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Animal-Assisted Activities: Results From a Survey of Top-Ranked Pediatric Oncology Hospitals

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Abstract

Animal-assisted activities (AAA) are increasingly common, yet little is known about practices in pediatric oncology. To address this gap, we surveyed the top 20 pediatric oncology hospitals in the United States in May and June of 2014. Questionnaires were sent via e-mail and generally returned by e-mail or postal mail. Among the 19 responding hospitals, the 18 that offered AAA to pediatric patients formed the basis of our analysis. All sites had written AAA policies. Most programs were restricted to dogs. At 11 hospitals, children with cancer could participate in AAA activities. Outpatient waiting rooms and individual inpatient rooms were the most common locations for AAA with pediatric oncology patients. Safety precautions varied by hospital, but all required hand sanitation after visits and that animals receive an annual health examination, be on a leash or in a carrier, be ≥1 year old, and not be directly from a shelter. Our findings reveal consistencies and variations in practice that may help other hospitals develop their own programs and researchers identify areas of future study.

Keywords

animal-assisted activities, human–animal interaction, pediatrics, oncology

Introduction

Animal-assisted activities (AAA) are "opportunities for motivational, educational, recreational, and/or therapeutic benefits to enhance quality of life . . . delivered in a variety of environments by specially trained professionals, paraprofessionals, and/or volunteers, in association with animals that meet specific criteria" (Pet Partners, 2012). Less formally, AAA generally consists of visits by domestic animals and their handlers in settings such as schools, clinics, hospitals, and residential facilities.

In adults, AAA improves patient mood and mental function and reduces anxiety, physiological measures of stress (e.g., blood pressure, heart rate), pain, and loneliness (Banks & Banks, 2002; Barker & Wolen, 2008; Cerulli et al., 2014; Chu, Liu, Sun, & Lin, 2009; Cole, Gawlinski, Steers, & Kotlerman, 2007; Harper et al., 2014; Johnson, Meadows, Haubner, & Sevedge, 2008; Johnson, Odendaal, & Meadows, 2002; Nimer & Lundahl, 2007; Orlandi et al., 2007). Few studies have examined the effectiveness of AAA in children and adolescents (Barker & Wolen, 2008; Chur-Hansen, McArthur, Winefield, Hanieh, & Hazel, 2014; Nimer & Lundahl, 2007; Urbanski & Lazenby, 2012). Research on children has primarily been in general pediatric hospital units, and also in a pediatric cardiac unit, psychiatric units, and residential facilities (Bardill & Hutchinson, 1997; Caprilli & Messeri, 2006; Kaminski, Pellino, & Wish, 2002; Mallon, 1994a, 1994b; Teeter, 1997; Tsia, Friedman, & Thomas, 2010; Wu, Niedra, Pendergast, & McCrindle, 2002). In these patients, AAA can reduce pain, comfort patients, and have positive emotional effects (Bardill & Hutchinson, 1997; Braun, Stangler, Narveson, & Pettingell, 2009; Caprilli & Messeri, 2006; Kaminski et al., 2002; Sobo, Eng, & Kassity-Krich, 2006; Wu et al., 2002).

Animal-assisted activities have the potential to benefit children with cancer because pediatric oncology patients often suffer from distress due to physical examinations, venipuncture, chemotherapy infusions, spinal taps, surgery, hospitalization, pain, fear of medical procedures, unpleasant physical symptoms, uncertainty, and worry about death (American Humane Association, 2013; Dupuis et al., 2010; Hedstrom, Haglund, Skolin, & von Essen, 2003; Pöder, Ljungman, & von Essen, 2010; Spagrud et al., 2008; Stewart, Mishel, Lynn, & Terhorst,

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2010; Willingham Piersol, Johnson, Wetsel, Holtzer, & Walker, 2008). However, published studies have not commonly addressed the effectiveness or safety of AAA in pediatric oncology (Urbanski & Lazenby, 2012). Safety is of particular interest in this population because of concerns about AAA for immunosuppressed patients (Brodie, Biley, & Shewring, 2002; Elad, 2013). Only 1 study, at Quebec City University Hospital Center, addressed the feasibility of AAA for children with cancer (Bouchard, Landry, Belles-Isles, & Gagnon, 2004; Gagnon et al., 2004). At least 2 other studies on AAA in pediatric oncology are underway: the Canine and Childhood Cancer (CCC) study (American Humane Association, 2013) and our Pediatric Oncology Research on Pets in Outpatient and Inpatient Settings (PORPOISE) study funded by the National Cancer Institute, Group Health Research Institute, and crowdfunding.

