapist after the birth of her son. Opportunities allowed Barbara to expand her knowledge and move within the hierarchy of the insurance world. She became a Case Manager, Case Management Supervisor and Clinical Specialist for a leading California Workers’ Compensation carrier. Barbara became a Certified Case Manager in 1999 and is currently working in private practice as an Independent Case Manager and Nurse Life Care Planner.

April Pettengill, RN, CRRN, CDMS, CNLCP, MSCC (“Developmental Screening in Nurse Life Care Planning”) has over 22 years of experience as a Registered Nurse. For the last 19 years she has been a case manager for work-related injuries and illnesses. Ms. Pettengill has extensive experience with catastrophic injuries and in 2004 she became certified as a Nurse Life Care Planner. Ms. Pettengill became a Medicare Set Aside Consultant Certified in 2005 and began writing MSAs. She currently works per diem for a local Home Health Agency with patients over the continuum of care including High Tech Pediatric patients. In 2005, Ms. Pettengill founded ALP Medical Consultants providing medical case management services, medical cost projections, file reviews, life care plans and Medicare Set Aside Allocations. April has been a member of AANLCP since 2004 actively working on the conference committee and most recently as a director on the CNLCP Certification Board. She is also a member of NAMSAP and chairperson of the communication committee for NAMSAP.

Judy Seidmeyer, R.Ph., is President and Patricia Johnson, R.N., is Chief Medical Officer for Care Giver Support Products, LLC (“Bathing Challenges from Pediatric to Adolescent to Adult”). Care Giver Support Products were a featured vendor at the AANLPC Annual Conference in Denver CO in October 2009.

Justina Shipley (“Orthotic Considerations for Pediatric Pathologies”) has been employed at Shriners Hospitals for Children for five years, presently as Director of Orthotics and Prosthetics at Shriners Hospital, Shreveport, LA. She is a certified orthotist/prosthetist and licensed prosthetist/orthotist with over 20 years of experience with children and adults. Ms. Shipley belongs to several professional organizations, including the American Academy of Orthotics and Prosthetics, the Association of Children’s Prosthetic-Orthotic Clinics, the Orthotic and Prosthetic Assistance Fund (OPAF) and the Board of Certification Orthotics and Prosthetics. She is active in her state organization (LAOP) where she has served on the executive board as program coordinator and is currently president-elect for the 2010-12 term. Justina has also published material in the JPO and does presentations on various topics in the field for educational institutions and community groups. She enjoys outdoor activities and leads a Boy Scout Troop in Benton, LA as Scoutmaster with her three boys.

Robert Shipley Mr. Robert Shipley received his Bachelors Degree in Science with a double major in Energy and Power and General Technology from Illinois State University in 1991. Robert is currently employed at Volt Design and Technical Services at Caterpillar, Inc. He is presently in a position as a lab supervisor; he has overseen seven employees in research and development. Mr. Shipley is responsible for the design, development and administration of various bench tests and experiments in support of engine research efforts to meet tier 4 emissions standards. In addition he has worked with failure analysis, material selection and alternative energy activities. Mr. Shipley has also been employed as a lab technician for two years and a lab chemist for one year. He has worked in various laboratory environments in the automotive and mining industries and specializes in problem solving.
Journal Feedback

Although I’ve been a Certified Life Care Planner for several years, I am new to AANLCP membership. The reason for this letter is to share my enthusiasm with you after having received a few of the copies of the JNLCP. What a delight to find the content of the journal is filled with lots of valuable information for the nurse to use as an educational tool for current and future reference. The content of the journal has proven to be a fabulous channel for information which will help in my practice. I look forward to future publications. Keep up the great work and thank you.

Cheryl Kaufman, RN, BSN, CLNC, CLCP
Taunton MA

Please give my praise to all on the Journal Committee who put this last journal together. It's fabulous, beautifully done and very informative on upper limb problems and prostheses (a much neglected prosthetic subject). I'm not sure what the problem downloading it was for other members, I was able to save it easily the first time as a PDF until I had the time to read it. Again, your professionalism and efforts are greatly appreciated. We have something to be proud of with our Journal. Again, thanks to you all.

Helen "Heather" McDaniel

I am a CNLCP from the very first Kelynco class and was volunteer chair for the Certification Board for many years. I want to thank you for the excellent job you are doing with the Journal. It looks great and is full of information I can use daily. I have a very busy practice and an office of one. I don’t have a lot of time for reading but I now make the Journal a must. Congratulations on a job well done. Thank you.

Annie Barnes

The Journal board thanks everyone who has sent notes of appreciation for the hard work that goes into making this Journal what it is.

Our latest effort is aimed at placing the Journal of Nurse Life Care Planning in the literature indexes Medline and Cumulative Index of Nursing and Allied Health Literature (CINAHL). Criteria for acceptance include peer review, open access, and applicability to practice. Listing in these will increase the visibility of Nurse Life Care Planning, help recruit more nurses to the profession, and reach potential colleagues, business partners, and clients with our powerful message: Nurse Life Care Planning is excellent life care planning. Stay tuned for updates. Ed.

Letters on any topic are welcome and may be sent to the Editor at whowland@howlandhealthconsulting.com. Letters may be edited for brevity.
Early identification of developmental delays, a pediatrician’s responsibility, is critical for timely referral for appropriate subspecialty care. According to Frances Glascoe PhD and Henry Shapiro MD, 16% to 18% of children have disabilities like speech-language delays, mental delays, and emotional disturbances. However, only 20% to 30% are diagnosed prior to entering the school system, and under-detection delays early intervention. (Glascoe, 2007)

Screening for developmental delays have important implications for Nurse Life Care Planning. This review will familiarize the Nurse Life Care Planner with developmental screening in the pediatric population.

Developmental Screening Barriers and Recommendations

In 2001, the American Academy of Pediatrics (AAP) adopted a policy statement that all infants and young children be screened for developmental delays during preventive (routine) visits and recommended the use of valid, reliable screening tools. A year later, AAP conducted a periodic survey of its fellows. The executive summary released in April 2003 noted that 96% of all pediatricians surveyed screen for developmental risk. However, most pediatricians identify risk based on examination alone; only 23% reported using a standardized screening tool.

Unfortunately less than 30% of disabled children are identified by clinical assessment alone.

(Sand, Silverstein, Glascoe, Gupta, Tonniges, & and O’Connor, 2005). When members surveyed did use a tool, it was most often the Denver Developmental II (14%). Others were Bayley, 2% of the time; Ages & Stages, 7%; and Parents’ Evaluation of Developmental Stages (PEDS), 3%. The summary noted that the biggest barrier to screening with a tool is lack of time available in the office (85%). (American Academy of Pediatrics, 2003).

In 2005, Ms. Pettengill founded ALP Medical Consultants providing medical case management services, medical cost projections, file reviews, life care plans and Medicare Set Aside Allocations. She has been a member of AANLCP since 2004 actively working on the conference committee and most recently as a director on the CNLCP Certification Board. She is also a member of NAMSAP and chairperson of the communication committee for NAMSAP. Contact her at 195 Goodrich Hill Rd. Fairfax, VT 05454 802-849-2956
Screening Infants and Young Children

In 2006, the American Academy of Pediatrics issued a policy statement regarding screening which set forth an algorithm for pediatricians to follow when evaluating infants and young children for developmental disorders. (American Academy of Pediatrics, 2006) The first step is surveillance: parents, providers and other adults close to the child express concern and provide specific examples of where they feel the child has difficulties. A few visits to the pediatrician may be needed to evaluate and document a developmental history. If surveillance demonstrates risk, then the pediatrician should complete a formal screening tool.

If this demonstrates risk of delay, then the pediatrician should initiate referrals for medical evaluation and Early Intervention (EI) evaluation for underlying etiology. This includes neuropsychological, behavioral, vision, audiology, and neurological tests by many disciplines, including neuropsychology, physical therapy, occupational therapy, speech-language therapy, and social work. If the medical and EI evaluations demonstrate a developmental disorder than the child should be referred for the appropriate services and close follow up is recommended.

The AAP lists 20 screening tools, indicating the name, description, target age range, number of items on the tool, administration time, psychometric properties, scoring method, cultural considerations, vendor information, and key references for each.

