Arthroplasty

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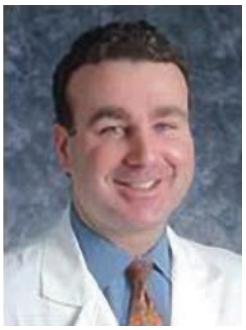

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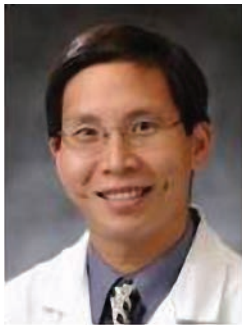

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Arthroplasty Division Update: Value Driven Readmission Mitigation for Hip and Knee Arthroplasty at Penn Medicine

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Value is quality compared to cost. American healthcare quality is being measure by frequency of untoward outcomes such as Hospital Acquired Complications (HACS) and readmission rates. American health care is expensive so hurts the public paying for health care and competition in global economy. Cost often drives discussions. Our improvement in readmission rate (Figure 1) show the result of effort so far and fiscal impact of CMS readmission penalties (Figure 2) we face. Gainsharing from bundled payment programs potentially from IBC of $160K and from CMB/Remedy of $740K.

Readmissions are a metric of low quality and are high cost; both contribute to adverse effects on value. Because of this double effect on quality and cost, readmission rates must be a focus for improving value. Readmissions may be preventable, through better patient selection, better preparation preoperatively, better discharge preparation and better post-acute management. Some readmissions can be considered to be "unnecessary", if the care during the admission could have been managed safely as an outpatient.

Readmission mitigation starts in the evaluation done in the outpatient office. First is the decision to proceed with elective surgery. Effective shared decision making utilizing the patient's risks for readmission and complication rates can support the decision for surgery. Our data demonstrate approximately 60% increase of readmission for alcohol use and an almost threefold increase of readmission rate for patients with cirrhosis. But can the effort to minimize risk for safer patient care become restriction of access to health care? As payers and bundle programs apply penalties and offer fiscal rewards for programs to cherry pick and lemon drop, access to care will be adversely affected.

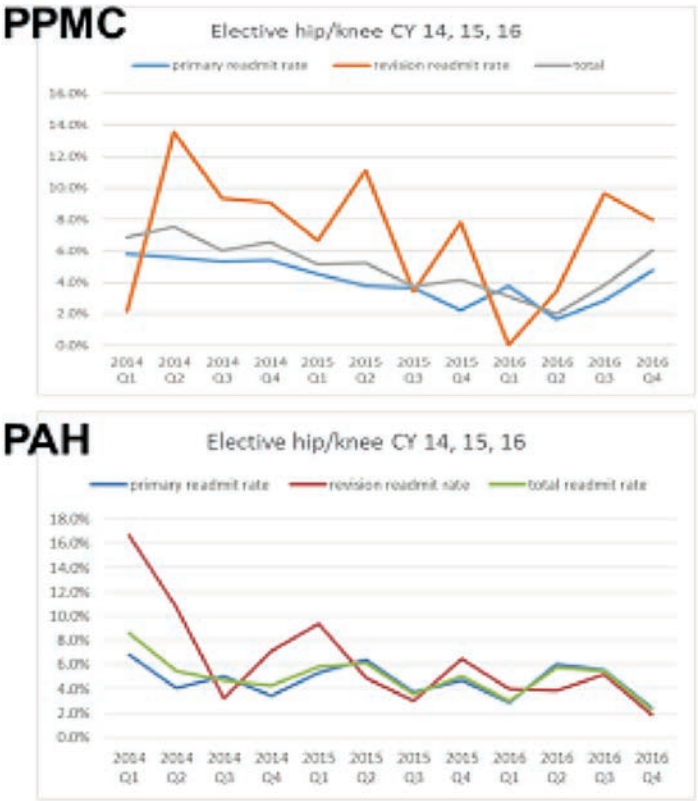

Figure 1.

