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## AAHKS Symposium

## The 5 Clinical Pillars of Value for Total Joint Arthroplasty in a Bundled Payment Paradigm

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## ABSTRACT

**Background:** Our large, urban, tertiary, university-based institution reflects on its 4-year experience with Bundled Payments for Care Improvement. We will describe the importance of 5 clinical pillars that have contributed to the early success of our bundled payment initiative. We are convinced that value-based care delivered through bundled payment initiatives is the best method to optimize patient outcomes while rewarding surgeons and hospitals for adapting to the evolving healthcare reforms.

**Methods:** We summarize a number of experiences and lessons learned since the implementation of Bundled Payments for Care Improvement at our institution.

**Results:** Our experience has led to the development of more refined clinical pathways and coordination of care through evidence-based approaches. We have established that the success of the bundled payment program rests on the following 5 main clinical pillars: (1) optimizing patient selection and comorbidities; (2) optimizing care coordination, patient education, shared decision making, and patient expectations; (3) using a multimodal pain management protocol and minimizing narcotic use to facilitate rapid rehabilitation; (4) optimizing blood management, and standardizing venous thromboembolic disease prophylaxis treatment by risk standardizing patients and minimizing the use of aggressive anticoagulation; and (5) minimizing post-acute facility and resource utilization, and maximizing home resources for patient recovery.

**Conclusion:** From our extensive experience with bundled payment models, we have established 5 clinical pillars of value for bundled payments. Our hope is that these principles will help ease the transition to value-based care for less-experienced healthcare systems.

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Since the establishment of the Bundled Payments for Care Improvement (BPCI) initiative in 2011, major reforms have been proposed by the healthcare system to achieve the intended goals of delivering “higher quality, more coordinated care at a lower cost to Medicare” [1]. The means to reaching these goals have involved both shifting payment models from the traditional pay-for-service paradigms to a bundled, payment plan, as well as aligning incentives of all stakeholders involved. Early reports concerning bundled payment efforts have led to an optimistic outlook on the successful long-term implementation of this model [2,3]. Given the

early demonstrated success of BPCI, the Comprehensive Care for Joint Replacement model was introduced in April 2016, as a mandatory version of the Model 2 BPCI program targeting patients undergoing total joint arthroplasty (TJA) [4]. The Comprehensive Care for Joint Replacement initiative includes 800 hospitals nationwide and will involve about 110,000 TJA cases over its 5-year plan.

Our large, urban, tertiary, university-based institution has had a 4-year experience with BPCI. In 2013, we implemented a BPCI Model 2 initiative, which covers the cost of care starting from 72 hours before admission until 90 days after discharge [2]. Our experience has led to the development of more refined clinical pathways and coordination of care through evidence-based approaches. We have established that the success of the bundled payment program rests on 5 main clinical pillars:

1. Optimizing patient selection and comorbidities
2. Optimizing care coordination, patient education, shared decision making, and patient expectations