Denver Developmental II is a revision of the original Denver Developmental Screening Test (DDST). DDST was originally developed in 1967 by William K. Frankenburg and introduced with J.B. Dobbs in 1967, marketed by Denver Developmental Material. This test provides a percentage range for skills based on age appropriate performance levels for a given task. For example by age 2 months, 50% of children can sit and hold their head steady; by 3 months, 75% of children can sit with their head steady. By age 4 months, 90% of children are able to perform this task. There are four categories: social contact, fine motor skills, language, and gross motor skills. Concerns about its reliability in predicting less severe delays prompted Frankenburg to revise it to the Denver Developmental II (DDSTII) in 1992. The tool is intended for use with children from birth to aged six years. There are 125 questions and takes 10 – 20 minutes to administer. It is scored based on observation. Advantages of the DDSTII include graphics showing norms for 25%, 50%, 75% and 90% of children for each item, giving a quick visual comparison of how this child ranks against others; and results for subgroups according to sex, maternal education, and ethnicity. Used over time it is ideal for visualizing the child’s progress. (Glascoe FP, 1992)

Reliability issues of the DDSTII are specifically due to the way it is scored. If the administrator is not able to observe the child on a certain task, it is marked “no opportunity.” The scorer can then score the “no opportunity” as a pass or a fail, but cannot remove these tasks from scoring. The sensitivity of the DDSTII is anywhere from 56% - 83% and specificity is anywhere from 40% - 80%. (Schonwald, 2006)

Bayley Infant Neurodevelopmental Screening (BINS) was developed in 1995 by GP Aylward. It consists of 11 – 13 items, depending on the child’s age, and given between 3 to 24 months. There are six item sets to screen basic neurological functions, receptive functions, expressive functions, and cogni-

continued next page
tive processes. Children are graded as low-, medium-, or high-risk in each of the four categories. One study showed BINS had low predictive validity in groups of 6- and 13-month-old infants with an environmental risk. (Hess CR, 2004).

**Ages and Stages Questionnaire (ASQ)** was originally published in 1995. It has a 30 items and the age range is 4 – 60 months. It is completely filled out by parents and addresses areas of communication, gross and fine motor, problem-solving, and personal adaptive skills. It is scored on a pass/fail basis. The third edition was released in 2002. (Bricker D, 2009). Its sensitivity is 72% and specificity is 86%. (Schonwald, 2006). One advantage of this test is that it is available in English, French, Spanish, and Korean. One disadvantage is it is filled out entirely by parents and lack of understanding may affect reporting.

**Parents’ Evaluation of Developmental Status (PEDS)** was developed in 1998. It has 10 items that address areas of developmental and behavioral problems for further evaluation and includes a referral algorithm for additional screening or continued observation. This tool has 75% sensitivity and 74% specificity. Patients falsely identified at risk are typically high-risk children performing below age level academically. (Schonwald, 2006). This screening tool is available in 6 languages, uses one form for all ages, and identifies need for further evaluation.

**Sample Questions From PEDS:**
- Do you have any concerns about how your child talks and makes speech sounds?
  - No
  - Yes
  - A little
- Do you have any concerns about how your child uses his or her hands and fingers to do things?
  - No
  - Yes
  - A little
- Do you have concerns about how your child gets along with others?
  - No
  - Yes
  - A little

Ninety percent of pediatricians who identify a delay with screening will refer a child to the state’s Early Identification (EI) program. (American Academy of Pediatrics, 2003). The primary barrier to referral was lack of understanding or information of the programs, processes, and procedures (46%). Other respondents cited lack of services (20%) or no evidence of effectiveness (10%) as barriers to referral. (American Academy of Pediatrics, 2003)

**Early Intervention in At-Risk Groups**

In 1990, the Infant Health and Developmental Program published the first multisite, randomized trial on the effectiveness of early intervention for children with developmental delays. (The Infant Health and Developmental Program, 1990) It noted that as more low birth weight (LBW) babies survived, several studies showed these infants were at increased risk for medical complications compared their normal birth weight counterparts. Prior studies also

---

**Sample Questions From ASQ:**
- After holding her head up while on her tummy, does your baby lay her head back down on the floor, rather than let it drop or fall forward?
  - Yes
  - Sometimes
  - Not yet
- Is your baby’s hand usually tightly closed when he is awake? (If your baby used to do this but no longer does, mark ‘Yes’)
  - Yes
  - Sometimes
  - Not yet
- Does your baby look at objects that are 8-10 inches away?
  - Yes
  - Sometimes
  - Not yet

(continued next page)
found LBW children scored lower on cognitive tests, had more behavioral issues, and poor academic achievement.

This study concluded that comprehensive and intensive early intervention decrease the number of LBW babies at risk for developmental disability. The advantages included higher academic achievement, fewer placements in remedial classes, lower risk of school dropout and delinquency, and increased employability.

In 1997 Cecelia McCarton MD published the results of a study where children were re-evaluated at age 8 after early intervention programs during their first three years. (McCarton CM, 1997) This study discovered that slightly heavier but still classified as LBW children had better outcomes from the early intervention programs. She posited that “… the lighter birth weight group may contain a higher proportion of neurologically-impaired children who could not benefit from the intervention.” (McCarton CM, 1997) The study recommended developing refined assessment tools for future studies to pinpoint differences between heavier and lighter LBW babies. This study also noted that the cost for the early intervention program that included cognitive, behavioral, and health components cost an average of $15,146 per child, including transportation costs.

In 2006, Marie McCormick published a study of early intervention in LBW premature infants at age 18 (McCormick, 2006). This found similar outcomes to the 1997 study of children at 8 years old, supporting the efficacy of early educational intervention in longer-term outcomes.

As Nurse Life Care Planners we see some of these children in our practices. Understanding screening tests and their strengths and weaknesses will help the Nurse Life Care Planner assess how delayed an individual child is and what additional services to include in the Plan, because a child who has been appropriately identified and provided EI services may make strides in overcoming delays.

A child’s delays and related support needs become more evident with progress through EI programs and transitions to school. Initial intervention may significantly help the child and decrease or eliminate need for services. Some children will require support and subspecialty services through school and into adulthood. As the McCormick study from 2006 noted, however, children with lower birth weights may not benefit as much from early intervention. This may be because many of the children in the study had significant neurological injury which might have made them less able to benefit from an educationally-based EI program.

**Transition to Adulthood**

Meeting health care needs and providing support become especially difficult as the child grows from child to adolescent to adulthood. A person with spe-
cial needs faces many barriers to continued care for many reasons. The Department of Health and Human Services recognized the importance of planned transitions in 2000 when it issued *Healthy People 2010.* (US Department of Health and Human Services, 2000). One objective called for all youth with special needs to receive all necessary services for transition from pediatric to adult care. In 2002 the AAP, the American Academy of Family Physicians (AAFP), and the American College of Physicians (ACP) issued a joint statement defining specific steps to address this. They recommended that healthcare transition services start at age 14 with a written transition plan including recommended services, preventative services, and continuous health insurance coverage. (American Academy of Pediatrics, American Academy of Family Physicians, and American College of Physicians- American Society of Internal Medicine, 2002)

In 2008 AAP performed a survey (#71) of its Fellows on adolescent health care needs. This survey showed that despite the 2002 recommendation for early transition planning for adult care, most pediatricians (65%) did not start planning until the child was aged 18-20 years. Some barriers to transition planning included lack of a family physician to care for older adolescent (80%), lack of available adult specialists (78%), lack of community resources (88%), lack of insurance for transition services (76%), and difficulty breaking the bond between pediatrician and patient and family (90%). (McManus M, 2008)

Although health and human services, pediatrician, family, and internal medicine physician organizations have all identified the need for a written plan for this transition for special needs children, it is not done in the majority of the cases. The Nurse Life Care Planner is in the perfect position to provide patient, family, physician, and attorney with a written plan to follow. It therefore becomes the responsibility of the Nurse Life Care Planner to look at resources in the area and add them into the plan whether there is a cost or not, so that family and providers are aware of them. Whenever possible, discuss the options with the patient and family to determine what will work for them based on their preference, cultural issues, and availability.

The Nurse Life Care Plan can help with this transition even in the absence of litigation. Attorneys who work with special needs trusts or children with disabilities and their families can use it to help plan for care needs and anticipated expenses, assisting all parties through this process.

**A Final Note**

Although pediatricians are screening according to recommendations, the 2002 AAP survey showed that the tool they use most often is the DDSTII, which has questionable reliability and validity. Therefore life care planners should not rely solely on tools or diagnosis based on examinations.

The Nurse Life Care Planner can work collaboratively with therapists and subspecialists who perform medical and EI assessments. The 2006 AAP policy statement provides the framework for healthcare evaluations and follow-up care. Our assessment skills and knowledge of childhood development will help us decide on appropriate services and care needs. Our training and experience as nurses gives us the background to look at age-related issues and long-term care needs of our pediatric and adolescent clients. The professional Nurse Life Care Planner will use nursing process, nursing diagnosis, and ex-
perience as the basis for a Plan that patient, family, and care provider team can use throughout the continuum of care.