Little is known about AAA in pediatric oncology beyond several descriptions of single-site programs or pilots. The goal of this study was to describe AAA practices and policies in leading pediatric oncology hospitals. Understanding current practice of AAA in pediatric oncology is necessary for formulating a research agenda to evaluate the safety and effectiveness of this increasingly common service.

Method

Procedures

In May and June 2014, we identified *U.S. News and World Report's* 20 top-ranked pediatric hospitals for cancer (US News & World Report, 2014). We selected these hospitals because we wanted our approach to be systematic and reproducible, and because we thought that they may be looked to for setting standards of care for other institutions. We used publicly available websites to obtain contact information for the 20 hospitals' AAA programs, child life departments, or main desk. We e-mailed surveys to the identified contact person or department and requested that respondents consult with colleagues at their institution to complete the survey if they did not know all the answers. When necessary, we reminded participants by phone or e-mail to complete the survey. The study-specific survey consisted of questions about institutions' AAA practices, emphasizing pediatric oncology. The Group Health human subjects review office determined that this survey project did not involve human subjects and therefore institutional review board review was not required.

Measures

The survey was developed specifically for this study with input from experts. Survey content was based on characteristics of programs described in the literature and guidelines for animal-assisted interventions in health care facilities published in the *American Journal of Infection Control* (Lefebvre et al., 2008). The survey had 32 questions; most were structured with multiple response categories, but we also allowed space for free-text responses to certain questions.

Analysis

Simple descriptive statistics were computed. Our first set of analyses included all hospitals that offered AAA to at least some of their pediatric patients, regardless of whether they reported allowing AAA visits for pediatric oncology patients. We characterized hospital programs with respect to historical and administrative characteristics (e.g., length of time program had been in effect, program oversight and coordination, written policies), volunteer requirements, animal registration, and types of animals permitted. We then described patient populations allowed to receive AAA visits and the process for identifying eligible patients.

Next, we focused on AAA for pediatric oncology patients specifically, looking first at reasons some hospitals did not offer these services. Among those that did, we characterized visit location, frequency, precautions, and allowed activities. As the nature of this study was purely descriptive, we did not attempt to make general inference or compute statistics other than means, medians, and distributions. All analyses were conducted in Stata version 12 (Stata Corp, College Station, TX).

Results

Of the 20 hospitals we contacted, nearly all ($N = 19$, 95%) responded to our survey. One site completed the questionnaire by phone, and the rest returned the survey by e-mail or postal mail. Most surveys were completed by personnel in child life ($n = 5$), volunteer services ($n = 9$), or both ($n = 1$). The remainder were completed by clinical or research staff. All 19 responding hospitals reported some form of AAA. At 1 institution, AAA was not available for pediatric patients, so we excluded this hospital from remaining analyses; thus, our final analytic sample consisted of 18 hospitals.

Most AAA programs have been in effect for at least 10 years (Table 1). Usually, either child life or volunteer services departments are in charge of AAA, sometimes in conjunction with each other or with infection control and prevention. More than 1 department share responsibility for AAA programs at 4 of the hospitals. All 18 sites reported having written AAA policies. At many sites, multiple departments—usually including infection control and prevention, child life, and/or volunteer services—are responsible for maintaining AAA policies.

Table 1. Characteristics of Animal-Assisted Activities (AAA) Programs (18 Hospitals).

