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Practice Pattern Variation Analysis (PPVA) Multi-Stakeholder Project

Project Briefing

September 12, 2014

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I. Introduction – Executive Summary

The following report is a briefing of Massachusetts Health Quality Partners' (MHQP) Practice Pattern Variation Analysis (PPVA) Project. The goal of the project is to implement an ongoing statewide evidence-based analysis and quality improvement program to deepen clinicians' and other stakeholders' understanding of unexplained practice variation that may suggest overuse or underuse of medical services. Through practice pattern variation analysis (PPVA), we can identify significant differences in how individual physicians treat similar conditions, seek understanding of the causes of the variation, determine whether the variation is clinically warranted, and consider how the variation impacts quality and cost.

Background

Massachusetts Health Quality Partners (MHQP) has worked with Focused Medical Analytics (FMA), a leader in PPVA (http://www.fma-us.com/), to complete this analysis. Together we have developed the first cycle of a multi-payer PPVA program, utilizing three years of statewide Massachusetts claims data (July 2008-June 2011) obtained from the Center for Healthcare Information and Analysis (CHIA). This first cycle serves both as a test of the feasibility of implementing PPVA using CHIA's comprehensive Massachusetts All Payer Claims Database (MA APCD) data set, and as a baseline of information for the MHQP PPVA program. Future cycles could incorporate additional commercial payers and MassHealth, in addition to providing a refresh of more current data for the initial payers.

Collaboration

Critical to the PPVA project was MHQP's development of the PPVA Stakeholder Group, a multi-stakeholder forum comprised of physicians and other health care leaders from health plans and provider organizations, MassHealth, and the Massachusetts Medical Society. The PPVA Stakeholder Group set the collaborative framework for the project and provided oversight and guidance. In the coming months the Stakeholder Group will work with MHQP to inform and engage the physician community on best practices for appropriate care. The group will also work with MHQP to engage the public in understanding the questions they should ask their providers as they work together to ensure that the care provided best meets their needs as patients.

MHQP also established a physician group composed of over 30 physicians from a wide array of specialties. This specialist group met several times with the Stakeholder Group to review the results of the PPVA analysis and selected the conditions for focus. Together the specialists and the stakeholder group were known as the Combined Leaders Group. The dedication, experience, and medical expertise of the members of the Combined Leaders Group were instrumental to the high quality outcome that was achieved in the analytic phase of the MHQP PPVA project.

Initial Output

The analytic process began with creating a blueprint of information on overall costs for more than 25 specialties, and identifying the highest cost conditions and services, divided into general cost categories. Thirty-six condition/specialty combinations (defined by episode treatment groups (ETGs)) were identified from the blueprint, based on a set of criteria for selection developed by the PPVA Stakeholder Group. The Combined Leaders Group then chose ETGs for selected specialties (e.g., Cataracts for Ophthalmology), and FMA applied its methodology to determine the key cost drivers and their potential for cost savings for each selected specialty ETG. Following this review, 11 conditions were selected to assess practitioner variation in the utilization of services or procedures found to be cost drivers and which resulted in volume and cost differences in services among clinicians. Based on the Combined Leaders Group review of the 11 variation curves, two ETGs were selected for focused provider specialty discussions planned for Fall 2014/Winter 2015. The two specialty ETGs selected are:

- Back Joint Degeneration (specifically laminotomy and laminectomy procedures) for neurosurgeons and orthopedists, and
- Ischemic Heart Disease (specifically cardiac catheterization with or without stents) for cardiologists.

Next Steps

Analysis of statewide claims data through the PPVA process is only a starting point for collaborative multi-stakeholder engagement to identify quality improvement opportunities and actions. Our ultimate goal is to activate the medical community to collaborate around a data driven process by engaging the professional community in a respectful accountable process that promotes effective and efficient care and ensures that patients receive the right care, at the right time, and in the right place by reducing overuse and underuse of services.

We look to promote ongoing engagement in PPVA through specialty society and provider network discussions, peer learning sessions to share best practices, development of evidence-based community indications for use of various procedures and other actions that will lead to changes in behavior through variation-focused quality improvement initiatives.