Bibliography:


Pediatric Spinal Cord Injury: Evidence-Based Practice and Outcomes

M.J. Mulcahey, Caroline J. Anderson, Lawrence C. Vogel, Michael J. DeVivo, Randal R. Betz, and Craig McDonald

Systematic and longitudinal evaluations of children with spinal cord injury (SCI) have increased the knowledge on the etiology, natural history, treatment, and outcomes of childhood-onset SCI. Typical growth and development of children are catalysts to some of the most challenging secondary manifestations of pediatric SCI. Although a comprehensive discussion of SCI in children is beyond the scope of this article, new and important understandings of pediatric SCI will be discussed. This article will briefly describe the epidemiology of childhood SCI and discuss new surgical and rehabilitation techniques for select aspects of pediatric SCI care. In addition, some of the implications of outcomes of adults with childhood onset SCI will be discussed. Estimated lifetime costs of SCI in children will be presented, and priorities for rehabilitation and research teams working with children with SCI will be outlined.

Epidemiology
A conservative 5% of the SCIs that occur each year in North America occur in individuals younger than 15 years of age and an equally conservative 20% occur in those younger than 20 years of age.² During middle childhood and adolescence, SCI in boys is more common.¹³ However, there is no difference in the frequency of injuries in girls and boys under 5 years of age.³⁴⁷⁻⁹ In children, the level and category of the neurological injury vary as a function of age. For example, younger children are more likely to sustain injuries that result in paraplegia and are more likely to have neurologically complete injuries at any level.⁹ Among children 12 years of age and younger, approximately two thirds sustain paraplegia and realize complete lesions at any level.⁹ In contrast, among adolescent-onset SCIs, one half of all injuries result in paraplegia and one half of all injuries result in complete lesions. Children of all ages are more likely to have low cervical level injuries (C5-C8) than high cervical injuries (C1-C4), with children younger than 8 years of age being least likely to have high level cervical injuries.⁷⁻¹³

Although motor vehicle crashes are the most common cause of SCI in children and adolescents, like their adult peers, children sustain a relatively high percent of injuries as a result of violence.¹⁰⁻¹¹ Lap-belt injuries primarily occur in children where the car lap-belt is positioned above the pelvis, resulting in complete paraplegia.¹²⁻¹⁶ Other causes of SCI in children and adolescents include birth injuries,
child abuse, and transverse myelitis. Additionally, children with skeletal dysplasias, juvenile rheumatoid arthritis, and Down’s syndrome are susceptible to cervical SCI.

Rehabilitation and Habilitation of Children with SCI

Considerations in the rehabilitation and habilitation of children with SCI have been addressed by a variety of clinicians. Rehabilitation refers to restoration of lost skills. Habilitation, a more appropriate term during conversations about caring for infants and toddlers with SCI, refers to the teaching and training of new skills that were never obtained prior to the SCI (e.g., independent mobility in a child injured prior to developing rolling, creeping, or crawling skills). Although the philosophy of pediatric SCI rehabilitation and habilitation may vary among centers, most agree that the interaction between growth and development and the SCI creates significant challenges for children as they age. As a result, rehabilitation and treatment efforts must accommodate the dynamic nature of children and the realization that one day they will require the physical, emotional, and supportive skills to function in the adult world. Many aspects of pediatric SCI have been studied and described, but several areas deserve additional attention.

Paralytic hip

Hip instability in children with SCI has been well documented. There is no consensus on treatment for prevention or correction of hip instability, but our recommendation continues to remain aggressive. For children under 5 years of age with spastic paralysis, a hip abduction brace is prescribed. For children between 6 and 11 years of age, pharmacological management of spasticity and soft tissue stretching through daily routines of range of motion are recommended. If indicated, surgical correction can be successful.

Paralytic spine

Scoliosis is also a well-documented sequel to pediatric-onset SCI. Although literature suggests poor effectiveness of prophylactic bracing, use of a thoracic-lumbar-sacral orthosis (TLSO) may slow the progression of spine deformity in the youngest children with curves less than 20 degrees allowing for further spinal growth. For children under 10 years with flexible curves of over 40 degrees, a TLSO should also be prescribed until the early teenage years at which time surgical correction could be considered.

The mainstay of surgical treatment of paralytic spine deformity is spinal fusion with instrumentation, but new surgical techniques are currently being developed and studied for their safety and utility. For example, for children with mid-to-high cervical level injuries and weakness of the shoulders and elbows, compensatory use of their spine deformity is often responsible for their independence in feeding (mouth-to-hand strategy). Although standard fusion of the spine in an anatomically corrected position may aid with sitting balance and breathing, these children often lose their compensatory strategy as a result of the spine fusion. Recently, Betz and colleagues have developed a method to fuse the spine with a degree of thoracic kyphosis to preserve compensatory function. Satisfaction with spine fusions among those with higher injuries has improved as a result of this technique. Another new surgical technique for paralytic spine deformity is also being pioneered by

continued next page
Betz and involves fusionless correction of the deformity.

**Scapular instability**

Although it has been long recognized that scapular instability develops in persons with tetraplegia, children with high-level injury and who have undergone surgical fusion of paralytic spine deformity may realize even greater upper extremity limitation due to instability of the scapula.

Betz and colleagues studied a consecutive case series of four patients with tetraplegia and mild-to-severe scapular instability to see whether fusion of the scapula to the rib cage is effective in improving cosmesis or the ability to obtain function. For one patient, scapular stabilization for cosmetic correction of scapular winging was effective. Two additional patients who, prior to stabilization, were unable to bring their hands to their mouths achieved independent eating after scapular stabilization. Additional research is currently underway on the indications and outcomes of scapular stabilization in children with high-level tetraplegia.

**Autonomic dysreflexia**

A significant gap in pediatric SCI literature and practice concerns the reliability of pediatric blood pressure measurement and subsequent interpretation. In addition, there is little understanding about the symptomatology of autonomic dysreflexia (AD) in young children. Yet it is known that compared to the adult SCI population, the manifestations and management of AD differ in children as a result of developmental variations of blood pressure, appropriate blood pressure cuff sizes, the communication abilities of younger children, and varying dependency upon parents or guardians.

Hickey reviewed the medical records of 121 patients with pediatric-onset SCI and found that 62 (51%) of them had experienced AD. The most common causes of AD were urological (75%) and bowel impaction (18%). Of the urological causes of AD, bladder distention was most common. Hickey also reported that the most common symptoms of AD for children and adolescents of all ages were facial flushing, headache, sweating, and piloerection. For dysreflexia episodes experienced by children 5 years of age and younger, the most common symptoms were facial flushing and sweating; the youngest age group did not typically experience headaches and piloerection. Because younger children are more likely to have paraplegia due to lapbelt injuries, they are less likely to have AD. The authors are currently developing a prospective, multicenter study to further investigate the phenomenon of AD in infants, toddlers, and children.

**Wheeled mobility**

Little work has focused on building evidence for the timing of when to introduce wheeled mobility to toddlers who were injured prior to independent walking. Studies found that training can begin as early as 12 months and children as young as 18 months of age can learn to use a powered chair safely and independently. Factors that influence successful wheeled mobility in the very young include consistent physical access to the powered wheelchair, cognitive readiness, sensorimotor integration skills (processing sensory input, motor planning, reaction time), and temperament (attention, persistence, and motivation). The specific cognitive and developmental skills that set children up for success are problem-solving ability and an understanding of spatial relationships.

Kangas developed training strategies for children who had never been mobile and also had cognitive impairments. She developed criteria used to determine readiness for powered mobility training that included understanding of stimulus–response, starting and stopping, and directionality. Mastery of powered mobility can easily be correlated with mastery of the skill of ambulation. Ambulation occurs over time, with practice and supervision; the same principles should be considered for power mobility training.

For the child who never met developmental milestones due to early-onset SCI, experience in move-
ment is integral to mobility training; this should occur within a familiar and safe environment. When starting power mobility training, it is best to start with access in one direction, such as forward or turning. Speed must be controlled, but the power wheelchair should remain responsive so that there is no delay in sensitivity or acceleration. Early training sessions should not involve directionality and should be short in duration. All children learn through the development of successful routines; to develop routines, frequent practice must occur.

