

Ancillary Services in Pediatric Departments of USA

MOHAMMED ALSABRI, AJITHA YELURU AND RATNA B BASAK

From the Department of Pediatrics, Brookdale University Hospital Medical Center, One Brookdale Plaza, New York 11212.

Correspondence to: Dr Ratna B Basak, Brookdale University Hospital Medical Center, Brooklyn, NY, USA.

ratnabimalbasak@gmail.com

It is well known that prolonged hospitalizations and medical procedures have adverse psychological impact on children. Ancillary services in the pediatric departments help in mitigating stress, improve patient satisfaction, reduce procedural time, and improve the quality of life. This can be translated to measurable outcomes such as less doctor's visits, fewer symptoms, early discharge and fewer medications. Other benefits include conserving staff time and energy, thereby increasing productivity, staff retention and decreasing burnout. As more free-standing children's hospitals emerge, the ancillary services will gain more recognition and popularity to give the best patient care experience.

Keywords: *Art, Clowning, Health, Hospital, Music, Pets.*

In the eighteenth century, physician George Armstrong expressed concerns on the psychological impacts of hospitalization in young children and that separation of sick children from their mothers had adverse outcome on the well-being of these children [1]. However, it was not until 1946 that pediatrician Sir James Spence established the first mother and child hospital [2]. In 1986, the American Academy of Pediatrics mandated that any facility with ten or more pediatric beds must actively address the psychological needs of patients, through implementation of appropriate programs [3].

Recently, there has been a rapid expansion of ancillary services and complimentary medicine in healthcare in pediatric settings world-wide. It is estimated that >50% of children in North America who have chronic diseases use some form of complementary therapy every year. Another study conducted in 20 European countries involving 68% of the European population, showed that complementary medicine (example acupuncture) was offered in private practices in all the countries [4]. Recently a large national survey with an 84% response rate, conducted in the USA reported that 74% employed a massage therapist, 53% a music therapist and 22% an art therapist [5]. A systematic review on the prevalence of use of complementary/alternative medicine varied from 9 to 65% [6]. In 2020, a survey on music therapists working in pediatric medical settings in the United States found that such services have become a standard of care in many pediatric hospitals across the United States [7]. Currently all children's hospitals and community hospitals with medium and large pediatric units in the United States provide various services like – Child life specialist, art and music therapy,

massage therapy, acupuncture, medical clowning and many more. Further, many pediatric units have school teachers to help children catch up with missed homework and earn credits with the work done during hospitalization.

In the following sections we will discuss each of the ancillary services in detail to appreciate their roles in a hospitalized child.

Child Life Specialist

Child life specialists (CLS) are individuals, working in a pediatric hospital setting, who are specialized in child psychology and development. Their goal is to provide emotional and spiritual support, educate and advocate children in a manner appropriate for the development of the child [8]. Along with other team members, they help to build rapport with the patient and the family and help in strengthen the role of parents in a family centered care model [8-10]. The admitted children may be exposed to two kinds of trauma which could impact their welfare-trauma of sickness and the trauma of hospitalization [11]. CLS help in reducing fear and allay anxiety by employing unique strategies tapered to the needs of the child. It may be as simple as giving a box of Lego to a 6-year-old to divert his attention during a physical examination or as complicated as to extract history from a sexually abused 5-year-old girl using play therapy. They also form an integral part of pediatric palliative care team – by identifying non-verbal pain, recognizing the needs and emotions at the end of life, conveying them to the palliative care teams and help in building legacy [8]. Interdisciplinary CLS teams work together focusing

on the quality of life, addressing the psychosocial needs, while respecting the traditional cultures and religious customs [10-12]. They work at times that are convenient for the child, help restructure the day, and prepare children for medical procedures [10,13]. They may decorate the hospital room to make it as comfortable and familiar as the home environment and have traditional “Friday family game nights.” They play board games; bring in movies, and electronic gadgets, helping children stay in touch with their classmates. They encourage patients and families to continue to maintain a semblance of normal life in the hospital setting [8,12,14]. The CLS work in both out-patient and inpatient pediatric settings including in the pediatric intensive care units, behavioral and rehabilitation facilities [15]. Most hospitals have a ratio of 1 CLF for every 10-15 patients, but the ratio may vary depending on the severity of illness and the emotional state of each patient [8,12].

