COMMENTARY

THE AMERICAN JOURNAL of MEDICINE®

New Approaches for the Treatment of Delirium: A Case for Robotic Pets

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Delirium is highly prevalent in hospitalized patients and is a strong and consistent negative predictor of length of stay, mortality, and long-term cognitive outcomes.[1] Symptoms commonly associated with delirium include reduced ability to focus, sleep disturbances, psychomotor agitation, and emotional disturbances. The management of the behavioral disturbances of delirium is challenging. Although non-pharmacologic means to reduce the duration or severity of delirium are advocated, there are limited established therapies beyond early physical mobilization, reorientation, attempting to enhance natural sleep patterns, and bedside sitting.[1,2]

Recently, the use of robotic pets has been reported to be helpful in reducing agitation in nursing home patients with dementia.[3-5] Given that dementia is a major risk factor for delirium, it is reasonable to speculate whether such devices could be useful in a hospital setting. To this end, we initiated a pilot study to assess the feasibility of using robotic pets as a non-pharmacologic behavioral intervention for intensive care unit (ICU) patients with delirium.

We recruited 20 subjects with ICU delirium, at our hospital, from July 2017 to December 2017. The institutional review board approved the study. Delirium was confirmed using the Confusion Assessment Method for the ICU scale.[1] After written informed consent was obtained from the subject's proxy, the subject received a new "Joy for All" robotic cat (Hasbro, Pawtucket, RI). The cat is battery-operated and can purr, meow, and react to touch. The family and bedside nurse were encouraged to use the cat with the subject (Figure). At 3 days post-enrollment, the subject (if able) and family (if available) were asked to complete a 5-question survey and to provide unstructured feedback. The same survey was e-mailed to all ICU nurses, support staff, and clinicians (n ~ 400). Survey questions were graded on a 5-point Likert scale (from 1 ["strongly disagree"] to 5 ["strongly agree"]). Twenty-three surveys were returned from subjects and their families, and 70 were returned from ICU support staff.

Of the 20 subjects, the median age was 73 years (range 26-94), and 50% were female. The primary ICU diagnosis was medical in 65% and surgical in 35%. Prior to enrollment, opiates had been administered in 85% of subjects, benzodiazepines in 55%, and antipsychotics in 30%. Mittens had been used in 65% and restraints in 40%.

Overall, 65% of subjects, their families, and clinical staff agreed that the cat was calming. Over 70% of respondents

Figure A subject holding the "Joy for All" robotic cat in the surgical intensive care unit.

Funding: Hasbro donated research supplies for this study.

Conflict of Interest: Dr Schulman-Marcus received research support from Hasbro for research supplies for an investigator-initiated trial. There are no other conflicts of interest.

Authorship: All authors had access to the data and a role in writing this manuscript.

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https://doi.org/10.1016/j.amjmed.2018.12.039

Table Selected Comments

Subjects/Family

- "Louis" calms my husband and makes him smile.
- I hate cats. If this was a dog, that'd be great.
- It would be nice if the cats were warm. The dog would be ideal, as he is a dog person, not a cat person. But he really likes this cat.
- I think it would help other people who were more agitated or delirious. My father had a lot of family . . . [I]t may be better for someone who was alone (I'm a nurse).
- She doesn't love cats in general. I think my father would really like it at the nursing home, and I will probably give it to him.
- It was very helpful when they placed it on his hands. It's important for clinical staff to place it in a way that the patient can use it naturally.
- I think the purring is very relaxing and more useful than meowing.

Staff

- I only had one experience with the robotic cat, but my patient seemed to really like it, and it helped keep her calm.
- I think it served more as a distraction, whether positive or negative and allowed the patient to have control . . . at a time they have very little control.
- This was definitely helpful for patients with hypoactive variant of delirium and some with the hyperactive variant as well. However, when people became oriented again, it lost much of its value (especially in people that don't like cats!).
- It is hard to define when this pet would be beneficial. Patients with severe delirium seem to be the best patients, but it's hard to determine when to start giving out the pets.
- My patient did not have delirium but the pet was a comfort to her. She enjoyed petting it. It reminded her of her cats at home.
- Some of my patients became even more agitated and anxious when introduced to the robotic pet.
- Being on the floor and seeing what the pet can do for all the staff was great. It not only helped the patient, but created a better environment for staff as well.

did not feel that the cat interfered with clinical care. A sizeable majority of respondents agreed that the cat could have a future role in ICU patients (95% of subjects/family, 72% of staff). Unstructured comments were generally, but not universally, positive (Table). The most common suggestion was offering a robotic dog as well (20% of comments).

Although there is growing public recognition of the pernicious consequences of delirium in hospitalized patients, there are few non-pharmacologic management options. Our pilot study found that robotic pets may be a feasible intervention to mitigate behavioral disturbances in patients with ICU delirium. To our knowledge, this is the first study of robotic pets in an ICU setting. The intervention was simple, unobtrusive, safe, and low-cost. The robotic pets were generally well received by subjects, their families, and staff. Indeed, the major complaint we received (and reason for declining participation) was that we did not have a robotic dog. Since conclusion of the study, ICU nurses have frequently asked our team if robotic pets are available for selected patients with delirium.

Our findings were limited by the study design and sample size. As this was a feasibility trial, no control arm was enrolled. The use of robotic pets and similar interventions could potentially reduce the need for psychotropic medications and use of restraints while improving patient and family experiences. Furthermore, such devices may be even more helpful in other inpatient populations (eg, pediatrics and brain injury) or on units with a lower acuity of illness. These hypotheses require testing in larger cohorts.

Our findings demonstrate that relatively simple "non-medical" technologies may be beneficial in the management of delirium and other hospital ailments. We hope that medical students, researchers, and families take notice.

ACKNOWLEDGEMENTS

We thank all of the adult ICU nurses and nurse managers at Albany Medical Center for their contribution to this pilot study.

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