**Play and leisure**

Play and leisure of typically developing children have gained attention with respect to the large number of diverse activities school-age children participate in, the significant time spent with computerized and other high-tech toys by children of all ages, and the alarming amount of time adolescents spend in sedentary activities. With few notable exceptions, literature on children with SCI is small; even within that body of knowledge, attention to play and leisure is scarce. Recognition of play as both a modality and important outcome has been reported. However, the influence that leisure participation by children with SCI has on their health and wellness has not been studied. Recent work by Johnson suggests that children and adolescents with SCI participate in low-level activities such as listening to music, using a computer, and watching television. Time spent in these activities surpassed that of able-bodied peers. Further research is required to better understand the interaction among play, leisure, and outcomes of children with SCI.

**Upper extremity considerations in tetraplegia**

Outcomes of reconstructive procedures in children with tetraplegia have been reported previously. Our recent unpublished studies of long-term follow-up reveal that tendon transfers to restore hand grasp in children remain effective for more than 10 years after surgery and suggest that active pinch and grasp should be restored for children and adolescents within 12 to 18 months of their injuries and for preschool children prior to starting kindergarten or first grade.

Outcomes of pediatric-implemented functional electrical stimulation (FES) systems also indicate long-term effectiveness. Long-term outcomes of pediatric FES also suggest that some persons, who rejected or infrequently used FES hand systems as children, initiated daily or weekly FES use as adolescents and adults when college student and worker roles were assumed. Also, data support the opposite; frequent use of FES was adversely influenced by sedentary transitions. For example, periods between high school graduation and entering college were associated with infrequent use of FES. Fluctuation in FES use is a direct result of growth and development and, as previously reported for upright mobility, should be anticipated and not considered noncompliant or as a failure of the child or technology, respectively.

**Long-Term Considerations**

One of the gravest responsibilities of pediatric clinicians involves the provision of treatment that is not only beneficial to the child but also facilitates his or her success in future adolescent and adult roles. As such, anticipatory guidance, a term used to refer to
the practice of guiding and educating children and families on what to anticipate or expect in the future, is used. Until recently, little empirical data have been available to assist in preparing children with SCI for long-term outcomes. However, the recent work by Vogel and Anderson and studies of lifetime costs of pediatric onset SCI have established some evidence.

Transition issues and adult outcomes
Through their research of adults with pediatric-onset SCI, Vogel and Anderson have challenged pediatric SCI rehabilitation teams to consider fundamental rehabilitation concepts based on their work with adults with childhood-onset SCI. For example, because adults with childhood-onset SCI have comparable or more schooling than their able-bodied peers, but are gainfully employed to a much lesser degree, Anderson suggests that children with SCI be provided with opportunities to perform household chores and that adolescents with SCI engage in work experience via household chores, part-time work, or volunteerism. As an effort to advocate for such programming, Vogel and Anderson have established a work camp each summer where adolescents assume a variety of worker roles (such as secretary, phone receptionist) and participate in vocational counseling. The long-term impact of such programming has yet to be determined but has set a precedent for other pediatric SCI programs to focus on outcomes not only related to school, play, and self-care but also to age-appropriate work routines.

Dating and sexuality routines of adults with pediatric-onset SCI differ from those of able-bodied adults. Anderson suggests developmentally based sexuality education for children 10 years and older and parental education on fertility, pregnancy, and sexuality for parents of toddlers. In addition, ongoing support and encouragement is recommended for adolescents and young adults to meet the expectations of dating and marriage. Additional implications of Vogel’s and Anderson’s work will be revealed by longer follow-up of adults with early onset SCI. It is well-recognized that children must be transitioned into becoming informed adult health care consumers. A healthy letting-go of adolescents and their families is a catalyst for success in adulthood. As for success for typically developing children, success for children with SCI is the ability to fully participate in life’s experiences with the necessary physical, emotional, social, and vocational tools so that skills and confidences for healthy adult life are developed.

Lifetime Direct and Indirect Costs
Estimates of the average present value of lifetime direct and indirect costs of SCI for a 10-year-old child appear in Table 1. The figures in Table 1 were derived by updating previously published estimates for inflation using the medical care component of the consumer price index for direct costs and the

<table>
<thead>
<tr>
<th>Type of cost</th>
<th>C1-C4 ASIA ABC</th>
<th>C5-C8 ASIA ABC</th>
<th>Paraplegia ASIA ABC</th>
<th>Any level ASIA D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct cost</td>
<td>3,096,242</td>
<td>1,634,430</td>
<td>965,944</td>
<td>586,565</td>
</tr>
<tr>
<td>Lost wages/benefits</td>
<td>2,745,619</td>
<td>2,055,885</td>
<td>1,946,643</td>
<td>1,870,048</td>
</tr>
<tr>
<td>Total costs</td>
<td>5,841,861</td>
<td>3,690,315</td>
<td>2,912,587</td>
<td>2,456,613</td>
</tr>
</tbody>
</table>

Table 1 Mean present value of lifetime direct costs, lost wages, and lost benefits associated with SCI for a child injured at 10 years of age by neurologic category (In June 2003 dollars assuming a real discount rate of 2%).
employment cost index for civilian total compensation for the value of lost wages and fringe benefits. A 2% real discount rate was assumed for all calculations. Additional details and discussion of the limitations of these figures appear elsewhere.

A listing of the direct costs by category of expenditure (in 1992 dollars) has also been reported previously. The greatest long-term expense is for attendant care, particularly for persons with tetraplegia. These expenses are highly variable, depending on the number of hours and level of skill required, as well as whether attendant care services are provided by an agency or through an independent contractor. Costs for ventilator-dependent persons are also substantially higher than the figures cited in Table 1.

The figures in Table 1 should be viewed as conservative, because no provision was made for either improvements in life expectancy or the development of expensive new treatments that have occurred since the data were originally collected in 1990. Substantial increases in the costs of acute care and rehabilitation for persons with SCI that exceed the rate of medical care inflation during the past decade have already been documented.

Future Priorities
Pediatric SCI rehabilitation programs and research efforts demand certain significant priorities. First, there is a need for an outcomes measure designed specifically to assess outcomes of pediatric SCI. Within this effort, the lower age limit for use of the American Spinal Injury Association (ASIA) neurological standards must be defined. Subsequently, modification to the ASIA standards or development of a pediatric SCI neurological exam and classification must occur. This work is underway at the Shriners Hospitals for Children, Philadelphia Hospital.

Other priorities include the inclusion of children with SCI in clinical drug and device trials and a proactive approach to obesity prevention and promotion of physical fitness. Several funded studies under the leadership of Dr. Craig McDonald at the Shriners Hospitals for Children, Northern California Hospital, are focused on physical fitness in children with disabilities. Current efforts in activity-based rehabilitation, a term used to refer to a combination of cycling, supported weight bearing, and other physical activities, must be approached methodically to facilitate optimal benefit with minimal risk to children. At the Shriners Hospitals for Children, Philadelphia, there are several studies and clinical programs evaluating the effectiveness of supported treadmill training, cycling, and aquatic therapy on the health of young children with SCI.

A concerted effort to modify rehabilitation programs based on our knowledge of adults with childhood-onset SCI is essential in the effort to improve long-term outcomes of participation, gainful employment, and quality of life. Drs. Vogel and Anderson continue to pioneer this work through their funded research on quality of life of adults with pediatric onset SCI.

Conclusion
This article provides a review of contemporary issues about and practices for pediatric SCI. Over the past decade, systematic research efforts have resulted in evidence-based practice for paralytic hip and spine management, surgical intervention for restoration of upper extremity function in children, timing for the introduction of wheeled mobility to toddlers, and developmental principles of rehabilitation. Experience and life survival analysis have also exposed areas for continued research and program development. These areas include the treatment of paralytic scapula instability, the role of play and leisure in quality of life outcomes, the effectiveness of physical activity and exercise programs for the reduction of obesity, and promotion of health and specific creative strategies to facilitate a healthy transition into adulthood.

Acknowledgments
We acknowledge the content contributions of Kathryn Hickey, Christin Krey, MPT, ATP, SCI Program Coordinator at the Shriners Hospitals in Philadelphia, and Kris Johnson. Support for the completion

continued next page
of this manuscript was provided by the Shriners Hospitals for Children.

References


continued next page


Cerebral Palsy
Cerebral palsy is a catchall term for a variety of disorders that affect a child’s motor skills and ability to maintain posture and balance. These disorders proliferate from brain injuries that occur before, during, or within the first few years after birth. The injury does not damage the child’s muscles or the nerves connecting them to the spinal cord -- only the brain’s ability to control the muscles. Depending on its location and severity, the brain injury that causes a child’s movement disorders may also cause other problems, such as mental retardation, seizures, language disorders, learning disabilities, and vision and hearing problems. Because cerebral palsy influences the way children develop, it is known as a developmental disability. In the United States about 5000 infants and toddlers and 1200-1500 preschoolers are diagnosed with cerebral palsy each year (Geralis, 1998).