Art and Medical Music Therapy

Art and health have been at the center of human interest since early times [12]. Creative art therapy is the use of expressive media including music, dance, poetry and fine arts which blend together in providing support during medical interventions [8,14,16]. It is well known that music can provide analgesia in painful procedures [13,17]. In addition, creative art therapy assists patients to express thoughts, feelings, and access the subconscious when words are difficult [14,17].

Art therapy is especially effective in pediatrics where primary communication is non-verbal [10,14]. It is well known that, the prefrontal cortex and anterior cingulate cortex are under-activated and amygdala is over-activated in children with mental trauma resulting from chronic debilitating medical illness, death of parents or abuse [18]. Self-expression through art therapy allows the creator to depict emotional experiences by creation of images and provides insight into how these experiences affect thoughts and behaviors [10,12,14,17]. These activities assist in making mind and body connections such as creating a map which can depict their emotions using shapes and colors [14,19]. Creative art therapists provide comfort and support at the community meetings through active listening at times of emotional distress [14,17]. The pediatric psychiatric unit implements a behavioral modification plan that is facilitated by creative art therapists which consists of earning points on a scale of 0-4. Most children are motivated to maintain positive behavior to earn privileges, such as not wearing a hospital gown or getting a special treat [19]. It is often seen that many sick children are more open to the creative art therapists as opposed to their physicians or nurses

[19,20]. There is evidence that patients taking part in visual and performing arts interventions, had earlier discharges compared to those not doing so [12,14]. Furthermore, it also shows that complimentary medicine is effective in decreasing the incidence of apnea in premature infants, shortening length of stay in NICU by 3 days [21]. A study in 29 children found that those receiving music therapy coped better with immunization procedures than those receiving traditional care [22]. One group was randomly assigned to have a music therapist present during immunization, while the second group received traditional care [22]. It has also been reported that music significantly increases levels of oxygen saturation and salivary IgA [23]. Studies show that parent's participation in music therapy helped in improving their interactions with their child. However more studies are needed to explore the type and duration of art-based therapies that are effective in specific conditions.

Pediatric Massage Therapy

The first written records of massage therapy (MT) were found in China and Egypt, as long back as 2700 BC. In United States, MT became popular in the hospitals in the 1850's [24]. Many studies have shown that MT can relieve both emotional and physical discomforts by decreasing anxiety, fear and stress associated with chronic conditions such cancer, asthma, sickle cell disease in children [25]. Pediatric massage therapy (PMT) decreases cortisol level, reduces anxiety and improves the pulmonary function in patients with cystic fibrosis [25]. PMT increases the ability of children with ADHD to focus, helps the autistic child to tolerate touch, and relieves post-traumatic stress disorder [25,26]. The therapists offer their services in a variety of settings like NICU, oncology units, and adolescents clinics [26,27]. Growing evidence has shown that neonates feel the same pain intensity as older children and adults. The lack of verbal skills and cognitive limitation to recognize pain such as in vaccination (commonest source of iatrogenic pain in children) among infant and younger children is more challenging compared to older children. One interesting study found that massage therapy reduced vaccination pain (mean pain scores of 3.05 ± 0.13 and 5.03 ± 0.03 in the study and control groups, respectively) [27]. More studies are needed to understand the frequency, style, and duration that have maximal benefits in children.

Aromatherapy

Aromatherapy is the use of aromatic plant extracts and essential oils in massage or baths, which potentially induces self-healing in hospitalized children by reducing stress and promoting relaxation. The use of such essential

oils for therapeutic, spiritual, hygienic, and ritualistic purposes dates back to ancient civilizations in Chinese, Indian, Egyptian, Greek, and Romans who used them in cosmetics, perfumes and drugs [28]. Variable effectiveness has been seen in pediatric cancer patients [29]. On the other hand, a systematic review found that aromatherapy had superior results in reducing anxiety and improving quality of life compared to massage therapy [30].