Reports

The MHQP PPVA project, the first phase of which was funded by MHQP's six health plans (Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim Health Care, Tufts Associated Health Plan, Fallon Health, Health New England and Neighborhood Health Plan), reflects broad multi-stakeholder support from the Massachusetts health care community. The data and analysis from the project will be shared with health plans and physician organization leaders who participated as part of MHQP's initial project. These reports will not be publicly available nor will they be used for health plan incentive programs. However, PPVA data and reports can be made available to other providers and organizations that have not participated in the initial phase of this project, but have received or would like to receive training in discussing PPVA with clinicians.

Get Involved

Please contact us directly if you have additional questions about PPVA or are interested in available PPVA training and/or obtaining PPVA data for your organization. We look forward to ongoing engagement of the health care community in using PPVA to positively impact the cost and quality of care provided to patients.

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About MHQP

Massachusetts Health Quality Partners (MHQP) is a non-profit, health improvement collaborative that for the past 19 years has brought together multiple stakeholders to produce trusted, comparable performance measurement that help drive health care quality improvement in Massachusetts. MHQP's mission is to drive measureable improvements in health care quality, patients' experiences of care, and use of resources in Massachusetts through patient and public engagement and broad-based collaboration among health care stakeholders. To learn more about MHQP, visit www.mhqp.org.

II. Background– Practice Pattern Variation Analysis

Studies about geographic variation in clinician practice patterns (e.g., Wennberg and others) have clearly demonstrated wide, unexplained variation in medical and surgical practices that leads to over- and underutilization of services, higher resource use, higher costs, and lower quality. Practice Pattern Variation Analysis (PPVA), an approach developed by Howard Beckman and colleagues at Focus Medical Analytics (FMA), has been shown in several markets to effectively change behavior by using variation data to engage clinicians in improvement efforts within medical groups and practices[1]. PPVA provides an analytic approach for identifying variation and key drivers of that variation, and for reaching insights that can lead to better health outcomes.

Various studies of utilization patterns, including the work of FMA as well as early health plan efforts in using PPVA, led stakeholders in Massachusetts to work with MHQP to develop a multi-payer based Practice Pattern Variation Analysis (PPVA). This project uses a robust volume of multi-payer claims data to inform analysis of services with high costs that would perhaps not be apparent using plan specific data alone. MHQP applied for and received permission from the Center for Health Information and Analysis (CHIA) to use the Commonwealth's Massachusetts All-Payer Claims Database (APCD) for this multi-payer data analysis. By using multi-payer data, the MHQP project has created statewide analyses with reports that can be used as part of variation focused discussions with providers across the Commonwealth.

III. Approach - Practice Pattern Variation Analysis

The PPVA approach involves a multi-step process used to develop a series of reports and analyses that include:

1. An overall Cost Analysis Blueprint created to identify condition areas of opportunity
2. 30 –ETG Key Cost Driver Reports for select specialty and condition combinations
3. Potential Savings associated with key cost drivers within each specialty and condition
4. 11 Detailed Variation Curves reflecting individual provider utilization for each selected procedure or service

Refer to Appendix A for a summary of the PPVA reports and data

In concert with these analyses, the MHQP PPVA Stakeholder Group, composed of members of MHQP's Health Plan and Physician Councils, played a critical role in developing and convening a 30+ Physician Leaders group representing a wide range of specialties. Collectively these two groups, known as the Combined Leaders Group, participated in a series of meetings to review the PPVA analytic reports and helped to determine the condition areas with the greatest opportunities for further analysis and focus.

The Combined Leaders Group considered the following questions:

