PROGRAM PROFILE

Robotic Pet Therapy in the Intensive Care Unit

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Background: Robotic pet therapy could aid in the nonpharmacologic treatment of pain, agitation, delirium, immobility, and sleep disruption (PADIS) in the intensive care unit (ICU), similar to traditional pet therapy.
Observations: The North Florida/South Georgia Veterans Health System implemented a robotic pet therapy program for patients requiring ICU care. Details of this program are described in this article, including evaluating its impact on PADIS management.
Conclusions: Robotic pet therapy can be successfully implemented in the ICU and could be a simple, safe, and beneficial nonpharmacologic intervention for PADIS.

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Critical illness is commonly associated with interrelated conditions including pain, agitation, delirium, immobility, and sleep disruption (PADIS). Managing PADIS is often complex and includes pharmacologic and nonpharmacologic interventions.[1] Incorporating multifaceted practices to enhance PADIS management has been shown to improve several intensive care unit (ICU)-related outcomes.[2]

Many pharmacologic PADIS treatments are ineffective or associated with adverse effects. For example, antipsychotics used for treating ICU-related delirium have not shown improved outcomes.[3,4] Commonly used medications for agitation, such as benzodiazepines, increase delirium risk.[5,6] Because of these limitations, several nonpharmacologic interventions for PADIS have been evaluated.

FIGURE Robotic Pets Used in the Intensive Care Unit

Pet therapy has been implemented in some ICU settings, but is not widely adopted.[7] Also referred to as animal-assisted activities, animal-assisted therapy, or animal-assisted interventions, pet therapy typically involves interaction between a patient and a live animal (most commonly a dog) under the direction of an animal handler, with the intention of providing therapeutic benefit. Interactions frequently include meet and greet activities such as petting, but also could include walking or other activities. Pet therapy has been reported to reduce pain, agitation, and stress among ICU patients.[8] Introducing a pet therapy program with live animals in the ICU could be challenging because of factors such as identifying trained, accredited animals and handlers, and managing infection control and other risks.[9] As an alternative to live pets, robotic pet therapy has been shown to be beneficial—mostly outside the ICU—in settings such as long-term care.[10,11] Although uncommon, robotic pets have been used in the ICU and hospital settings for therapeutic purposes.[12] Robotic pets reduce many concerns associated with live animals while mimicking the behaviors of live animals and potentially offering many of the same benefits.

OBSERVATIONS

The North Florida/South Georgia Veterans Health System (NF/SGVHS) implemented a novel robotic pet therapy program for patients requiring ICU care to improve the treatment of PADIS. Funding was provided through a Veterans Health

TABLE 1 Procedures for Robotic Pet Therapy in the Intensive Care Unit

Category	Details
Selection	• Patients are determined based on factors that reflect interest in, positive response to, or expectations of therapeutic benefits; factors include: Pain, agitation, delirium, immobility, sleep disruption, or other disorder that might respond to pet therapy; history of having a pet; current symptoms/observations (eg, aggressive behaviors); positive response to visiting therapy pets and/or stuffed animals • Benefits and risks are discussed with interdisciplinary team and the patient or caregiver/decision maker • If the intensive care unit team and patient/decision maker approve, patient is offered a choice of companion animals
Assessment	• Nurse determines when interaction with the robotic pet should be encouraged • Nurse observes the patient for therapeutic benefits • According to the patient's care plan, interaction with the companion animal could be encouraged before providing care or in other situations to prevent responsive behaviors
Implementation	• Nurse retrieves companion animal; activates/turns on companion animal; models how to interact with it (eg, pet the animal's back); encourage patient interaction with companion animal; and provides brief verbal cues and/or demonstrations (eg, "What a beautiful cat! May I pet him? (demonstrate petting it). Listen to him purr! Will you pet him?")
Monitoring response	• Nurse observes the patient for desirable responses, such as brighter affect or being more alert or engaged, calmer; changes in responsive behaviors; or any undesirable responses (eg, increased anxiety, tearfulness, or agitation in response to the pet). If an undesirable responses occurs, nurse discontinue use, documents response, and consults with intensive care unit team
Documentation	• Nurse documents use of robotic pet and patient response
Storage and cleaning	• Companion pet is stored in patient's room • Nurse practices hand hygiene before touching the pet, such as washing their hands, using hand sanitizer; or wearing gloves if indicated • If indicated, the patient will be encouraged to practice hand hygiene before interacting with pet • Nurse will wipe down the fur of the pet using cleaning procedures at least weekly as needed and if the pet appears soiled or comes into contact with a soiled surface • Cleaning procedures: wipe down fur of pet with hydrogen peroxide wipes; let fur dry as much as possible; brush the fur; clean the brush; and replace batteries as needed
Safety	• Potential safety concerns are discussed during the selection phase; including patient behaviors that raises safety concerns • Initial interactions are observed for safe interactions • If the intensive care unit team has concerns about the pet being available throughout the day, the pet will be stored out of sight and out of reach when not in use

