

PURPOSE

Patient immobility has been described as an unrecognized epidemic in the hospital. Immobility is associated with high morbidity, with muscle mass declining by up to 50% during hospitalization. Mobility has been shown to reduce ICU and hospital length of stay, mechanical ventilator days, ventilator associated pneumonias, and ICU costs. The Cardiac ICU at Vidant Medical Center identified patient mobility as an area for improvement and a quality improvement project was started using the Plan, Do, Study, Act (PDSA) cycle system. We aimed to identify barriers to patient mobility in the Cardiac ICU and increase the number of patients being mobilized per day by 50% over 6 months.

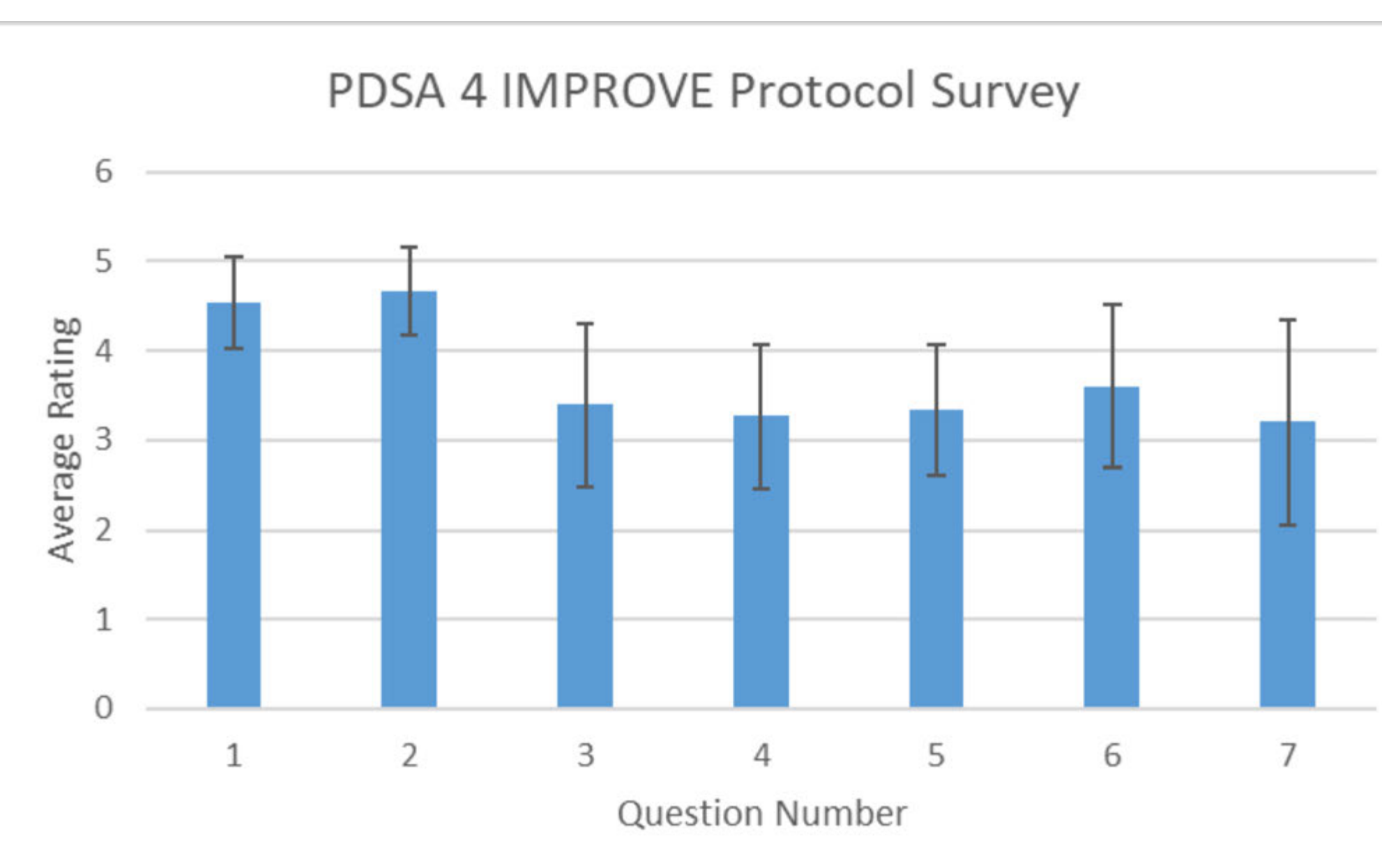
MATERIALS & METHODS

The first PDSA focused on barriers to patient mobility. A bedside questionnaire was administered in one half of the unit to review providers' knowledge of the current protocol and perceived barriers to mobility. PDSA 2 created an exercise supplement to GEMS using a pedal exerciser, called the IMPROVE Movement Program. Exercise routines were stratified by GEMS level, with separate levels for bed-bound patients who were able to participate versus bed-bound and unable to participate in an exercise intervention. PDSA 3 implemented the IMPROVE Movement Program across the unit. PDSA 4 collected data from the healthcare workers that utilized IMPROVE movement to evaluate its effectiveness and its ability to improve patient mobility.