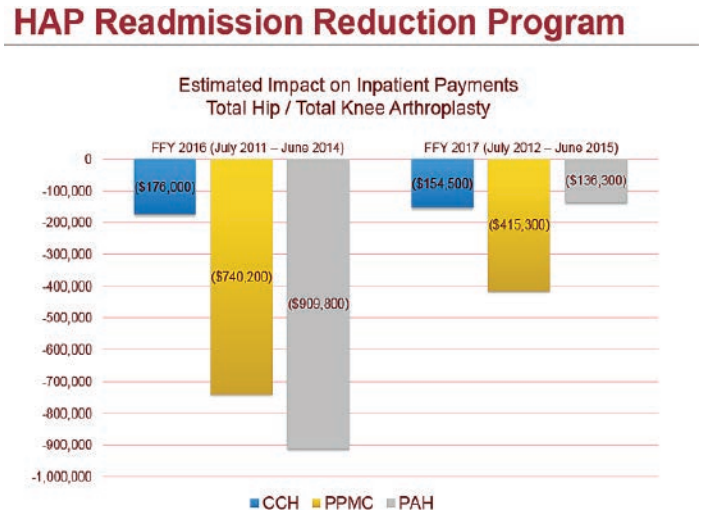

Figure 2.

Our risk stratification has effectively lowered hospital mortality by predicting the right location of care for the postoperative night. Next step is to use risk evaluation to support management before surgical procedure. Patients with A1C of >8 should be managed to a safe glucose level before XXX. Patients with a hemoglobin of <10 predictor and for total hip revisions a hemoglobin of <12, shows higher readmission rate, these patients should be sent to the Center for Transfusion Free Medicine at Pennsylvania Hospital. Nutrition, smoking, excess alcohol intake and chronic opioid users are all important predictors of adverse outcomes. Diligent pre-operative management of these modifiable conditions will further drive down adverse events such as cancellations, complications and readmissions (Figure 3).

Other preventable readmissions fall into orthopaedic and medical categories. The hot joint phone line and advanced practice provider's availability allows urgent conditions to be triaged and managed within a half business day. Our hot joint protocol, based on AAOS and AAHKS periprosthetic joint

Category	PPMC Total Pts	PPMC Readmit N	PPMC Readmit % of category	PAH Total Pts	PAH Readmit N	PAH Readmit % of category
All	3174	90		1,871	48	
Not risk evaled	94	6	6.4%	25	5	20%
ICU	127	6	4.7%	151	5	3.3%
A1c >=8	86	2	2.3%	338	9	2.7%
HB <=12	622	28	4.5%	296	12	4.1%
CHF	144	8	5.6%	40	4	10.0%
CAD	233	8	3.4%	99	5	5.1%
Alcohol Use	139	10	7.2%	16	1	6.3%
Delirium	455	11	2.4%	35	1	2.9%
Cirrhosis	37	2	5.4%	33	2	6.1%
BMI >30	2765	19	0.7%	470	11	2.3%
Complex	2500	81	3.2%	915	25	2.7%

Redcap: primary joints, 1/1/15 to 12/31/16 UHC: primary joints, 1/1/15 to 12/31 /16

Figure 3.

infection guidelines, has allowed us to stop the "unnecessary" readmission for infection. Beyond outpatient care for hot joints, care for the swollen calf can be evaluated in the office and sent for outpatient ultrasound. If negative, the patient is never in an emergency room and never admitted. If there is a DVT at the level of the popliteal fossa or above, collaboration with medical co-management, for an overnight observation unit, to start heparin and bridge to Coumadin or oral agents, can prevent readmission.

A not insignificant number of readmissions occur amongst both our low risk population and our complex patients. Both groups will be addressed using pathways to manage unnecessary medical readmissions with the hospital co-management team. We are working focused management for this group with active navigation. Bounce backs from rehabilitation facilities to emergency rooms are an important source of unnecessary readmissions. Our readmission rate from Skilled Nursing Facilities (SNF) and inpatient rehab facilities (IRF) is approximately twice from home. The Hot Joint protocol (green, yellow, red stoplight) is a resource for SNFs and other post-acute care providers (Figure 4). Communication back to our team for patient care is an important resource for preferred providers.