Administration Innovation Grant procured by a clinical pharmacy specialist as the program's champion. Goals of the robotic pet therapy program include reductions in: distressing symptoms associated with PADIS, use of psychoactive drugs and physical restraints, and ICU length of stay. The ICU team developed standard operating procedures and an order menu, which were integrated into the ICU prescriber ordering menu. Patients were selected for pet therapy based on PADIS scores and potential for positive response to pet therapy as assessed by the ICU team. Patients in medical and surgical ICU settings were eligible for the program. The robotic pets used in the program were Joy for All Companion Pets (Ageless Innovation LLC). Robotic cats and dogs were available and pets were "adopted' by each

TABLE 2 Patient Demographics (N = 30)

Criteria	Results
Age, median (IQR), y	73.5 (70-83)
Sex, No. (%)	
Male	25 (83)
Female	5 (17)
Race, No. (%)	
White	24 (80)
Black	3 (10)
Unknown or declined to answer	3 (10)
ICU specialty, No. (%)	
Medical	21 (70)
Surgical	9 (30)
Diagnosis, No. (%)	
Respiratory failure	13 (43)
Sepsis	8 (27)
Shock from cause other than sepsis	4 (13)
Bowel obstruction	2 (7)
Acute coronary syndrome	1 (3)
Acute stroke	1 (3)
Gastrointestinal hemorrhage	1 (3)
ICU length of stay, median (IQR), d	9 (5-14)
ICU day when receiving robotic pet, median (IQR)	4.5 (3-8)
Documented indication(s) for robotic pet, No. (%)[a]	
Pain	11 (37)
Agitation	15 (50)
Delirium	15 (50)
Insomnia	2 (7)

Abbreviation: ICU, intensive care unit.
[a]Patients may have had > 1 indication.

patient (Figure). As an infection control measure, pets were not reissued or shared amongpatients and pets could be cleaned with a disinfectant solution. Nurses were primarily responsible for monitoring and documenting responses to robotic pet therapy.

It was necessary to secure buy-in from several services to successfully implement the program. The critical care clinical pharmacy specialists were responsible for ordering, storing, and dispensing the robotic pets. The NF/SGVHS innovation specialist helped secure funding, procure the robotic pet, and promote the program. The standard operating procedures for the program were developed by a multidisciplinary team with input from critical care nurses, intensivists, pharmacists, patient safety, and infection control (Table 1). Success of the program also required buy-in from ICU team members.

PROGRAM IMPACT

A retrospective cohort study was conducted to assess for improvements in PADIS symptoms and medication use post-intervention. Patients were included if they received robotic pet therapy in the ICU from July 10, 2019, to February 1, 2021. Individuals aged < 18 years or > 89 years, were pregnant, or were not receiving ICU-level care were excluded. Outcomes assessed included improvement in pain scores, agitation scores, sleep quality, resolution of delirium, and use of pain or psychoactive medications during patients' ICU stay.

Thirty patients were included in the study (Table 2). After receiving a robotic pet, 9 (30%) patients recorded decreased pain

scores, 15 (50%) recorded decreased agitation scores, 8 (27%) had resolution of delirium, and 2 (7%) described improvement in sleep. Pain medication use decreased in 12 (40%) patients and psychoactive medication use was reduced in 7 (23%) patients.

Limitations

The robotic pet therapy program has shown promising results; however, some aspects merit discussion. Evaluation of this program is limited by factors such as the observational study design, single-center patient sample, and lack of comparator group. Although no known adverse effects of robotic pet therapy were seen, it is possible that some patients may not have a favorable response. Challenges of implementing a robotic pet therapy program include cost and additional operational activities (storage, ordering, dispensing) necessary to maintain the program. Additional research is needed to evaluate the impact of robotic pet therapy on other outcomes including cost, ICU length of stay, and patient satisfaction.

CONCLUSIONS

Robotic pet therapy can be successfully implemented in the ICU and appears to provide a simple, safe, beneficial, nonpharmacologic intervention for PADIS. This study showed that many patients had favorable response to robotic pet therapy, indicating that it may be a viable alternative to traditional pet therapy. Other health systems could benefit from implementing programs similar to the robotic pet therapy program at NF/SGVHS.

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Disclaimer

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