RESULTS

IMPROVE Routine	Exercise Routine
1.	GEMS 1A: Bed bound/Non-participatory: passive range of motion a. Flexion and extension of elbow and shoulder: 10 min (30-40 reps per joint) And b. Flexion and extension of the knee and hip: 10 min (30-40 reps per joint)
2.	GEMS 1B: Bed bound/Participatory: active range of motion a. Pedal Exerciser for upper extremities: 10-15 min And b. Active leg adduction/abduction and leg raises: 10 min (30-40 reps per) Or Pedal Exerciser for lower extremities: 10-15 min
3.	GEMS 2: Able to get in chair but unable to walk: active range of motion a. Pedal Exerciser for upper extremities: 10-15 min And b. Sitting to standing exercise with assistance: 10 min (10-20 reps) Or Pedal Exerciser for lower extremities: 10-15 min
4.	GEMS 3: Able to walk with support: active range of motion a. Pedal Exerciser for upper extremities: 15 min And b. Walk from chair to bed/bathroom 3-5 times with assistance Or Walk the hallway 50-100 feet with cardiac rehab walker
5.	GEMS 4: Walking independently a. Walk the hallway 50-100 feet with/without cardiac rehab walker

Figure 1: Depicts the IMPROVE Movement Program supplement to GEMS in PDSA 2



PDSA 1 showed 100% knowledge of the GEMS score among 10 participants. However only 1 of 6 nurses and 1 of 4 physicians knew the recommended exercise regimen. Two major obstacles to patient mobility were a lack of clearly defined instructions in the current model and a lack of resources needed to adequately mobilize patients. A pedal exerciser was found to be ideal for patients who were bed bound or who were able to sit in a chair. PDSA 2 trialed this intervention, finding good nursing and patient participation and improvement in patient mobility. PDSA 3 made pedal exercisers and exercise program worksheets easily accessible in each room. Data on improvements in mobility are currently being collected. While the results from PDSA 4 suggest a benefit with the protocol on documentation and progression of mobility in the CICU, further PDSA cycles must be implemented to perfect the protocol and obtain significant results. Further communication on our end is needed to train the workers on the benefits of the program and obtain constructive feedback on how to improve the program from their standpoint.

IMPROVE Protocol Survey

Thank you for participating in our survey. This past month the IMPROVE protocol was implemented in the CICU to increase patient mobility and progressive their mobility throughout their stay. This was done by detailing which exercises each patient should perform at a certain level. The current protocol in place is the Greenville Early Mobility Scale (GEMS) and this supplement was added for the CICU. In order to better understand how the IMPROVE protocol has impacted patient care and mobility in the CICU, we invite you to answer these questions honestly to better serve you and our patients!

Instructions: Circle the number that corresponds to your stance on the IMPROVE model:

1: strongly disagree; 2: somewhat disagree; 3: neither; 4: somewhat agree; 5: strongly agree.

- The IMPROVE protocol clearly defined which mobility level each patient falls under.
1 2 3 4 5
- The IMPROVE protocol clearly defined which exercises a patient should complete at a specific mobility level.
1 2 3 4 5
- I believe that the IMPROVE protocol has helped my patients become progressively more mobile from initial level.
1 2 3 4 5
- I believe the IMPROVE protocol has helped me track patient mobility effectively.
1 2 3 4 5
- The IMPROVE protocol has exercises that are easy for me to help the patient perform.
1 2 3 4 5
- The IMPROVE protocol was a helpful addition to the GEMS.
1 2 3 4 5
- I am more aware of the importance of mobility after this protocol was implemented.
1 2 3 4 5

Figure 2: The survey given to CICU nursing staff working between August 13th and September 13th for PDSA 4.

Figure 3: The average rating against the question number in Figure 2. Error bars depict the standard deviation in the responses to each question.

DISCUSSION

We identified areas in the current hospital model for mobility that did not meet the needs of Cardiac ICU patients. Particularly, guidance and resources were lacking for bed bound patients who could participate in active mobility and were at high risk for immobility. A new supplemental exercise program specific to the ICU was created, allowing patient-centered mobility progression that was nurse-initiated and easy to accomplish. Moving forward, after obtaining feedback from nurses, our next PDSA cycle will focus continuing unit education and a training session on the protocol. We also plan to improve the EHR interface to make it easier to document patient mobility over time. We believe these two changes could increase compliance with the protocol.

REFERENCES

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