Characteristic	No. of Hospitals (%)[a]; (N = 18)
Years since program established[b]	
≤5	0 (0)
6-10	6 (33)
>10	10 (56)
Unknown	1 (6)
Department/person in charge of AAA program[c]	
Infection control and prevention	2 (11)
Child life	10 (56)
Volunteer services	10 (56)
External organization	0 (0)
Other	4 (22)
Department/person coordinating AAA program[c]	
Child life	8 (44)
Volunteer services	10 (56)
External organization	0 (0)
Other	3 (17)
Written policy on AAA	18 (100)
Department/person who maintains AAA policy[c]	
Infection control and prevention only	3 (17)
Child life only	4 (22)
Volunteer services only	1 (6)
Multiple departments involved	8 (44)
Do not have a policy	0 (0)
More than one policy administered by different departments	0 (0)
Other	2 (11)
Types of animals that may participate[c]	
Dogs	18 (100)
Cats	1 (6)
Miniature horses	1 (6)
Hours per day that teams may volunteer	
<1	1 (6)
1 to 2	14 (78)
>2	1 (6)
No restrictions	2 (11)
Handlers receive volunteer training at hospital	18 (100)
Therapy teams receive AAA training at hospital[b]	13 (72)
Therapy teams undergo temperament testing[b]	17 (94)
Registering organizations[c]	
Pet Partners	9 (50)
Therapy Dogs International	7 (39)
None	4 (22)
Other	6 (33)
Don't know	1 (6)
Patient pets allowed to visit	
Yes	1 (6)
Yes, if approved	3 (17)
Sometimes, under rare circumstances	12 (67)
No, never	2 (11)
Staff pets allowed to visit	
Yes	0 (0)
Yes, if approved	3 (17)
Sometimes, under rare circumstances	1 (6)
No, never	14 (78)

[a] Percentages may not sum to 100% due to rounding.
[b] Missing response = 1.
[c] Results do not sum to total as multiple responses were allowed.

All hospitals provide general volunteer training to handlers, and 13 also reported providing AAA-specific training (Table 1). Dogs participate in all the programs; 1 program also allows cats, while another permits miniature horses. No hospitals reported allowing the following animals in their programs: rabbits; hamsters, gerbils, mice, or rats; nonhuman primates; hedgehogs or prairie dogs; llamas or alpacas; or reptiles or amphibians. Most hospitals require therapy teams be registered with 1 or more organizations that evaluate and register volunteer AAA teams (n = 13). PetPartners and Therapy Dogs International were the most commonly reported organizations. The majority of responding hospitals allow therapy teams to volunteer 1 to 2 hours at a time. Patients' own pets are allowed to visit at 1 site, with approval at 3 sites, and under rare circumstances at 12 sites; however, staff pets are generally not allowed to visit. All 18 hospitals allow some inpatient AAA visits; 4 do not permit outpatient visits (Table 2). In general, visits are allowed for patients before or after surgery but not for patients with current infections, wounds, in the emergency room, with contact precautions, in isolation, who are colonized by certain organisms, who have had bone marrow transplants. There is substantial variation across sites with respect to whether visits may occur in the intensive care unit or in patients with past infections. Sites reported a variety of approaches to identifying patients eligible for AAA visits (Table 3): Asking parents, asking staff, and referring to a census prepared by hospital staff were frequently reported.

Of the 18 hospitals, 11 allow children with cancer to participate in AAA under at least some circumstances or in some settings. One of the 7 sites that indicated it does not allow visits for children with cancer noted in the comments section at the end of the survey that medically cleared patients with cancer may sometimes have visits off the unit. Nevertheless, based on coded responses, this site was classified as not allowing AAA for children with cancer. All 7 hospitals that do not allow AAA for pediatric oncology patients cited infection control and prevention regulations as a reason AAA visits are not permitted. At a few hospitals, lack of permission from hospital administration (n = 1) or oncology clinicians (n = 2) was also noted. None of the sites responded that inadequate staffing or number of volunteers were reasons for not offering AAA to pediatric oncology patients.

Outpatient waiting rooms and individual inpatient rooms were the most commonly reported locations for AAA with pediatric oncology patients (Table 4). Additional locations for hosting AAA visits were hallways and inpatient playrooms, with each being reported by 5 sites. Most hospitals did not report allowing AAA visits in outpatient exam or treatment rooms. All hospitals offering AAA to pediatric oncology patients require participating animals to receive annual health screening,

Table 2. Pediatric Patients Allowed to Receive Animal-Assisted Activities Visits (18 Hospitals).