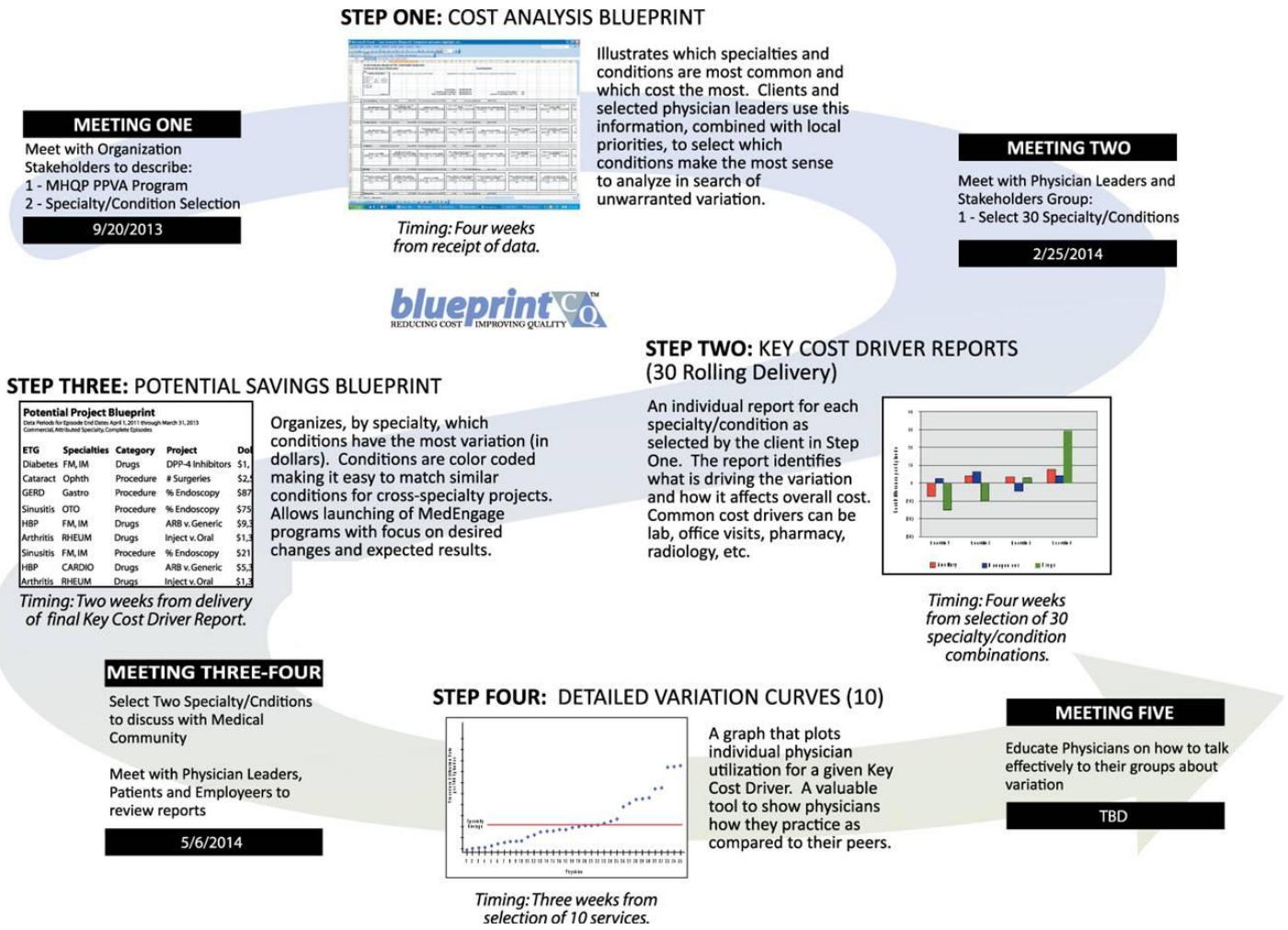
- What specialties and conditions (i.e., episode treatment groups (ETGs)) account for the highest cost?
- What the key cost drivers are within each condition?
- What variation exists within each key cost driver?
- How to select the right opportunities to potentially reduce costs?(i.e. *opportunities that provide appropriate care, maintain or improve quality and reduce unnecessary overuse or underuse of services)*
- What actions have potential to achieve measurable savings while maintaining or improving quality?

[1]Greene, R., Beckman, H., Mahoney, T., "Beyond the Efficiency Index: Finding A Better Way to Reduce Overuse and Increase Efficiency In Physician Care",*Health Affairs* 27, no. 4 (2008): w250–w259 (published online 20 May 2008).

