Value Based Anti-coagulation Optimization for PCI

Capturing Triple Aim Value in Percutaneous Coronary Intervention

The Heart Institute

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PROBLEM STATEMENT

The rising use of Bivalirudin in Percutaneous Coronary Intervention contributed to a significant cost increase without apparent improvement in outcomes.

BACKGROUND

- Wide variation in Bivalirudin utilization
- No apparent outcome difference
- High-cost anti-coagulant at $1,388/case
- Heparin as low-cost alternative

Bivalirudin Rates by Facility

	14 Q1	14 Q2	14 Q3	14 Q4	15 Q1	15 Q2	15 Q3	15 Q4	16 Q1	16 Q2	16 Q3	16 Q4	17 Q1	17 Q2	17 Q3	17 Q4	PCI (n)
St Peter (H)	87%	93%	87%	81%	73%	61%	68%	63%	57%	59%	51%	24%	10%	6%	12%	11%	3,166
Edmonds (H)	67%	65%	69%	79%	54%	48%	34%	7%	7%	4%	0%	0%	0%	0%			862
Tarzana (H)	80%	73%	73%	68%	61%	47%	28%	38%	23%	15%	17%	20%	21%	12%	7%	5%	1,246
Holy Cross (H)	90%	70%	64%	26%	12%	9%	26%	26%	25%	16%	19%	8%	10%	8%	3%	4%	1,459
Cherry Hill	76%	56%	44%	42%	41%	33%	14%	9%	13%	8%	5%	3%	3%	3%			3,203
St Mary					91%	100%	76%	76%	70%	71%	84%	75%	65%	60%	50%	12%	311
Issaquah	65%	46%	24%	29%	22%	35%	5%	17%	5%	3%	0%	0%	0%	0%			284
Sacred Heart	72%	42%	29%	24%	26%	26%	22%	20%	17%	17%	13%	5%	7%	2%	3%	2%	4,193
Everett	40%	36%	33%	25%	25%	27%	20%	15%	17%	15%	13%	9%	11%	7%	8%	9%	3,172
Little Company		36%	29%	34%	22%	26%	24%	24%	17%	15%	25%	19%	22%	15%	11%	8%	1,701
Medford	48%	40%	27%	8%	0%	14%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	604
St Joseph			22%	30%	23%	16%	10%	8%	7%	0%	2%	2%	8%	3%	5%	3%	1,099
St John				45%	18%	12%	1%	1%	2%	1%	0%	0%	0%	0%	0%	0%	734
St Vincent	32%	8%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2,939
Portland	20%	1%	3%	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	1%	0%	1%	1,833
Alaska (L)	1%	3%	7%	5%	4%	4%	2%	1%	0%	1%	1%	1%	0%	0%	1%	1%	2,412
St Patrick (L)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1,852

Fig. 1. Wide variation of Bivalirudin utilization

METHODS

- Internal Ischemic Heart Disease group – representative from all ministries
- Review of literature
- Point vs counter point from passionate supporters
- Consensus statement generated
- Utilization by usage group, outcomes, and costs tracked

RESULTS

System wide Bivalirudin utilization decreased from 52% (January 2014) to 5% (April 2017) with concomitant increase in Heparin only utilization. No change was observed in procedural related in-hospital mortality and myocardial infarction (Figures 2 and 3), as well as bleeding and acute closure.

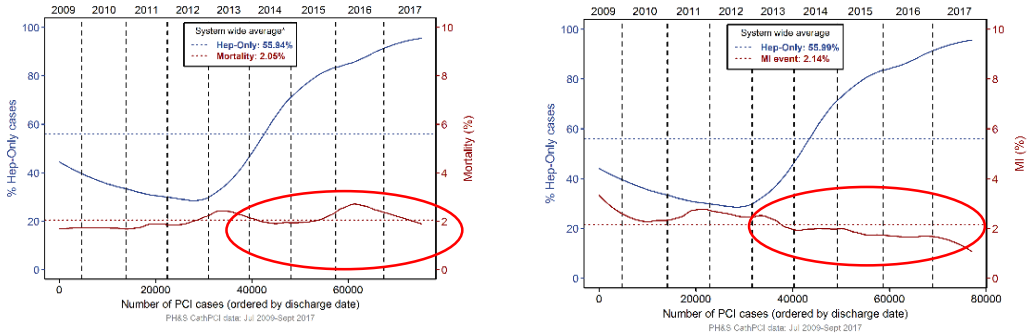

Fig. 2 and 3. Increase in Heparin (blue lines) with steady or improving outcomes (red lines).

CONCLUSION

Cost savings/cost avoidance > $1M annually (Figure 4). Reduction in Bivalirudin showed incremental improvement over time for all usage groups (Figure 5).

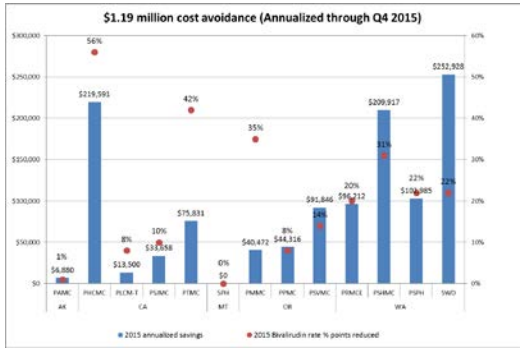

Fig. 4. Bivalirudin reduction results in cost avoidance

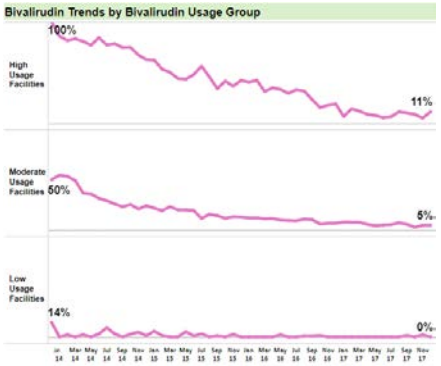

Fig. 5. All facility usage groups reduce Bivalirudin over time