Patient Group[a]	No; n (Row %)	Yes; n (Row %)	Unknown; n (Row %)	Missing; n (Row %)
Patients in intensive care unit	7 (39)	9 (50)	1 (6)	1 (6)
Patients in the emergency room	10 (56)	4 (22)	2 (11)	2 (11)
Patients on contact precautions protocol	16 (89)	0 (0)	2 (11)	0 (0)
Patients in isolation	17 (94)	0 (0)	0 (0)	1 (6)
Patients with immunosuppression	10 (56)	5 (28)	2 (11)	1 (6)
Patients in shared rooms	3 (17)	10 (56)	1 (6)	4 (22)
Patients who have had a bone marrow transplant	13 (72)	4 (22)	1 (6)	0 (0)
Patients with current infections	14 (78)	3 (17)	1 (6)	0 (0)
Patients who have open wounds	12 (67)	4 (22)	2 (11)	0 (0)
Patients with infections such as MRSA, VRE, ESBL, and CRE	15 (83)	0 (0)	3 (17)	0 (0)
Patients colonized by organisms such as MRSA, VRE, ESBL, and CRE	15 (83)	0 (0)	3 (17)	0 (0)
Patients with *past* infections, such as MRSA, VRE, ESBL, and CRE	7 (39)	5 (28)	5 (28)	1 (6)
Patients who have recently had surgery	0 (0)	16 (89)	2 (11)	0 (0)
Patients who are scheduled for surgery	2 (11)	15 (83)	1 (6)	0 (0)
Inpatients	0 (0)	18 (100)	0 (0)	0 (0)
Outpatients	4 (22)	13 (72)	0 (0)	1 (6)

Abbreviations: MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant enterococcus; ESBL, extended-spectrum β-lactamase; CRE, carbapenem-resistant enterobacteriaceae.
[a] Percentages may not sum to 100% due to rounding.

Table 3. Processes Animal-Assisted Activities Teams Use to Identify Patients Eligible for Visits (18 Hospitals).

Process[a]	No. of Hospitals (%); (N = 18)
Census prepared by hospital staff	9 (50)
Note on door	4 (22)
Note in medical record	3 (17)
Ask staff	10 (56)
Ask parents	10 (56)
Other	8 (44)

Note. Examples of processes animal-assisted activities teams use to identify patients eligible for visits include: the staff identify patients or make requests, the volunteer office takes requests, they are part of the regular activity schedule, multiple people identify eligible patients, or patients/families sign consent at registration.
[a] Results do not sum to total as multiple responses were allowed.

be bathed before visiting, be on a leash or carrier until they reach the patient, be ≥1 year old, and not be directly from a shelter. Nearly all require vaccination against rabies and parvovirus, require handlers to bathe and brush animals before visiting, and temporarily exclude animals with illness, ticks, fleas, or mange. Eight of 11 sites require routine screening for zoonotic diseases. At all hospitals, patients, visitors, and staff must sanitize hands after touching the animal, and usually before as well. All hospitals allowed children to pet the animal and the animal to sit on the bed with a barrier (Table 4). Most also allow the animal to sit on the child's lap and the child to brush the animal. Several sites allow the child to feed the animal, give the animal a treat (n = 5), or the animal to lick the child (n = 3).

Sites vary with respect to how visits are conducted. At about half of the sites, parents or guardians are required to be present during visits, and at half, hospital staff members are required to supervise (Table 5). Three sites require both parents/guardians and staff to supervise; 2 hospitals do not require either. Handlers obtain patient consent at 8 sites and parental consent at 9 sites; we did not ask sites to report whether consent was verbal or written.

Five of 11 sites reported keeping records of which patients received AAA visits. The most common approach for tracking adverse events (e.g., infections, bites) was for volunteers, patients, visitors, and staff to report them on their own (n = 8); only 1 site reported that infection control and prevention actively monitors AAA-related infections.

Discussion

Human–animal interaction is a growing area of research and health care delivery. There are professional societies (e.g., International Association for Human–Animal Interaction Organizations [IAHAIO] and International Society for Anthrozoology [ISAZ]), scientific journals

Table 4. Location, Frequency, and Permitted Activities at Hospitals Offering Animal-Assisted Activities to Pediatric Oncology Patients (11 Hospitals).