In the identification of opportunities the group employed criteria developed by the PPVA Stakeholders Group to prioritize conditions where:

- Variation could harm patients
- Influencing clinician behavior is reasonably likely
- Guidelines are not clear or are not being followed
- Synergies might exist with the American Board of Internal Medicine (ABIM) Foundation's Choosing Wisely initiatives to help physicians and patients engage in conversations to reduce overuse of tests and procedures (http://www.choosingwisely.org),
- Organizations do not have QI programs already in place.

MHQP's PPVA project's year-long multi-step process (Fall 2013-Summer 2014) is illustrated below.



Source: Focused Medical Analytics

III. PPVA Project Output

Below is a summary of the step-by-step process taken and excerpts of the actual results used to identify the two top conditions selected for further focus and discussion in Fall 2014/Winter 2015. The following steps are detailed: 1) Cost Analysis Blueprint, 2) Key Cost Driver Reports, 3) Potential Cost Savings, and 4) Detailed Variation Curves.

Step One: The Cost Analysis Blueprint

The Cost Analysis Blueprint identified the top ten Episode Treatment Groups (ETGs) for over 25 specialties representing the highest to lower cost specialties. Key elements of the analysis include:

- The total dollars associated with the top ten displayed ETGs and percent of specialty dollars associated with the ETGs,
- The number of episodes analyzed to extrapolate the total number of episodes, average cost per episode and total cost of the ETG for a given period, and
- The percent of dollars by service category (e.g., inpatient costs, surgical costs, radiology, emergency room, labs, pharmacy/RX, visits).

Dates of services July 1, 2008 through June 30, 2011

highest cost etg → lower cost etgs

highest cost specialty ↓ lower cost specialty

Ob/Gyn — Total dollars in displayed ETGs: $1,284,561,869 — Percent Specialty dollars in displayed ETGs: 76.3%

1			2			3			4			5		
Pregnancy, with delivery (601100)	Number	Cost	Non-malignant neoplasm of female genital tract (634700)	Number	Cost	Routine exam (779400)	Number	Cost	Conditions associated with menstruation (634900)	Number	Cost	Contraceptive management (779600)	Number	Cost
Analyzed episodes	39,082	$728,530,915	Analyzed episodes	61,942	$174,352,913	Analyzed episodes	363,847	$113,163,612	Analyzed episodes	105,508	$76,928,940	Analyzed episodes	81,385	$61,028,255
All episodes	41,614	$775,730,144	All episodes	70,746	$199,134,209	All episodes	368,999	$114,765,986	All episodes	119,640	$87,232,991	All episodes	88,548	$66,399,581
Avg cost per episode		$18,641	Avg cost per episode		$2,815	Avg cost per episode		$311	Avg cost per episode		$729	Avg cost per episode		$750
Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category		
inpt 52%; surg 27%			surg 40%; inpt 23%; rad 12%			EM 53%; lab 27%; rad 19%			surg 26%; EM 24%; lab 18%; rad 15%; RX 14%			surg 52%; EM 20%; RX 16%		

Internal Medicine — Total dollars in displayed ETGs: $1,073,226,693 — Percent Specialty dollars in displayed ETGs: 28.5%

1			2			3			4			5		
Hypertension (388100)	Number	Cost	Diabetes (163000)	Number	Cost	Ischemic heart disease (386500)	Number	Cost	Routine exam (779400)	Number	Cost	Asthma (438800)	Number	Cost
Analyzed episodes	425,500	$267,312,379	Analyzed episodes	133,669	$204,805,617	Analyzed episodes	62,481	$140,214,218	Analyzed episodes	427,196	$131,724,124	Analyzed episodes	62,536	$65,625,812
All episodes	500,994	$314,740,066	All episodes	155,864	$238,812,460	All episodes	75,791	$170,083,318	All episodes	465,129	$143,420,608	All episodes	71,432	$74,961,350
Avg cost per episode		$628	Avg cost per episode		$1,532	Avg cost per episode		$2,244	Avg cost per episode		$308	Avg cost per episode		$1,049
Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category		
EM 41%; RX 33%; rad 12%			RX 52%; EM 28%			RX 20%; EM 18%; rad 13%			EM 55%; lab 27%; rad 15%			RX 48%; EM 29%		

