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# Evaluating the Use of a Single Question Derivative to Determine Post-Acute Needs Following Total Joint Replacement

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## Background

The Activity Measure for Post-Acute Care (AMPAC) is a patient-reported questionnaire used to assign a standardized score to patient mobility (Thackeray et al., 2021). The full AMPAC and the modified 6-question AMPAC are difficult to use in high-volume settings, such as an orthopedic clinic. A single-question derivative (SQD) was synthesized using questions from the full AMPAC questionnaire.

## Objective

The objective of this retrospective study is to determine if an SQD of the AMPAC can be effectively used to risk stratify physical therapy needs in total knee and hip replacement patients, and if there is any correlation to post-operative functional quality outcomes.

## Methods

How much difficulty do you have walking around on one floor at home?

Unable to walk around home

A lot of difficulty walking around home

A little bit of difficulty walking around home

No difficulty walking around home

Pre-op prehab appointment

Pre-op prehab appointment

Home-based outpatient therapy ordered for post-op

Outpatient PT ordered for post-op

Prehab PT team will drive further appointment and PT needs

Prehab PT team will drive further appointment and PT needs

- Above: AMPAC SQD to aid in the determination of post-op PT needs.
- HBOP: Home-Based Outpatient Therapy
- Data was collected retrospectively from 1/1/2024 through 3/29/2024 for total knee and total hip replacement patients.
- A total of 156 patients were assessed (87 knee and 69 hip). There were 43 knee replacement patients asked the SQD, 44 were not. There were 25 hip replacement patients asked the SQD, 44 were not.

## Results

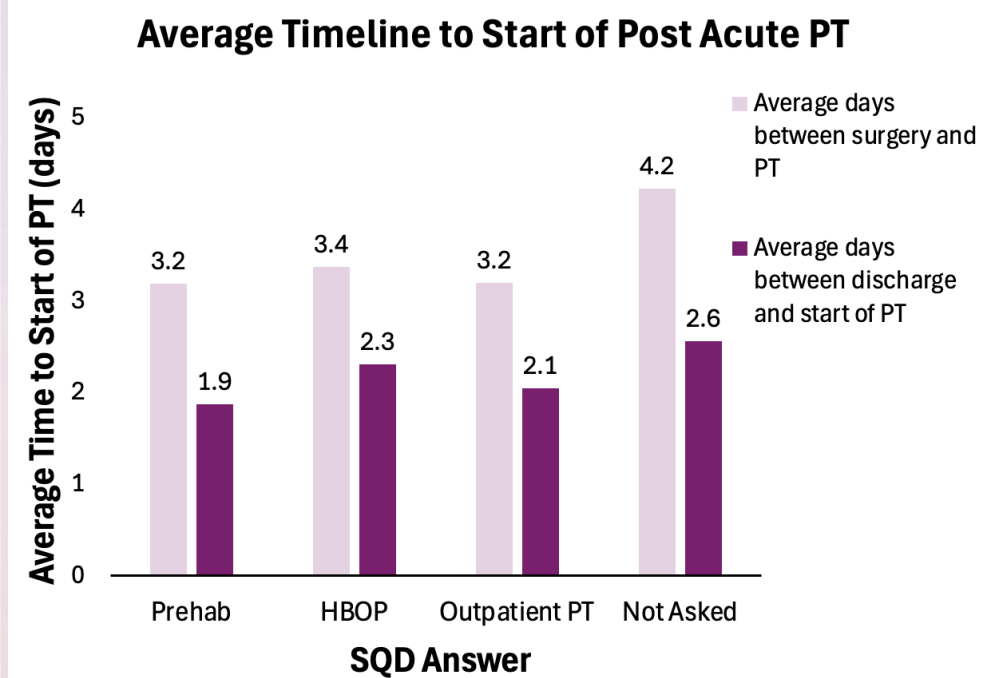


Figure 1. Average timeline of care until the start of physical therapy (PT) in days per single-question derivative (SQD) answer for both knee and hip replacements. Timeline of care measured by average days from date of surgery to beginning of PT compared to average days between discharge and start of PT.