	No. of Hospitals (%) (*N* = 11)
Location[a]	
Outpatient waiting rooms	8 (73)
Outpatient exam rooms	1 (9)
Outpatient treatment rooms	2 (18)
Individual inpatient rooms	8 (73)
Outpatient play room	3 (27)
Inpatient play room	5 (45)
School room	0 (0)
Family room	2 (18)
Hallways	5 (45)
Other	4 (36)
Number of days per week that AAA teams visit inpatient pediatric oncology unit	
1-2	2 (18)
3-4	2 (18)
5-6	1 (9)
7	2 (18)
It varies a lot	3 (27)
Inpatient visits not allowed	1 (9)
Number of days per week that AAA teams visit outpatient pediatric oncology unit	
1-2	5 (45)
3-4	0 (0)
5-6	1 (9)
7	0 (0)
It varies a lot	2 (18)
Outpatient visits not allowed	2 (18)
Missing	1 (9)
Permitted activities	
Child can pet animal	11 (100)
Child can feed animal/give treat	5 (45)
Animal can sit on child's bed without a barrier	1 (9)
Animal can sit on child's bed with a barrier	11 (100)
Animal can sit on child's lap	7 (64)
Child can brush animal	7 (64)
Animal can play with toy	5 (45)
Animal can lick child	3 (27)
Group visits	9 (82)

[a]Results do not sum to total as multiple responses were allowed.

(e.g., *Anthrozoös*), funding opportunities (e.g., National Institute of Child Health and Human Development's public private partnership with WALTHAM Centre for Pet Nutrition; Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2012), and academic centers (Johnson, 2013) dedicated to human–animal interactions. A PubMed search (November 7, 2014) on "animal-assisted therapy" retrieved 155 citations in 2013 compared with only 43 in 2000, and there have been several recent reviews on the topic (Chur-Hansen et al., 2014; Kamioka et al., 2014; Urbanski & Lazenby, 2012). Nevertheless, the literature on AAA in pediatric oncology remains sparse. No published studies have addressed the effectiveness or safety of AAA in pediatric oncology. However, the Quebec City University Hospital Center study demonstrated high satisfaction with an AAA program in pediatric oncology, and all parents surveyed indicated they would recommend it to others. No nurses reported extra work. Parents reported that children were happier, more social, and more compliant with treatment. No safety incidents, allergic reactions, or infections were reported (Bouchard et al., 2004; Gagnon et al., 2004).

Understanding whether AAA is safe and effective for pediatric cancer patients is critical, especially because of concern about infection in immunosuppressed persons. Conducting AAA research in pediatric oncology requires understanding current regulations and variations in practice. Knowledge of regulations helps us understand elements required for intervention protocols (e.g., hand cleaning), whereas knowledge of practice variation can help us identify research opportunities. For example, the fact that most hospitals do not allow visits in outpatient treatment rooms suggests that conducting a study on the effectiveness of AAA to reduce distress during treatments may be challenging to conduct under current hospital policies. In contrast, the fact that there is substantial variation in which activities are permitted provides the opportunity for natural experiments on the safety and benefits of different activities.

While there are reports of individual programs, the last systematic survey of institutions was more than 20 years ago and did not focus on many of the elements in our survey or on children with cancer specifically (Waltner-Toews, 1993). Our findings reveal important consistencies and variations in AAA practice in pediatric oncology. These findings may help hospitals develop their own programs and researchers identify areas of future study. Among the top-ranked 20 pediatric oncology institutions in the country, 11 offer some form of AAA to pediatric oncology patients, 8 do not, and the status of 1 is unknown. All 7 hospitals that offer AAA to some pediatric patients but not pediatric oncology patients listed infection control and prevention regulations as a reason for their policy. These data alone indicate substantial variation in practice and suggest a need for epidemiologic studies of the risk of infection due to AAA in pediatric oncology patients.

Programs vary considerably in how patients are identified and consented and who must be present during the visit, how often visits occurred, and where they occurred. Hospitals are consistent with respect to safety

Table 5. Precautions Used at Hospitals Offering Animal-Assisted Activities to Pediatric Oncology Patients (11 Hospitals).