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Risk Factor	Points on Risk Stratification Scale
<b>1</b> <b>Infection risk factors: <i>Staphylococcus Aureus</i> colonization</b> Every patient is screened If positive for staphylococcus colonization: <ul style="list-style-type: none"> <li>▪ Nasal mupirocin or povidone-iodine, chlorhexidine gluconate (CHG) wipes, and appropriate antibiotic coverage</li> <li>▪ If these requirements are not met then <i>hard stop</i> until protocol implemented</li> </ul>	Hard Stop
<b>2</b> <b>Smoking (Tobacco use)</b> All tobacco users will be enrolled in tobacco cessation program 4 to 8 weeks prior to surgery	1
<b>3</b> <b>Obesity</b> BMI greater than 40: <ul style="list-style-type: none"> <li>▪ Enroll in nutritional counseling program</li> <li>▪ Long-term weight loss program, and</li> <li>▪ Undergo bariatric consult.</li> </ul> BMI 35-40: <ul style="list-style-type: none"> <li>▪ Patients will be enrolled in nutritional counseling with consideration of acute weight loss program</li> </ul> BMI 30-35: <ul style="list-style-type: none"> <li>▪ Enroll in nutritional counseling program</li> </ul>	Hard Stop  2  1
<b>4</b> <b>Cardiovascular Disease</b> Patient has history of coronary artery disease (CAD), stroke, peripheral vascular disease or VTED, age $\geq 60$ years and 2 cardiac risk factors: renal insufficiency (CrCl < 60ml/min); Diabetes; chronic obstructive pulmonary disease; Hypertension; Recent smoker (<30 days); Cancer; Heart failure <ul style="list-style-type: none"> <li>▪ All qualifying patients will be enrolled in OPTIMIZE-OS peri-operatively</li> </ul>	1
<b>5</b> <b>Venous Thromboembolic Disease</b> History of pulmonary embolus or deep venous thrombosis: <ul style="list-style-type: none"> <li>▪ Consider inferior vena cava (IVC) filter or aggressive VTED management</li> </ul> Has VTED risk factors: CVA, COPD, BMI >30, CAD, stroke, PVD, activated protein C resistance	2  1
<b>6</b> <b>Neurocognitive, psychological and behavioral problems (including alcohol and drug dependency)</b> Alcohol abuse or chronic active narcotic dependency  Neurocognitive deficits such as traumatic brain injury (TBI), active psychiatric illness, dementia etc.  Score of 7 or more on catastrophizing, PHQ-9	2  1  1
<b>7</b> <b>Physical Deconditioning</b> Nonambulatory or needs assistance with transfers status  Comorbidities affecting physical function and ambulation	2  1
<b>8</b> <b>Diabetes</b> Fasting blood glucose >180 <ul style="list-style-type: none"> <li>▪ Must be corrected prior to surgery, consider referral to diabetic management clinic (endocrinologist)</li> </ul> Hgb A1c > 8 <ul style="list-style-type: none"> <li>▪ Referred to diabetic management clinic (endocrinologist)</li> </ul> Well controlled DM	Hard stop  2  1

**Fig. 1.** Scoring criteria for the readmission risk assessment tool. Boraiah et al [5], The Journal of Bone & Joint Surgery (2016). BMI, body mass index; CAD, coronary artery disease; CHG, chlorhexidine gluconate; IVC, inferior vena cava; TBI, traumatic brain injury; VTED, venous thromboembolic disease; CVA, cerebrovascular accident; COPD, chronic obstructive pulmonary disease; PHQ, patient health questionnaire; PVD, peripheral vascular disease; DM, diabetes mellitus.

3. Using a multimodal pain management protocol and minimizing narcotic use to facilitate rapid rehabilitation
4. Optimizing blood management, and standardizing venous thromboembolic disease (VTED) prophylaxis treatment by risk standardizing patients and minimizing use of aggressive anticoagulation
5. Minimizing post-acute facility and resource utilization, and maximizing home resources for patient recovery.

We will describe the importance of these pillars, and how they have contributed to the early success of our bundled payment initiative. We are convinced that value-based care delivered through bundled payment initiatives is the best method to optimize patient outcomes while rewarding surgeons and hospitals for adapting to the evolving healthcare reforms.

## The 5 Clinical Pillars of Value for TJA

### Optimize Patient Selection and Comorbidities

It is common for Medicare-eligible TJA patients to be burdened with one or more coexisting medical conditions [5]. At our institution, common comorbidities among TJA candidates include musculoskeletal comorbidities (73.8%), hypertension (60.1%), hyperlipidemia (55.3%), tobacco use (22.0%), and diabetes (19.2%). These findings are particularly alarming given that these and other frequently observed comorbidities have been individually associated with increased readmission rates, and the cumulative severity of these risk factors correlates with the cost of each readmission [6]. Kiridly et al [6] demonstrated that when a patient's comorbidities are stratified on index of readmission by their All Patient

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