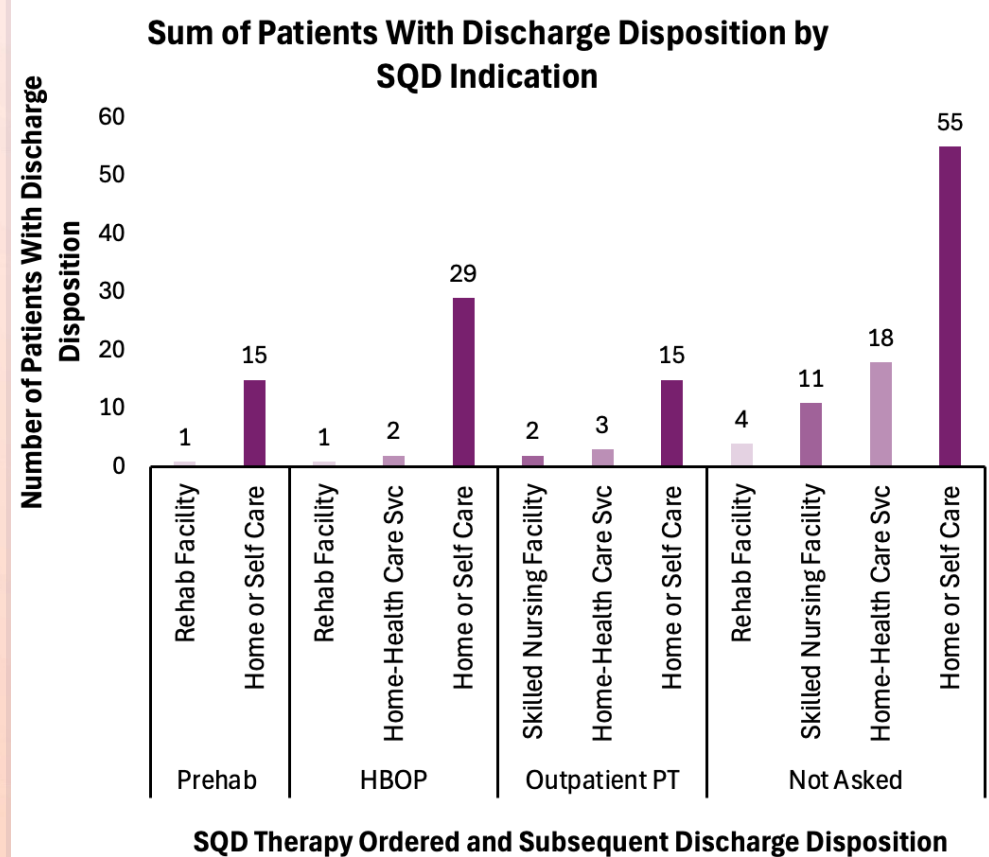


Figure 2. Sum of patients per discharge disposition based on single question derivative (SQD) answer compared to patients who were not asked for both knee and hip replacements.

