

# Deviation-Based Cost Modeling: A Novel Model to Evaluate the Clinical and Economic Impact of Clinical Pathways

## The Problem

- Despite technological and quality of care advancements, there has been little progress to keep costs down.
- Unwarranted variation in medical practice results in inappropriate care and increased medical costs.
- *Clinical Pathways have emerged*
  - Do clinical pathways keep patients “on-course”?
  - How do pathways impact deviations?
  - Do pathways have incremental impact beyond that of secular trends?

## Aim/Goal

### Hypothesis

- “Deviations” more accurately measure the effectiveness of clinical pathways.
- Deviation-based modeling will enable a more detailed analysis of the clinical and economic impact of clinical pathways.

## The Team

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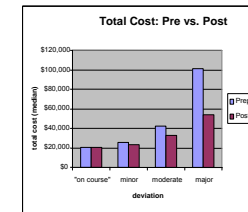
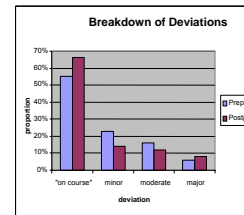
## The Interventions

### Study Design

- Retrospective analysis: Oct. 2001 – Feb. 2006
- 185 consecutive Whipple Resections
- Comparison of Pre- & Post-pathway Outcomes
  - Pathway implemented February 2004
  - 64 patients PrePath, 121 patients PostPath
- All patients stratified according to our deviation model
- Total Cost Analyses

Deviation	Definition
“On-Course”	— No complication or minor complication <i>plus</i> LOS ≤ 8 days
Minor Deviation	— No complication or minor complication <i>plus</i> LOS 9-12 days
Moderate Deviation	— Moderate complication <i>plus</i> any LOS
Major Deviation	— No complication or minor complication <i>plus</i> LOS ≥ 13 days
	— Severe complication <i>plus</i> any LOS

## The Results/Progress to Date.....



Deviation-Based Cost Modeling			
	Deviation	PrePath	PostPath
Deviation Mix	“on-course”	55%	64%
	minor deviation	23%	15%
	moderate deviation	16%	12%
	major deviation	6%	9%
Deviation Cost (median)	“on-course”	\$19,725	\$19,365
	minor deviation	\$24,909	\$21,707
	moderate deviation	\$39,985	\$29,415
	major deviation	\$96,213	\$53,415
Weighted-Avg. Cost	all patients	\$28,748	\$23,623
	cost-savings per case	--	\$5,125
	all “on-course” and minor cost-savings per case	\$21,254	\$19,735
			\$1,519

**The pathway contributed \$1,519 in cost-savings per patient while secular trends accounted for \$3,606 in cost-savings per patient (\$5,125 - \$1,519).**

## Lessons Learned

### DBCM Deviation-Based Cost Modeling (DBCM)

- Provides the data necessary to model the financial viability of common clinical and administrative decisions.
- Allows for a more detailed analysis of the net impact of clinical pathways.
- Evaluates a pathway’s ability to mitigate the occurrence and costs of a deviation.
- Determines how much of the reduction in total costs is attributable to the pathway rather than to secular trends.

## Next Steps/What Should Happen Next:

- DBCM can be adapted to the evaluation of other clinical pathways.