Orthotic Treatment
CP is a life long condition. The treatment goal for patients is to develop maximum independence through motor therapy within the limits of the disability. Properly managed, many patients, especially those with spastic paraplegia or hemiplegia, can lead near-normal lives.

About 85% of children diagnosed with cerebral palsy are prescribed an orthosis to augment their therapeutic exercise program. Orthoses are devices made from plastic, leather, or lightweight metal that provide stability to the joints or passively stretch the muscles. Orthotics devices may also help to reduce muscle tone, sometimes dramatically. Plastic is now the commonly used material because it is light, easily cleaned, relatively attractive and holds its shape under stress. Orthotic devices most often used for children with cerebral palsy are heel cup, arch support, ankle foot orthosis (AFO), and knee ankle foot orthosis (KAFO). These devices are worn inside the shoe and help to stabilize a child’s foot, ankle and lower leg, making firm foot contact with the ground easier when walking or standing. When used in con-
junction with physical therapy, AFOs can frequently help children correct excessive knee flexion in standing and walking (Geralis, 1998).

Orthotic devices are usually prescribed when a child is ready to stand upright. Sometimes however, they are used earlier to maintain joint position. Since each patient with cerebral palsy will have a different level of disability, gait evaluations help determine what kind of orthosis would benefit them the most.

Evaluations usually include information such as stride length; whether they are able to clear the floor during swing phase, foot position, amount of energy consumption and instability. The purpose of the orthosis would be to improve one or all of these issues.

The type of brace depends on the muscles and how they have been affected by the disorder. One patient will benefit from some motion at the ankle but the next patient may need to have the ankle fixed in a specific position to help with instability at the knee.

The use of an orthotic device must be carefully coordinated with the physical therapists exercise and stretching program. An exercise program developed by a therapist is important to help maintain proper fit and function of an orthotic device on a cerebral palsy patient. Because the muscles in many of these children will stay in a contracted position longer then normal because of muscle imbalance, stretching helps to keep the brace fitting properly. Without stretching it may become difficult to put the joint in a neutral position in the orthosis. This will cause improper fit and lead to redness, irritation and possible breakdown of the skin. Since cognitive levels of children with cerebral palsy vary from profound to highly functioning and the disorder is considered to be more of a spectrum disorder that encompasses many levels of acuity there is little relevant research that will specify at what age or cognitive status a child should be able to become independent with brace care. This will depend on each child individually in addition to the scope of services that they will be exposed to. Transitioning from childhood to being an adult is difficult for any individual with a moderate to severe disability because attendant care will need to be considered when the possibility of family assisted care becomes non existent.

**Spina Bifida**

Defective closure of the vertebral column is one of the most serious neural tube defects compatible with prolonged life. Its severity varies from the occulta type with no findings to a completely open spine (rachischisis) with severe neurologic disability and death. In spina bifida cystica, the protruding sac can contain meninges (meningocele), spinal cord (myelocele), or both (myelomeningocele).

Open spina bifida can be diagnosed by amniocentesis showing elevated alpha fetoprotein levels. Spina bifida is most common in the lumbar, low thoracic or sacral region and usually extends for 3 to 6 vertebral segments. The sac in myelomeningocele usually consists of meninges with a central neural plaque. (Fig.1) If not well covered with skin, the sac can easily rupture, increasing the risk of meningitis (Berkow, 1992).

When the spinal cord or lumbosacral nerve roots are involved in the spina bifida, as is usual, varying degrees of paralysis occur below the involved level. Since this paralysis is present in the fetus, there can be orthopedic problems present at birth, e.g., club-
foot, arthrogryposis, or dislocated hips. The paralysis usually affects the bladder and rectal functions and the resulting GU disorder can eventually lead to severely damaged kidneys. Kyphosis, sometimes associated with spina bifida, can hinder surgical closure and prevent the patient from lying supine. Hydrocephalus occurs frequently and may be related to aqueductal stenosis or Arnold-Chiari malformation. Other congenital anomalies may be present (Berkow, 1992).

The need for therapy and orthopedic bracing will depend on a number of factors: degree of paralysis; sensory deficits; presence of a shunt; joint deformities; developmental reflexes; intelligence and strength. An important goal for any patient with orthoses is to function independently in the home, community and at school. This also includes or activities of daily living (ADLs).

**Orthotic Treatment**

Braces for children with spina bifida are designed to give different levels of support, depending on the level of the lesion and the resulting paralysis. A child with spinal involvement may use one or many types of orthoses. These include AFOs, KAFOs, HKAFOs and RGOs (reciprocating gait orthoses) for the lower extremity. The child may also require some level of LSO or TLSO for spinal support. This support ranges from trying to keep the spine in a neutral position for sitting in a chair, to allow tasks such as eating or school work. Many children with this type of disability will also require a lift attached to a shoe on one side or the other, because the spinal lesion does not always result in a symmetrical disability. One leg may be shorter then the other (Geralis, 1998).

Ankle foot orthoses (AFOs) are used in the myelomeningocele population as foot deformities develop secondary to absent intrinsic or other muscle imbalance. Caution in orthotic wear needs to be taken with these children because the limbs often lack sensation and they do not realize when a skin irritation or rubbing problem begins (American Academy of Orthopaedic Surgeons [AAOS], 1996).

S2 innervation or lower is rare in myelomeningocele, so therefore most patients have weak or absent gastrocnemius-soleus complex muscles. This will usually result in a crouch gait that over time causes internal damage to bones and joints. These patients usually lack protective sensation, putting them at a higher risk for serious injury. The AFO helps to replace absent or unbalanced muscle tone and allows a more normal gait pattern that will decrease risk of possible damage to internal structures (AAOS, 1996).

Patients with upper lumbar or thoracic motor levels usually require some orthotic hip control for stability; those with lower levels may need some rotational control. This may be achieved by incorporat-
ing a hip joint attached to bilateral KAFOs which helps to stabilize the person with little or no motor control at the hips. (Fig. 2)

RGOs are a type of HKAFO (hip knee ankle foot orthosis) designed to help with a foot over foot gait. These are used typically in the spina bifida population for thoracic or upper lumbar level involvement of the spinal nerve roots. Generally the children will use them at an early age (18 months to approximately 12 years) but often trade them for a wheelchair because an RGO is difficult to manage and uses a lot of energy for mobility. The wheelchair is faster and easier (AAOS, 1996).

Orthotic treatment often requires a united effort by specialists from several disciplines. Initially important are neurosurgical, urologic, orthopedic, pediatric, and social service evaluations. Thorough evaluation of the infant and counseling of the family should generally precede intervention. It is important to assess the type, level, and extent of the lesion; and resources; and the community resources, including ongoing care. Following this, a decision can be made on how aggressive treatment should be. Orthopedic care should begin early with application of a cast for clubfoot, if present, and close observation of the hip joints, since dislocation is frequent. Other continuing orthopedic concerns are scoliosis, pathologic fractures, development of pressure sores, and muscle weakness and spasm, which may cause further deformities (Berkow, 1992).

Patient and family education is critical in achieving positive outcomes for therapeutic regimens incorporating orthotics. The child’s age, the amount and type of bracing, toileting status, and personal preference should all be considered when developing a treatment plan.

Parents, patients and caregivers alike should be well versed in the fit and function of the device in use. Orthoses should always fit each child comfortably and be applied easily. An orthosis should allow movement of unaffected joints but control motion as needed in other areas depending on the patients specific needs. Any pressure marks under straps or from the brace contact should disappear 10 to 15 minutes after removal of the orthosis. There should also not be any blisters or red marks on the skin.

Duration of brace wear depends on the physician’s prescription and the tolerance of the child. The skin should be checked at least twice daily. Typically growth patterns for each specific patient should be monitored closely. Devices are usually refabricated every 6 months to a year for growing pediatric patients. One indication that a brace is becoming too small in a lower extremity type device is toes extending over the toe plate by more then ¼ of an inch. The proximal portion of the AFO should be no lower than 2 inches below the fibular head. The device will begin leaving red marks and blisters around the edges and the patient may complain about tightness.
in the thigh and or calf areas depending on the type of orthosis worn. Spinal braces will no longer close properly; the opening will gap more the 2 inches and the patient will begin to have too much mobility proximally and distally in the brace (Lutkenhoff, 1999).

Socks or some kind of interfacing should be worn between the brace and the child’s skin. This will help protect the skin especially when the patient has insensate skin. Dermatitis is common and can be treated with cotton socks or other interfacing options that contain moisture wicking and antibacterial capabilities. (Fig. 3)

Orthoses are usually designed to wear under clothing but can be worn over clothing also. Precautions should be taken in the event braces are worn over clothing. A simple wrinkle or two can cause blisters quickly.