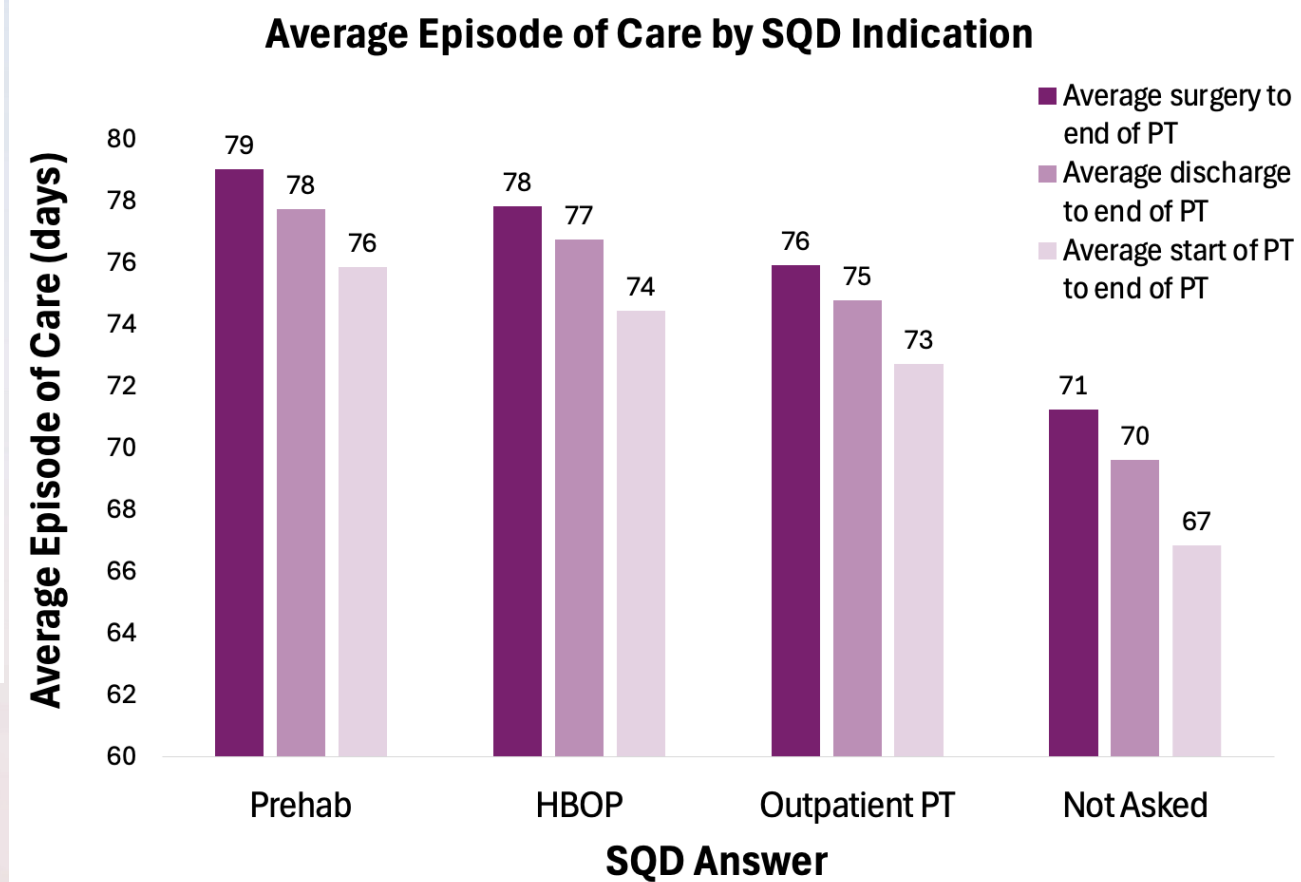


Figure 3. Average episode of care (days) based on single question derivative (SQD) answer for both knee and hip replacements. Episode of care is defined three ways: surgery date to end of physical therapy (PT), discharge date to end of PT, and start of PT to end of PT.

SQD Recommended Therapy by Joint Replaced	Average of Length of Stay (nights)
<b>Prehab</b>	<b>1.31</b>
Hip	1.57
Knee	1.11
<b>HBOP</b>	<b>1.09</b>
Hip	0.92
Knee	1.21
<b>Outpatient PT</b>	<b>1.15</b>
Hip	1.00
Knee	1.20
<b>Not Asked</b>	<b>1.66</b>
Hip	1.77
Knee	1.55

Table 1. Average length of stay (nights) per single-question derivative answer, separated by joint replaced. Length of stay defined as nights between surgery date and discharge date.

There were five adverse outcomes; 60% of them were not asked the SQD.

### Complications

- Three knee manipulations, two patients asked SQD.

### Readmissions

- Two hip readmissions, neither patient asked SQD.

## Conclusions

- Patients with a lower pre-operative function received physical therapy about one day sooner than those not asked the SQD (Fig. 1).
- Patients with a higher pre-operative level of function primarily received home or self-care discharge disposition, suggesting that the SQD is an effective predictor of patients' post-acute therapy needs. (Fig. 2).
- Of patients with a discharge disposition of Rehab or Skilled Nursing Facility, 79% were not asked the SQD, suggesting if the SQD is asked, there is an opportunity to positively impact a patient's discharge disposition and level of mobility post-operatively (Fig. 2).
- Patients asked the SQD with a response indicating greater post-operative care needs had a longer episode of care than those not asked (Fig. 3).
- Patients not asked the SQD had a shorter episode of care, likely due to the large amount of patients with home/self-care discharge disposition (Fig. 3).
- Patients who were asked the SQD at the time of scheduling their joint replacement had a 28% shorter average length of stay upon admission, likely due to anticipatory care planning (Table 1).
- Overall, the SQD impacted the average episode of care, length of stay, discharge disposition, and timeline between surgery and the start of PT.

## Limitations

- This study was limited to only one surgeon's office, with a limited sample size for total hip replacement patients (<30 asked SQD).
- The SQD was only asked to patients anticipated to schedule a total joint replacement during the encounter.
- Not all physical therapy visits were documented, specifically, out-of-network outpatient or home care.
- Visit totals were averaged based on plan frequency for out-of-network patients.
- For patients who received an SQD determination of prehab and a PT order, prehab was not scheduled. Only one of sixteen patients received prehab.
- One hip replacement patient not asked the SQD removed due to being an extreme outlier, which affected both Figures 1 and 3.

## Further Implications

To recommend the implementation of the SQD AMPAC, a more dedicated study with consistent use and execution of the SQD process, as well as a larger sample size would need to be conducted.

REFERENCES: Thackeray, A., Hanmer, J., Yu, L., McCracken, P., & Marcus, R. (2021). Linking AM-PAC Mobility and Daily Activity to the PROMIS Physical Function Metric. *Physical Therapy*, 101(8). <https://doi.org/10.1093/ptj/pzab084>