Complications, rate of periprosthetic joint infection, DVT, PE, are all opportunities for quality improvement and process improvement. Surgical and medical risks both contribute to readmissions. An MI within 90 days for surgery is included in the BPCI bundle cost. While the goal is 0% periprosthetic joint infections and hip dislocations, we cannot completely prevent surgical complications. "Never" events may be best managed by a focus on "always" events in pathways aimed to lower risk of complications.

Quality or cost as driver?

Nationally for hospital systems and surgeons, the concern about bundles has been the apparent drive to the reduce reimbursement, often referred to as "race to the bottom". Because of the delay in getting cost data, our efforts have been aimed at process improvement with clinically pertinent pathways based on clinical reasons for on readmissions. In the two years that we have been managing the CMS Medicare Bundled Payment Care Initiative (BPCI) and Independence Blue Cross bundles for hip and knee arthroplasty for primary joints and for revision joints, high quality and safe care has led to cost savings. We have realized that better safety and better

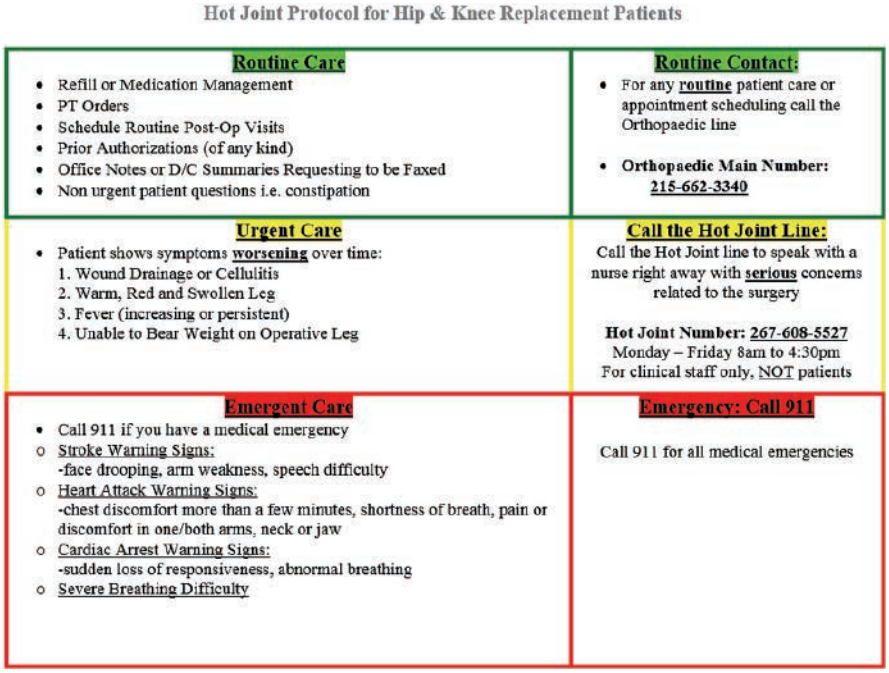

Figure 4.

safer patient care will drop to the bottom line, and has been a reassuring realization.

The "race to the bottom" cost is an important concern. Under the BPCI methodology, the present year's fiscal performance must beat the moving average of the last three years, but the average drifts down with success. Chasing the lowering moving average is not sustainable in the long-term because there is no lower limit for reimbursement. The "race to the bottom" cannot be sustained below the cost line where cost efficient care has been maximized. The line is, at the present, not defined.

In summary, our group is focused on managing readmission rates for all of our hip and knee, primary and revision, arthroplasty patients. Preventable readmissions occur among complex patients whose comorbidities can be mitigated. We continue to work in four time periods: in preop, in acute care, in discharge planning and during post discharge care. For both complex and low risk patients , supporting better home preparation, using preferred home health, SNFs and developing ER/OBS clinical pathways should lower the rate of "unnecessary" readmits. Data from the bundles have informed us as to the cost saving opportunities. While we learn within the bundle structure, we apply the lessons across our whole patient population with the ultimate goal of developing high value population management processes for hip and knee arthroplasty.