Acupuncture

Acupuncture, originating in China in 100 BC, is a form of alternative medicine in which thin needles are inserted into the body [31]. It is still not clear whether acupuncture works through release of neurochemicals such as endorphins or through direct effect on the sympathetic and parasympathetic nervous system [10]. One study showed that it is effective and well tolerated in acute post-operative pain as well as in chronic pain [32]. Further, acupuncture promotes relaxation and sleep [32], thereby decreasing the stress of hospitalization. The biggest challenge in pediatric acupuncture is addressing children's fear of needles. To deal with this issue, the acupuncturist may spend hours with their first-time patients and families to make them completely comfortable with the procedure. They explain and demonstrate the process on their own hands or on the child's toy animal.

Overall, studies have shown good results regarding the efficacy of acupuncture, especially in reduction of pain and vomiting in the pediatric oncology population [33]. It is worthwhile to mention that, acupuncture is safe with less than 0.05% serious adverse event rate [34]. However, more studies need to be done to establish its role in pediatric patients.

Pet Therapy

Pet therapy involves bringing domestic animals into the hospital to interact with patients. Pet therapy was first reported in 1792, to help people with mental illnesses at York Retreat in England, while the first documented use of animal therapy was in a convalescent hospital in New York in 1942 [35,36]. It is not clear when pet therapy was introduced in the pediatric patients. Many studies have shown that pet therapy has an important role in hospitalized children by improving satisfaction, decreasing stress, boosting the morale of patients and their parents as well as reducing post-operative pain, improving pleasure in pediatric palliative care patients [37,38]. The commonly used animals in pet therapy are dogs, which are trained for interacting in medical settings. However, there are concerns regarding risks of

potential allergic reactions and occasional aggressiveness of pets in hospital settings. More studies need to be done to explore type, time and preconditions of pet therapy in the pediatric population.

Hypnosis

Hypnosis is the induction of a state of consciousness in which a person apparently loses the power of voluntary action and is highly responsive to suggestions or directions [40]. It is not clear when hypnosis was used for the first time in the pediatric population, but it has been used in the treatment of a wide variety of childhood disorders. A systematic review done in 2010 suggested that hypnosis works by changing the perception and sensation [41]. Another study showed that hypnosis may activate certain brain areas resulting in changes in arousal, visual imagery perception and reinterpretation [42]. To measure the sensitivity of the child to hypnosis, many scales have emerged, with 'The Shorter stanford clinical scale' being the most commonly used [43]. According to studies, hypnosis has a positive impact in pediatric cancer patients in reducing anxiety, pain, nausea, vomiting and stress. Studies have also indicated that hypnosis is superior to standard therapy of controlled breathing, games or distraction [44,45].

Educational Services for Hospitalized Children

Hospital school program provides hospitalized children with their educational needs to enable a smooth transition back to school [46]. The teachers of the hospital school program are state certified. They are provided with curriculum and instructional materials aligned to the common core learning standards [46,47]. The children have a choice of attending the class in a group or may opt for individual bedside teaching. Science and Maths are taught in a large class setting. Along with academics, children are also taught coping skills and how to work with small peer groups in art projects [47]. They are given incentives like scented pencils, erasers, and highlighters for completing the educational tasks. Attending home school, while being hospitalized, helps children maintain their academic standing, especially during prolonged absence from school [46-48]. In addition, the children may take the examinations required for promotion. Thus, the hospital school program ensures children feel comfortable and less stressed, brightens their spirits during the hospital stay, and facilitates a smoother return to school.

Hospital Clowning

Hospital clowning is a program where specially trained clowns visit health care facilities with an aim to bring some joy and brighten up the everyday life of the

otherwise mundane hospital environment [48]. Since its introduction in the US in 1986, by professional clown Michael Christensen, medical clowning has been widely used in hospitals worldwide [48].