Shoes are a common issue in orthotic wear. Since most devices take up additional room in the shoe a larger size will normally be needed. Complaints of pain or rubbing on the dorsum of the foot usually indicate the need for a bigger shoe (Lutkenhoff, 1999).

A plastic orthosis is generally contraindicated when a patient has chronic swelling. If pediatric patients are complaining of tightness and there seems to be obvious swelling it is recommended that the patient be referred to a physician immediately. Since swelling can indicate many severe problems such as broken bones or a possible infection, an orthotist will seek further medical attention from a physician.

Cost of these types of devices can be significant. There are many different nonprofit organizations that make pediatric orthotic and prosthetic care available to children free of charge. Out-of-pocket cost for orthotic or prosthetic treatment begins in the thousands of dollars and can range up to $50,000 or more for only one device. Any device fit by an orthotist or prosthetist is considered to be custom-fitted.

Most of the devices fabricated for disabilities such as cerebral palsy or spina bifida would not only need to be custom-fitted but they are also custom-fabricated, which means that they are made for that specific child and would not fit anyone else. The musculoskeletal issues that most of these children have are moderate to severe and would rarely if ever be fit with an “off the shelf” appliance.

Fig. 3 Courtesy Justina Shipley

References
It is sometimes perplexing how media, nonmedical coworkers, and colleagues perceive nursing. Their view is often narrow; they seem unable to imagine a nurse’s role outside a hospital. In litigation, the Nurse Life Care Planner is sometimes asked about expertise in such terms as, “Isn’t it just finding costs?” or, “It’s like a recipe for the plaintiff’s life, right?” As nursing professionals, we know the answer: Nursing is a science. A professional nurse applies this science through the nursing process of assessment, analysis and interpretation, nursing diagnosis, planning, implementation, evaluation (George, 2002).

As clinical nurses we apply this process to hands on care; as case managers we apply it in guiding and analyzing appropriate care. Life Care Planners provide cost analysis as another expression of nursing process, of which critical thinking is the core.

Therefore a recipe is not an appropriate characterization, unless you are describing Julia Child’s work in her first book, Mastering the Art of French Cooking (1961). Child studied and critically analyzed many traditional French recipes, translated them, and transformed them for the American cook. A nurse develops critical thinking skills by acquiring education that includes complex pathophysiology, psychosocial issues, growth and development, culturally appropriate care, physical assessment, and experience.

To illustrate how this critical thinking process applies to Life Care Planning, this article will show how pediatric surgical and some other fees could be determined in a case study.

James Morgan was born at 40 weeks 5/7 days on 10/19/07 at a major Los Angeles Hospital to a 38-year-old Gravida 3, Para 1, SA 2 mother. His mother reported that pregnancy was complicated by a large-for-gestational-age fetus and
oligohydramnios. James’ birth weight was 3,960 grams.

Delivery was complicated by 3+ meconium staining and emergency C-section. APGAR scores were 5, 7, and 8 at one, five, and ten minutes respectively. James was intubated twice for suctioning of meconium. He continued with respiratory distress and was reintubated and transported to the Neonatal Intensive Care Unit (NICU).

His initial MRI revealed basal ganglia abnormalities, left greater than right. Post-NICU care was provided by a neonatologist, ophthalmologist, gastroenterologist, and neurologist.

James’ eye examination was normal. James had continued orthopedic care through the California Children’s Services (CCS); therapy was provided by the regional center. He had home occupational and physical therapy three times per week.

**Life Care Planning Begins**

The Nurse Life Care Planner and the designated expert physician, a pediatric physiatrist, evaluated James when he was 28 months old. James’ father spoke excellent English; he translated for James’ mother and the examiners.

The mother reported that her son was generally very healthy. James was an active, usually happy little boy. Although he had a gastrostomy tube inserted two months after birth, it was removed one year later. He tolerated a chopped diet and thin liquids without problems and did not cough after eating. He was well-nourished.

On examination James was unable to roll from supine to prone. While prone he could raise his head but did not push up on his arms. He was able to move all extremities. Moderate scoliosis was noted. He was unable to sit without moderate trunk support and unable to stand without maximal trunk support; balance was poor. He had moderate extensor hypertonicity in the lower extremities. He had moderate spasticity in his lower extremities and was unable to stand without maximal support under the arms. He could not yet walk, but scooted on his back for locomotion.

He had moderate athetoid movements in his upper extremities. He had problems with his upper extremity coordination, with difficulty reaching for objects in a precise manner. His fine-motor grasp was fair and mostly with his left hand.

Language acquisition was slow. James was able to say, “Mama” inconsistently and babbled consonant sounds. He recognized family members by sight and was able to follow simple directions, though inconsistently. He was hyperactive throughout the exam but occasionally responded to his mother’s commands. He focused on playing with the computer keyboard.

The medical diagnoses with ICD-9 codes included

- Severe birth asphyxia with neurological involvement (768.5)
- Hyperkinesis with developmental delay (314.1)
- Athetoid cerebral palsy (333.71)
- Scoliosis (737.32)

The surgical plan of care with some CPT codes is outlined in Table 1, next page.

The Nurse Life Care Planner returned for a visit with the family a week later. A home visit is a nec-
The necessary part of the Life Care Planning process, providing information about the environment, current function, safety, and psychosocial needs. It provides time with the family to determine further understanding of the patient’s disability and future care needs.

James’ family lived in a spacious two-bedroom, one-bathroom apartment. As he aged and needed more equipment and access for independence, living space quality would be increasingly important. This article will focus on immediate postoperative needs.

Nursing diagnoses included:

- Deficient diversional activity related to physical impairments, limitations on ability to participate in recreational activities
- Impaired physical mobility related to spasticity, neuromuscular impairment or weakness
- Impaired verbal communication related to impaired ability to articulate words
- Risk for falls related to impaired physical mobility
- Risk for injury: risk factors: muscle weakness, inability to control spasticity
- Self-care deficit: related to neuromuscular impairments and sensory deficits
- Chronic sorrow related to chronic disability for both parents and child (Ackley & Ladwig, 2006)

Questions to be answered:

- Would other conservative care be appropriate before surgeries and procedures?

### Table 1  Surgical Interventions and CPT codes

<table>
<thead>
<tr>
<th>Surgical Intervention</th>
<th>CPT codes (procedure only)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial casting procedure for non-surgical treatment of ankle/foot contracture</td>
<td>29450</td>
<td>To align feet for functional gait prior to or in addition to surgical intervention</td>
</tr>
<tr>
<td>Derotational osteotomies of the femur or tibia</td>
<td>2715 or 27455</td>
<td>To correct lower extremity deformity that often occur with spastic quadraparesis</td>
</tr>
<tr>
<td>Bilateral ankle/foot arthrodesis</td>
<td>27871</td>
<td>To correct foot deformities that often occur with spastic quadriplegia patients</td>
</tr>
<tr>
<td>Tendon lengthening of the lower extremities, especially the hip adductors, hamstring and Achilles tendon</td>
<td>Achilles: 27606, Hip adductors: 27000-27001, Hamstring: 27097</td>
<td>Tightness in the tendons from spasticity results in the inability of the muscle/tendon to adapt while the child grows. Surgical intervention will provide functional improvement.</td>
</tr>
<tr>
<td>Surgery to correct scoliosis</td>
<td>22800-22812; 22840; (Note: coding for correction of scoliosis is a complex process and requires expert knowledge of coding and further information than what currently known about the child at age two (e.g. number of vertebrae involved).</td>
<td>Due to postural deficits which occur with immobility</td>
</tr>
<tr>
<td>Baclofen pump trial and insertion</td>
<td>62319, 62362</td>
<td>For control of spasticity with limited systemic effect from the medication.</td>
</tr>
</tbody>
</table>

• Would James need inpatient or outpatient care?
• Will James need postoperative attendant care due to increased risk for complications?

