The Financial Implications of a Strategic Multi-Disciplinary Approach for Non-Spine Orthopedic Bundle Patients at a Tertiary Care Center.

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INTRODUCTION: The Bundled Payments for Care Improvement-Advanced (BPCI-A) directive is an opt-in alternative payment model created with the intention of improving quality of patient care while decreasing overall costs. Concern exists that many of the non-elective procedures in the expanded orthopaedic bundles will place institutions at financial risk since patients cannot be effectively screened and optimized pre-operatively. Additionally, there is concern that medically complex patients referred to tertiary care centers will incur higher costs that are not accounted for in the Diagnosis Related Group (DRG) stratification system. Certain bundled payment plans have already seen cuts to reimbursement while hospitals have improved efficiency, reduced costs per care episode, and decreased complications. The improvements come at a price to the institutions, as hospitals and groups have hired staff and dedicated resources specifically for the BCPI-A program. This study aims to identify whether non-spine orthopedic bundled payments are financially viable at tertiary referral centers and which patient disposition characteristics lead to financial loss or gain to the institution.

METHODS: The BCPI-A program at our institution has hired a dedicated nurse coordinator and has begun mandatory pre-operative optimization for elective procedures. BCPI-A cases are reviewed monthly in a multi-disciplinary meeting to discuss successes, failures, and strategize to implement improved pathways. We retrospectively reviewed a 12-month cohort (January 1, 2021 to December 31, 2021) of 187 patients in all non-spine orthopedic bundles, including: DRG 469-470, 521-522 and Healthcare Common Procedure Coding System (HCPCS) 27447 (Major Joint Replacement of the Lower Extremity); 480-482 (Hip and Femur Procedures Except Major Joint); 483 (Major Joint Replacement of the Upper Extremity); 492-494 (Lower Extremity/Humerus Procedure Except Hip, Foot, Femur); and 521-522, 533-536 (Fractures of the Femur and Hip or Pelvis) at our academic tertiary medical center. Overall episode of care costs, post-acute care costs, readmission, death, and comorbidities were recorded.

RESULTS: In a 12-month period, 187 patients were included in our institution's non-spine orthopaedic bundles. Overall, the institution averaged a net gain of $1363 per patient (range +$32,775 to -$70,977) for a total of $254,929. Patient readmission (n=13) was associated with an average loss of $20,683 per patient (p=0.0021). Patient discharge to post-acute care facilities (n=49) was associated with higher cost than discharge to home (n=137, p=0.0015). Discharge to skilled nursing facilities (n=33) was associated with a mean loss of $6,376, and discharge to inpatient rehabilitation (n=13) was associated with loss of $13,423 compared to a gain of $4,289 if the patient was discharged to home. DRGs associated with major joint replacement (470, 483, 493, 521, and 522) were associated with net loss while the rest were associated with net gain. Patient death (n=15) was associated with a loss of $744 per patient

DISCUSSION AND CONCLUSION:

Non-spine orthopedic bundles have wide variability in cost and margin. Overall, there was a net gain of $254,337, indicating current bundle payments could be financially viable. However not all DRG bundles were profitable. DRGs 470, 483, 493, 521, and 522 were the associated with loss while the rest resulted in financial gain, with the highest being DRG 482. Particularly concerning is that DRG 470, 483, and 493 account for many elective arthroplasties which have screening and optimization plans in place at our hospital. Institutions should aim to discharge patients safely to home, which will increase the likelihood of financial success for the program. Avoiding readmissions will help maintain profitability. Even so, the wide variability in costs means that in a bundle program that included 187 patients in a calendar year, the positive margin was within 4 patients of the loss-leading patient (-$70,977) in the bundle. As the BCPI-A program expires in 2023, institutions should consider these findings in preparation for the possibility of mandatory orthopaedic bundle participation in the future.

Table 1. Average gain/loss and range of individual diagnosis related group

DRG	Average Delta	Range	Max	Min
469	$2966	$0	$2965	$2965
470	-$9683.8	$46,846	$2029	-$44817
480	$8004.75	$51,339	$29823	-$21516
481	$6141.93	$71,162	$27429	-$43733
482	$17020.86	$12,314	$23426	$11112
483	-$2356	$13,241	$2599	-$10642
492	$12098.5	$26,087	$23493	-$2594
493	-$7905.13	$84,319	$32775	-$51544
494	$7848.5	$18,008	$18274	$266
521	-$22096.33	$82,566	$11589	-$70977
522	-$12252	$52,083	$15160	-$36923
533	$4544.5	$5,012	$7050	$2038
535	$6268.17	$28,625	$18730	-$9895
536	$3807.88	$72,165	$30308	-$41857
*CPT 27447	$1329.50	$30,107	$5969	-$24138

* Outpatient total knee arthroplasty with no DRG