Hospitalization can be a frightening experience for both parents their children. Thus, the so called ‘red nose doctors’ pitch in to help alleviate family fears and anxiety [10,48]. The Nonprofit organization ‘Red Noses’ founded in 2003, comprising of ‘red nose doctors’ or the ‘clown doctors’ serve the inpatient, intensive care, out-patient units and acute care waiting areas, touching the lives of hundreds of children and their families every year. The clowns use performances such as ‘red nose transplants’, ‘kitty cat scans’, funny bone exams, music, and magic tricks to demystify even the most complicated medical treatments, and support the emotional wellbeing of children and their families [48,49]. They reduce the children’s pre-operative anxiety and the pain during an invasive procedures like venous blood draws, allergy skin prick tests, and aid in healing respiratory infections [48-50]. According to a recent meta-analysis, clowning was found to be as effective in reducing children’s preoperative anxiety as midazolam or the presence of parents [48].

CONCLUSIONS

The invaluable role of ancillary services in managing a hospitalized child cannot be overemphasized. They improve patient satisfaction and have a positive outcome on the quality of life, which can be translated in to measurable outcomes such as reducing time for procedures, less doctor’s visits, fewer symptoms, early discharge and fewer medications. These services help in conserving staff time and energy thereby increasing productivity, staff retention and decreasing burnout [50].

The services can be implemented depending on the geographic location, hospital tier, and availability of the providers. All services need not be available in one facility, but they may be shared between different hospitals within a commutable range. As more free-standing children’s hospitals emerge, the ancillary services will gain more recognition and popularity to give the best patient care experience.

Acknowledgements: Ms Larissa Hall (Art Therapist) and Ms. Jessica Indarte (NYS Department of health school educator) for their contributions.

Contributors: MA: did literature search, wrote, edited and approved the final version of the manuscript; AY: did literature search, wrote, edited and approved the final version of the manuscript; RBB: conceptualized, did literature search, wrote, edited and approved the final version of the manuscript.

Funding: None; **Competing interest:** None stated.

REFERENCES

1. Still, GF. The history of pediatrics: The progress of the study of the diseases of children up to the end of the eighteenth century. London: Oxford University Press, 1931.
2. Spence JC. The purpose of the family: A guide to the care of children. National Children’s Homes, 1946.
3. American Academy of Pediatrics Committee on Hospital Care. Handbook of Hospital Care for Children and Youth. American Academy of Pediatrics, 1986.
4. Langler A, Zuzak TJ. Complementary and alternative medicine in pediatrics in daily practice – A European perspective. *Complementary Therapies in Medicine*. 2013; 21S: S26-S33.
5. Dain AS, Bradley EH, Huzeler R, Aldridge MD. Massage, music and art therapy in hospice: results of a national survey. *J Pain Symptom Manage*. 2015;49:1035-41.
6. Ernst E. Prevalence of use of complementary D alternative medicine: A systematic review. *Bull World Health Org*. 2000;78:252-7.
7. Knott D, Biard M, Nelson KE, Epstein S, Robb SL, Ghetti CM. A survey of music therapists working in pediatric medical settings in the United States. *J Music Ther*. 2020; 57:34-65.
8. Basak RB, Momaya R, Guo J, Rathi P. Role of child life specialists in pediatric palliative care. *Palliative care rounds*. *J Pain and Symptom Management*. 2019;4:735-37.
9. Michelson KN, Steinhorn DM. Pediatric end-of-life issues and palliative care. *Clin Pediatr Emerg Med*. 2018;83: 212-19.
10. Poder TG, Lemieux RL. How effective are spiritual care and body manipulation therapies in pediatric oncology? A Systematic review of the literature. *Global J Health Science*. 2014;6:112-27.
11. Malchiodi CA. Medical art therapy with children. Jessica Kingsley Publishers, 1999.
12. Stuckey H, Nobel J. The connection between art, healing, and public health: A review of current literature. *Am J Pub Hlth*. 2010;100:254-63.
13. Ghetti, C. Effect of music therapy with emotional approach coping on preprocedural anxiety in cardiac catheterization: A randomized controlled trial. *Journal of Music Therapy*. 2015;50:93-122.
14. Morelle M, Metz E, Field A. A pilot outcome study of art therapy and music therapy with hospitalized children. *Canadian Art Ther Assoc J*. 2016;29:3-11.
15. Lookabaugh S, Ballard SM. The scope and future direction of child life. *J Child Fam Stud*. 2018;27:1732-47.
16. Beebe A, Gelfand EW, Bender B. A randomized trial to test the effectiveness of art therapy for children with asthma. *J Allergy and Clin Immunol*. 2010;126:263-6.
17. Barrera ME, Rykov MH, Doyle SL. The effects of interactive music therapy on hospitalized children with cancer: A pilot study. *Psycho-oncology*. 2002;11:379-88.
18. Bremner JD. Traumatic stress: Effects on the brain. *Dialogues in Clinical Neuroscience*. 2006;8:445-61.
19. Martin L, Oepen R, Bauer K, Nottensteiner A, Mergheim K, Gruber H, Koch SC. Creative arts interventions for stress management and prevention – A Systematic Review