The Nurse Life Care Planner in collaboration with the physiatrist concluded that appropriate care would include:

• Serial casting before surgical intervention for contractures
• Bracing for scoliosis is recommended for idiopathic curves 20 to 40 degrees to prevent progression while the child is growing (National Scoliosis Foundation, adolescent bracing, 1/3/10)
• Inpatient hospitalizations for all surgical interventions, for pain management and to prevent postoperative complications
• Physical therapy, 6-12 sessions, 1-6 times in James’ lifetime
• Certified nurse assistant (CNA) home care as needed (Table 2)

A Word about Fees
The Nurse Life Care Planner must provide geographically-specific fees. Professional fees are best obtained from current providers. However, this is not always possible. In James’ case, fees were obtained from both local physicians and data from other resources. Examples include:

• The California Worker’s Compensation Fee Schedule (Department of Industrial Relations/Workers’ Compensation). These fees are based on the Medicare Fee Schedule http://www.dir.ca.gov/dwc/dwcpregs/OMFS_Regulations/OMFS_TableA_January2005.pdf

### Table 2 In-home CNA services

<table>
<thead>
<tr>
<th>Age 10</th>
<th>To Age 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA for respite</td>
<td>48 hours/month to age 10</td>
</tr>
<tr>
<td>CNA</td>
<td>8 hours/day when school is in session age 10-22, (2 hours in A.M. and 6 hours in P.M.) (237 days/year)</td>
</tr>
<tr>
<td></td>
<td>8-12 hours/day on weekends and Holidays age 10-22 (125 days/year)</td>
</tr>
<tr>
<td>Meals and incidentals for attendant</td>
<td>5-7 days (4-6 times in lifetime) when the child discharged home after surgery or inpatient hospitalization age 10-22</td>
</tr>
<tr>
<td></td>
<td>2 days per month to age 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 10-22</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Live-in CNA (If in a home with room for live-in attendant)</td>
<td>125 days/year, weekends and holidays age 10-22</td>
</tr>
<tr>
<td>Meals/Incidentals for Attendant</td>
<td>125 days/year on weekends and holidays age 10-22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 22 Forward</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA, live-in or not</td>
<td>362 days/year</td>
</tr>
<tr>
<td>Meals / incidental for attendant</td>
<td>362 days/year</td>
</tr>
</tbody>
</table>

• Codeitrightonline, to compare costs and determine appropriate CPT coding. (www.codeitrightonline.com) A product of Contexto Media, requires subscription
• The Agency for Healthcare Research and Quality (AHRQ) www.hcupnet.ahrq.gov
• American Hospital Directory www.ahd.com
• Medical Fees in the United States (PMIC, 2010)

The Nurse Life Care Planner should have a general understanding of costs in the community and be able to assess whether data from a general source is

continued next page
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Frequency</th>
<th>Cost each episode</th>
<th>Source of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baclofen pump trial</td>
<td>One time cost (undetermined at which age this will be required)</td>
<td>$32,242.44 Average fees: facility: $24,242.44 MD: $8,000;</td>
<td>• Medtronics representative&lt;br&gt;• Anesthesiology Providers of Jones City CA</td>
</tr>
<tr>
<td>Pump implantation</td>
<td>Every 7 years (undetermined at which age this will be required)</td>
<td>$40,005.21 Average fees: facility $38,177 ($11,676.71; battery: ($25,000) and catheter: ($1500)) surgeon $1607; anesthesia $276)</td>
<td>• Equipment: Medtronics, rep. for So. Cal and Medtronics at <a href="http://professional.medtronic.com/downloads/reimbursement/ltb_hosp_cbc.pdf">http://professional.medtronic.com/downloads/reimbursement/ltb_hosp_cbc.pdf</a>; Retrieved on 2/7/10&lt;br&gt;• Professional fees: Medical Fee Schedule in U.S. (PMIC) (page 374)&lt;br&gt;• Outpatient Surgery Center&lt;br&gt;• Contexto, Codeitright&lt;br&gt;• Anesthesia codes per OMFS, CA-DWC</td>
</tr>
<tr>
<td>Pump medication fills</td>
<td>Every 6-12 weeks (4.34-8.67 times/year)</td>
<td>$27,885 - $55,705 / year (Physician fee: $250; kit $175; medication: $6,000)</td>
<td>• Richard Roe, MD, Pediatric Physiatry Associates of Jones City CA</td>
</tr>
<tr>
<td>Scoliosis surgery</td>
<td>One time cost approx. age 12-14</td>
<td>$73,463 Average fees: facility $68,454; surgeon $7268, assistant. $2422; anesthesiology $896</td>
<td>• Facility fees: Agency for Healthcare Research and Quality (AHRQ), <a href="http://www.ahrq.gov">www.ahrq.gov</a>&lt;br&gt;• Professional Fees: Medical Fees in the U.S. (PMIC)&lt;br&gt;• Anesthesia: OMFS, CA-DWC</td>
</tr>
<tr>
<td>Serial casting for non-surgical treatment of ankle/foot contracture</td>
<td>1-2 times in Lifetime (unable to determine at which age this will be required)</td>
<td>$231-$462</td>
<td>• Medical Fees in the United States, (pg 176)</td>
</tr>
<tr>
<td>Tendon lengthening and/or contracture releases (i.e., hip adductors, hamstring and Achilles tendon)</td>
<td>1-3 in Lifetime (unable to determine at which age(s) this will be required)</td>
<td>$46,189 Average fees: facility $43,397 surgeon $1754 assistant, $452 anesthesiology, approx. $586</td>
<td>• Facility fees: Agency for Healthcare Research and Quality (AHRQ), <a href="http://www.ahrq.gov">www.ahrq.gov</a>&lt;br&gt;• Professional fees: Medical Fees in the U.S.</td>
</tr>
<tr>
<td>Bilateral arthrodesis (to correct foot deformities that often occur with spastic quadriplegia)</td>
<td>One time cost (unable to determine at which age this will be required)</td>
<td>$49,162.93 Facility: $45,049 Average fees: surgeon. $4943 each side assistant, $1648 anesthesiologist : $1103</td>
<td>• Agency for Healthcare Research and Quality (AHRQ), <a href="http://www.ahrq.gov">www.ahrq.gov</a>; Professional Fees: Medical Fees in the U.S. (PMIC), (pg 164)&lt;br&gt;• Anesthesia: OMFS, CA-DWC</td>
</tr>
<tr>
<td>Derotational osteotomies of the femur and/or tibia (to correct lower extremity deformity)</td>
<td>One time cost (unable to determine at which age this will be required)</td>
<td>$31,382.64 Facility fee approx. $25,275 Average fees: surgeon $4088 assistant, $1363 anesthesiology, $657</td>
<td>• Agency for Healthcare Research and Quality (AHRQ), <a href="http://www.ahrq.gov">www.ahrq.gov</a>&lt;br&gt;• Professional Fees: Medical Fees in the U.S. (PMIC) (pgs 145,153)&lt;br&gt;• Anesthesia: OMFS, CA-DWC</td>
</tr>
</tbody>
</table>

appropriate for the given situation. This is critical for appropriate cost projections. See Table 3 for representative cost projections for primary surgical procedures in James’ case. Note that they are specific for his geographic area, and most importantly, do not include all charges for hospitalization, ancillary inpatient services, or related postoperative care (MD office visits, VNA, therapy, DME, etc.).

continued next page
The Nurse Life Care Planner provided documentation for these aspects of care to all parties at deposition. Although this overview does not cover implementation and evaluation, standard of practice for Nurse Life Care Planning includes measurement criteria for both. Please refer to the Standards of Practice (American Association of Nurse Life Care Planners, 2007) for details.

Conclusion
It is critical to evaluate each individual patient’s needs. Clients with the same or similar diagnoses may require the similar procedures or equipment; however, costs and fees may differ by geographical area; patient’s circumstances including level of cognition, prior medical history, psychosocial issues (e.g. parent’s level of education, involvement of the parents), and the expert physician’s recommendations. Creating a Life Care Plan is neither magic nor recipe. It is the nursing process: assessment, nursing diagnoses, planning, implementation, and evaluation.

References
Contexto Media, (2009), Codetrightonline, American Medical Association, AMA Publishing, St. Louis
Department of Industrial Relations, (2009), Official Medical Fee Schedule (OMFS), Division of Workers' Compensation, Oakland.
http://www.dir.ca.gov/dwc/OMFS9904.htm#4
Bathing Challenges from Pediatric to Adolescent to Adult

Judy Seidmeyer, R.Ph.
Patricia Johnson, R.N.

Kathryn’s story is not unusual. She was a 16-year-old born with severe disability, high quadriplegia, and weighing 130 pounds. Her father injured his back attempting to lift her out of her wheelchair to put her onto a bench in the bathtub. He had dropped her more often in recent months, and she really hated even having him involved in her bathing. But what choice did they have?

Life care planners identify all different types of necessary support devices. While many issues come as a child enters adolescence, bathing is clearly one of the riskiest for both disabled and caregivers. Safety is paramount in determining the best short- and long-term solutions. The ideal situation requires no lifting or transferring and reduces or eliminates risk of slips or scalds.

Even a seriously-disabled infant can be bathed the same as an able-bodied baby, held by an adult in a tub or small sink-based bathing pan. Neither safety nor effectiveness issues arise.