Precaution[a]	No; n (Row %)	Yes; n (Row %)	Unknown; n (Row %)	Missing; n (Row %)
Handler baths animal before visit	0 (0)	11 (100)	0 (0)	0 (0)
Handler brushes animal before visit	1 (9)	10 (91)	0 (0)	0 (0)
Patients, visitors, and staff sanitize hand before touching animal	3 (27)	7 (64)	1 (9)	0 (0)
Patients, visitors, and staff sanitize hand after touching animal	0 (0)	11 (100)	0 (0)	0 (0)
Medical staff approves each visit	6 (55)	5 (45)	0 (0)	0 (0)
Handler obtains patient consent	3 (27)	8 (73)	0 (0)	0 (0)
Handler obtains parent consent	2 (18)	9 (82)	0 (0)	0 (0)
Animals are vaccinated against rabies	0 (0)	10 (91)	0 (0)	1 (9)
Animals are vaccinated against parvovirus	1 (9)	10 (91)	0 (0)	0 (0)
Animals receive annual health screening	0 (0)	11 (100)	0 (0)	0 (0)
Animals with illness, fleas/ticks/mange, or temporarily withdrawn	0 (0)	10 (91)	0 (0)	1 (9)
Animals *not* fed raw food or treats	3 (27)	7 (64)	1 (9)	0 (0)
Animals be on leash or in carrier until they reach patient	0 (0)	11 (100)	0 (0)	0 (0)
Animals be ≥1 year old	0 (0)	11 (100)	0 (0)	0 (0)
Animals be household pets not directly from shelter	0 (0)	11 (100)	0 (0)	0 (0)
Animals are routinely screened for zoonotic diseases	3 (27)	8 (73)	0 (0)	0 (0)
Visits are supervised by hospital staff member	5 (45)	6 (55)	0 (0)	0 (0)
Parents/guardians present during visit	5 (45)	6 (55)	0 (0)	0 (0)

[a] Percentages may not sum to 100% due to rounding.

precautions related to animal health and disease transition, but there are differences even in these practices.

In 2007, a stakeholder Working Group meeting sponsored by the Public Health Agency of Canada and the Centre for Public Health and Zoonoses at University of Guelph published guidelines for animal-assisted interventions in health care facilities (Lefebvre et al., 2008). They used the Center for Disease Control's evidence appraisal guidelines to rate the quality of evidence for each recommendation. The only guideline supported by IA-level evidence ("strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies") was exclusion of animals that had eaten raw foods, treats, or chews from animal origins within the past 90 days. In our survey, most of the sites ($n = 7$) required animals not be fed raw foods; however, 3 sites did not have this restriction, and 1 site was unsure. The Working Group also issued several IB recommendations ("strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretic rationale"). Those recommendations included hand washing before and after animal contact; restricting animals to domestic companion animals that are household pets, excluding certain species; forbidding animals directly from a shelter; requiring animals to be at least 1 year old; temporarily withdrawing animals with fleas, ticks, and mange from the program; routine screening for specific zoonotic microorganisms; preventing contact between the animal and skin breaches or medical equipment; using a barrier if the animal is placed on the bed; preventing the animal from licking the patient and health care staff. Nearly all the hospitals follow most of these precautions; however, there are several that do not require routine screening for zoonotic diseases or hand sanitization before visits. We did not inquire about contact between the animal and the broken skin.

Our study provides new information on the delivery of AAA in pediatric oncology practice; however, there are important limitations to note with respect to both the interpretation of our data and their generalizability. In general, departments that coordinated the AAA program—and were likely to have the best knowledge of policies—completed the surveys. However, it is possible that program coordinators may not have been aware of all current practices and that there may have been social desirability bias in responses. It is also possible that our unvalidated survey questions were misunderstood.

It is important to note that the goal of the survey was to describe practices at the invited institutions. We selected institutions systematically (i.e., based on *U.S. News & World Report* rankings); however, these hospitals may not be nationally representative. Nevertheless, the fact that we observed variation in practice even within this sample suggests that variation occurs more broadly in community practice. Given that these hospitals are

considered to be among the leading pediatric oncology institutions, they have the potential to set standards of care for other institutions. Thus, understanding their programs and the variations may help understand trends in other U.S. hospitals.

While this article documents current practices and policies, it does not provide evidence on what is safe or effective. Results from currently underway studies and future studies have the potential to elucidate which AAA protocols are safe and effective for children with cancer. Such research will help providers and hospitals make evidence-based decisions about whether and, if so, how to provide AAA services to pediatric oncology patients.

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