- Behav Sci. 2018;8:28.
20. Riley S. Art therapy with adolescents. *West J Med.* 2001; 175:54-7.
 21. Bieleninik L, Ghetti C, Gold C. Music therapy for preterm infants and their parents: A Meta-analysis. *Pediatrics.* 2016;138:e20160971.
 22. Yinger OS. Music therapy as procedural support for young children undergoing immunizations: A randomized controlled study. *J Music Therapy.* 2016;53:336-63.
 23. Grebosz-Haring K, Thun-Hohenstein L. Effects of group singing versus group music listening on hospitalized children and adolescents with mental disorders: A pilot study. *Heliyon.* 2018;4:e01014.
 24. Kong LJ, Zhan HS, Cheng YW, Yuan WA, Chen B, Fang M. Massage therapy for neck and shoulder pain: A systematic review and meta-analysis. *Evid Based Complement Alternat Med.* 2013;2013:613279.
 25. Post - White Ja, Fitzgerald M, Savik K, Hooke MC, Hannahan AB, Sencer SF. Massage therapy for children with cancer. *J Pediatric Oncol Nursing.* 2008;26:16-28.
 26. Groenewald CB, Beals-Erickson SE, Ralston-Wilson J, Lac D, Rabbits JA, Palermo TM. Complementary and alternative medicine use by children with pain in the United States. *Acad Pediatr.* 2017;17:785-93.
 27. Abasi Z, Salari A, Rashidi F, Taherpour M. The effect of massage method on the pain intensity of Vaccination in newborns. *J North Khorasan Univ Med Sci.* 2011;3:51-6.
 28. Ali B, Al-Wabel NA, Shams S, Ahamad A, Khan SA, and Anwar F. Essential oils used in aromatherapy: A systemic review. *Asian Pacific J Trop Biomed.* 2015;5:601-11.
 29. Ndao DH, Ladas EJ, Cheng B, Sands SA, Snyder KT, Garvin JH, *et al.* Inhalation aromatherapy in children and adolescents undergoing stem cell infusion: Results of a placebo-controlled double-blind trial. *Psychooncology.* 2010;21:247-54.
 30. Fellowes D, Barnes K, Wilkinson S. Aromatherapy and massage for symptom relief in patients with cancer. *Cochrane Database of Systematic Reviews.* 2004;2; CD002287.
 31. Xinghua BB. *Acupuncture: Visible Holism.* Butterworth-Heinemann, Oxford, UK, 2001.
 32. Kemper KJ, Sarah R, Silver-Highfield E, Xiarhos E, Barnes L, Berde C. On pins and needles? Pediatric pain patients' experience with acupuncture. *Pediatrics.* 2000; 105:941-47.
 33. Reindl TK, Geilen W, Hartmann R, Wiebelitz KR, Kan G, Wilhelm I, *et al.* Acupuncture against chemotherapy-induced nausea and vomiting in pediatric oncology. Interim results of a multicenter crossover study. *Support Care Cancer.* 2006;14:172-6.
 34. Jindal V, Ge A, Mansky PJ. Safety and efficacy of acupuncture in children a review of the evidence. *J Pediatr Hematol Oncol.* 2008;30:431-42.
 35. History of Animal Assisted Therapy." Animal assisted therapy cheshire. N.p., n.d. Web. 24 Jan. 2014. <http://www.animal-assisted-therapy-cheshire.com/historical-present-development-of-aat.html>.