As the child becomes older, bathtubs can still work as long as the caregiver is strong enough to lift the child into the tub, hold on carefully, and wash and rinse thoroughly.

When the child becomes larger, lifting becomes riskier for both child and caregiver. Positioning may become problematic, especially for children who require some degree of tilt for breathing, such as with cerebral palsy. The caregiver must manage transfer, maintain proper positioning, adequately perform bathing, and ensure that no problems occur. With a 100-plus pound child of five feet or more, simply handling and maneuvering can be a major challenge.

There are safe bathing solutions if architectural modifications for accessibility are an option. Floors can be changed to allow for unobstructed wheelchair access, doorways can be widened to accommodate large wheelchairs, shower heads can be lowered to within easy reach from a seated position, and tubs can be modified or simply accessed differently with special chairs. Roll-in showers have maximal access, and can be used by other family members, but may require expensive major structural and plumbing modifications, which may not be possible in a rental unit or in older construction.

Furthermore, permanent remodeling done for an adolescent or young adult who may want to move away from home in a matter of only a few years can be a less-than-ideal alternative.

Judy Seidmeyer, R.Ph., is President and Patricia Johnson, R.N., is Chief Medical Officer for Care Giver Support Products, LLC. Contact Ms. Seidmeyer at 723 South Casino Center Blvd., 2nd Floor, Las Vegas, NV 89101-6716, judyseidmeyer@cgsp.net
After safety, **bathing effectiveness** is a real concern. This issue also changes with age and size of the patient. A small baby can be washed effectively in the kitchen sink. An adolescent unable to access a full bath or shower with adequate water for true skin cleansing is at risk for developing skin conditions such as *Pseudomonas aeruginosa* folliculitis (sponge bath disease).

According to an article in “Updates,” a newsletter from American Ramp Systems, Issue #2, December, 2007,

> Dr. Rick Rader, Editor-in-Chief of *Exceptional Parent* magazine, calls sponge bathing “an undesirable health practice,” and reports, “Studies have shown that a patient is usually microbiologically more contaminated after the bath than before.”

The U. S. Army Research Institute and Walter Reed Army Institute of Research report “long term sponge bathing has been found to be harmful.” The *Journal of Dermatology* and *Journal of Applied Microbiology* report that sponge bathing can increase the spread of infections including *Pseudomonas aeruginosa* folliculitis and *Staphylococcus aureus*.

Sponge bathing is probably the least effective for maintaining skin health and basic hygiene. Unfortunately, it is often thought to be the only realistic option.

Not to be overlooked are the **emotional challenges** of ineffective bathing. The able-bodied who can shower do not experience the embarrassment of having someone else lift them naked in and out of a tub, or the social ostracism resulting from poor hygiene or catheter accidents that cannot be cleaned up timely and thoroughly.

Last, in a life care plan one must plan for physical condition that improves or worsens with age. Even if a bathing solution is effective for a child, decreased muscle strength in combination with increased size may result in the need for a new bathing alternative.

So what choices really exist? Aside from those mentioned above, the most common include bathtub slides, walk-in tubs, hand-held shower attachments and the FAWSsit portable shower stall for use while in a wheelchair. Each of the alternatives has some benefits and some issues. Table 1 shows some of the significant pros and cons.

When the child becomes an adult, and (with luck) is able to move to a home of his or her own, he or she can make the decisions for the best personal solution. In the meantime, it is incumbent upon the caregivers and the life care planners to provide a good solution during the growing years. This is now possible for a fraction of the cost of remodeling.

To finish this story, let me tell you about Kathryn now. Her family opted for the portable shower stall alternative for their rental home. She has moved from her parents’ rented home into her own apartment. She took her FAWSsit unit with her and is independent in bathing. Notably, she will tell you that she no longer feels like “a piece of meat being handled by her parents.” She graduated from high school and is now in college with plans to become an attorney representing the needs of individuals with disabilities.

continued next page
<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathtub slide, tub transfer bench</td>
<td>• Does not require remodeling or home modification</td>
<td>• Transfers, with attendant risks</td>
</tr>
<tr>
<td>$50-150</td>
<td>• Relatively low cost</td>
<td>• Must be able to reach bathtub controls</td>
</tr>
<tr>
<td></td>
<td>• Simple to operate</td>
<td>• Must be able to sit upright without support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• May not be accessible in small bathroom</td>
</tr>
<tr>
<td>Walk-in bathtub</td>
<td>• Can stay seated while bathing</td>
<td>• Must be able to stand or walk to enter, or install lift, an added expense</td>
</tr>
<tr>
<td>$10,000 +</td>
<td>• No replacement</td>
<td>• May not fit bariatric patient</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Must wait in the tub for filling and draining, risk of chilling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinsing off soapy water is an issue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires plumbing and structural changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remodeling changes required</td>
</tr>
<tr>
<td>Roll-in shower</td>
<td>• Easy access</td>
<td>• Major remodeling may be necessary</td>
</tr>
<tr>
<td>$10,000 - 20,000</td>
<td>• Can be used by all family members without further alterations</td>
<td>• May not be possible in very small bathrooms</td>
</tr>
<tr>
<td></td>
<td>• Good-quality wash, rinse</td>
<td>• Caregiver must plan to get wet</td>
</tr>
<tr>
<td></td>
<td>• Fits all sizes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No replacement</td>
<td></td>
</tr>
<tr>
<td>Fold-away wheelchair shower (FAWSsit™)</td>
<td>• No remodeling or structural changes</td>
<td>• More expensive than a bathtub slide</td>
</tr>
<tr>
<td>$1999 for basic model</td>
<td>• No transfers from the wheelchair</td>
<td>• Requires space within 10-12 feet of a sink for water source and drain</td>
</tr>
<tr>
<td></td>
<td>• Caregivers can assist from the outside and stay completely dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Can be used in any room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Floors stay dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Water temperature can be set safely before the patient enters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lightweight, at approximately 30 pounds total weight</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Can be folded flat and stored when not in use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Water can reach all body parts for efficient rinsing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Available in standard, bariatric, recliner styles, which work for all ages, from small children to adults of all sizes and conditions</td>
<td></td>
</tr>
</tbody>
</table>
The FAWSSit™
FOLD AWAY WHEELCHAIR SHOWER

People in wheelchairs deserve showers too!

The FAWSSit™ portable, self-contained shower provides the full health benefits of a regular shower without requiring lifts, transfers, or remodeling. The FAWSSit wheelchair shower can decrease the incidence of skin infections and UTI’s, promote circulation and muscle relaxation, and help maintain critical body temperature control. Makes any house, mobile home, or apartment completely wheelchair accessible for bathing, with NO HOME MODIFICATION and NO TOOLS required. Standard, Bariatric, Tall, and Recliner models available.

1/10th the cost of re-modeling

1-877-FAWSSit (329-7748)  www.fawssit.com
Give your child independence and freedom.

The STS Pediatric Power Wheelchair

- Custom built frame.
- Allows seating and standing.
- Allows a child to move around in any position.
- Allows up to 15" growth potential.
- Allows a child to be at eye level with peers, increasing self esteem.
- Increases blood circulation, digestion and bone growth.
- Operates in the grass.
- Meets FDA requirements.
- Newly HCPCS approved.

1.800.950.5185
www.mobility4kids.com
Adult and Pediatric Nurses

Careers in Caring

You want to provide one-on-one care with compassion, excellence, and reliability. That’s what home care with Bayada Nurses is all about. Join more than 13,000 nurses, home health aides, and therapists who love working for Bayada Nurses.

As a Bayada nurse, you can:

• **Set** your own schedule
• **Choose** your clients and locations
• **Receive** weekly pay and benefits
• **Enjoy** exceptional clinical support
• **Be recognized** and rewarded for excellence
• **Advance** your career with free training and scholarship opportunities

Call 1-888-4Bayada (1-888-422-9232) | www.bayada.com
Information for Advertisers

Any submission electronically with photos, art, and text is acceptable. Advertisers can submit any ad in a high-resolution PDF or JPEG. PDF format is preferred. We reserve the right to reject any advertising deemed to be in poor taste, libelous, or otherwise unacceptable. Please submit any ad for consideration to the Editor, Wendie A. Howland RN MN CRRN CCM CNLCP, whowland1@mac.com

Rates

Quarter page, $100 per appearance
Half page, $190 per appearance
Full page, $375 per appearance
Submit copy 3 weeks before publish date, invoiced and paid before publishing. Mail checks payable to AANLCP to AANLCP, 3267 East 3300 South #309 Salt Lake City, UT 84109