 36. Bustad, Leo K. Animals, Aging, and the Aged. NED - New edition ed., University of Minnesota Press, 1980. JSTOR, Available from: www.jstor.org/stable/10.5749/j.ctttt4cw. Accessed September 3, 2020.
 37. Silva NB, Osorio FL. impact of an animal-assisted therapy programme on physiological and psychosocial variables of pediatric oncology patients. *PLoS One.* 2018;13: 0194731.
 38. Gagnon JI, Bouchard F, Landry M, Belle-Isle M, Fortier M, Fillion L. Implementing a hospital-based animal therapy program for children with cancer: A descriptive study. *Can Oncol Nurse J.* 2004;14:217-22.
 39. Kaminski M, Pellino T, Wish J. Play and Pets: The physical and emotional impact of child- Life and pet therapy on hospitalized children. *Child Health Care.* 2002;31:321-35.
 40. Richardson J, Smith JE, McCall G, Pilkington K. Hypnosis for procedure-related pain and distress in pediatric cancer patients: A systematic review of effectiveness and methodology related to hypnosis interventions. *J Pain Symptom Manage.* 2006;31:70-84.
 41. Landier W, Tse AM. Use of complementary and alternative medical interventions for the management of procedure-related pain, anxiety, and distress in pediatric oncology: An integrative review. *J Pediatr Nurs.* 2010;25:566-79.
 42. Vanhaudenhuyse A, Boveroux P, Boly M, Schnakers C, Bruno MA, Kirsch M, *et al.* Hypnoses et perception de la douleur. *Rev Méd Liège.* 2008;63:424-28.
 43. Morgan AH, Hilgard JR. The Stanford hypnotic scale for children. *Am J Clin Hypn.* 1978-1979;21:148-55.
 44. Richardson J, Smith JE, McCall G, Richardson A, Pilkington K, Kirsch I. Hypnosis for nausea and vomiting in cancer chemotherapy: A systematic review of the research evidence. *Eur J Can Care.* 2007;16:402-12.
 45. Liossi C, Hatira P. Clinical hypnosis in the alleviation of procedure-related pain in pediatric oncology patients. *Int J Clin Expr Hypn.* 2003;51:4-28.
 46. Shaw SR, McCabe PC. Hospital to school transition for children with chronic illness: Meeting the new challenges of an evolving health care system. *Psychol School.* 2008;45:74-87.
 47. Steinke SM, Irwin MK, Sexton K, McGraw A. Pediatric hospital school programming: an examination of educational services for students who are hospitalized. *Physical Disabilities: Education and Related Services.* 2016;35:28-45.
 48. Konssen N, Bolus S, Rombey T, Piper D. Clowning in children undergoing potentially anxiety-provoking procedures: a systematic review and meta-analysis. *BMC.* 2019;8:178.
 49. Shefer S, Attia OL, Rosenan R, Wald OA, Ende H, Gabis LV. Benefits of medical clowning in the treatment of young children with autism spectrum disorder. *Eur J Pediatr.* 2019;178:1283-89.
 50. Gomberg J, Ravi A, Feng E, Meir N. Saving costs for hospitals through medical clowning: A study of hospital staff perspectives on the impact of the medical clown. *Clinical Medicine Insights: Pediatrics.* 2020;14: 1179556520909376.