Orthopedic — Total dollars in displayed ETGs: $1,005,613,578 — Percent Specialty dollars in displayed ETGs: 57.5%

1			2			3			4			5		
Joint degeneration, localized - knee & lower leg (712202)	Number	Cost	Joint degeneration, localized - thigh, hip & pelvis (712203)	Number	Cost	Joint degeneration, localized - back (712208)	Number	Cost	Joint derangement - knee & lower leg (714302)	Number	Cost	Closed fracture or dislocation of upper extremity - hand, wrist & forearm (713104)	Number	Cost
Analyzed episodes	65,761	$305,603,981	Analyzed episodes	19,904	$186,979,194	Analyzed episodes	20,283	$132,854,812	Analyzed episodes	23,802	$128,080,026	Analyzed episodes	22,907	$55,188,315
All episodes	74,518	$346,299,440	All episodes	22,964	$215,724,991	All episodes	23,224	$152,118,530	All episodes	27,228	$146,515,543	All episodes	25,160	$60,616,318
Avg cost per episode		$4,647	Avg cost per episode		$9,394	Avg cost per episode		$6,550	Avg cost per episode		$5,381	Avg cost per episode		$2,409
Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category			Percent of dollars by service category		
inpt 53%; surg 19%			inpt 70%; surg 15%			inpt 49%; surg 24%			surg 56%; rad 16%			surg 47%; EM 21%; rad 16%		

The Cost Analysis Blueprint was reviewed by the PPVA Combined Leaders Group and 36 condition areas cutting across multiple specialties were selected to understand further their respective key cost drivers. Below is a table of the ETGs and specialties selected. The shaded areas identify the key cost driver categories (high percentages of total cost) associated with the ETG.

The key cost driver detail (% of total costs) is illustrated below specifically for Back Joint Degeneration and Ischemic Heart Disease for cardiology. The key cost driver categories for these two ETGs are surgery/ procedures and inpatient facility costs.

				Key Cost Driver Category (leading categories are shaded) (Percentage of Total ETG Costs)						
	ETG Description	**Specialty(ies)**	**Total $ (Million)**	**Management**	**Surgery/ Procedures**	**Pharmacy**	**Radiology/ Imaging**	**Inpatient/ Facility**	**Lab & Pathology**	**Other categories***
1	Joint degeneration, localized-back	Orthopedic	$133M	6%	24%	1%	11%	49%	0.4%	8%
		Neuro-Surgery	$95M	6%	28%	2%	12%	44%	1%	7%
2	Ischemic heart disease	Cardiology	$338M	10%	13%	10%	11%	50%	1%	5%

**Other cost driver categories might include rehab/therapies, diagnostic, ancillary and other category.*

The following table lists the ETGs selected for the Cost Driver Reports and their leading cost driver categories.

				Key Cost Driver Category (Leading categories of ETG Costs are shaded)					
	ETG Description	**Specialty(ies)**	**Total $ (Million)**	**Management**	**Surgery/ Procedures**	**Pharmacy**	**Radiology/ Imaging**	**Inpatient/ Facility**	**Lab & Pathology**
1	Joint degeneration, localized-back	Orthopedic	$133M		24%			49%	
		Neuro-Surgery	$95M		28%			44%	
2	Ischemic heart disease	Cardiology	$338M		13%			50%	
3	Ischemic heart disease	Internal Medicine	$140M			20%		34%	
		Family Practice	$27M			23%		24%	
4	Diabetes	Internal Medicine	$205M	28%		52%			
		Family Practice	$69M	29%		52%			
5/6	Diabetes Type 1, 2	Endocrinology	$150M	17%		58%			
7	Joint degeneration, localized-knee and lower leg	Orthopedic	$306M		19%			53%	
		General Surgery	$5M		15%			63%	
8	Chronic sinusitis	Otolaryngology	$92M	17%	59%				
9	Chronic obstructive pulmonary disease	Internal Medicine	$47M	20%		40%			
		Family Practice	$14M	21%		39%			
10	Chronic obstructive pulmonary disease	Pulmonary Disease	$27M	16%		46%			

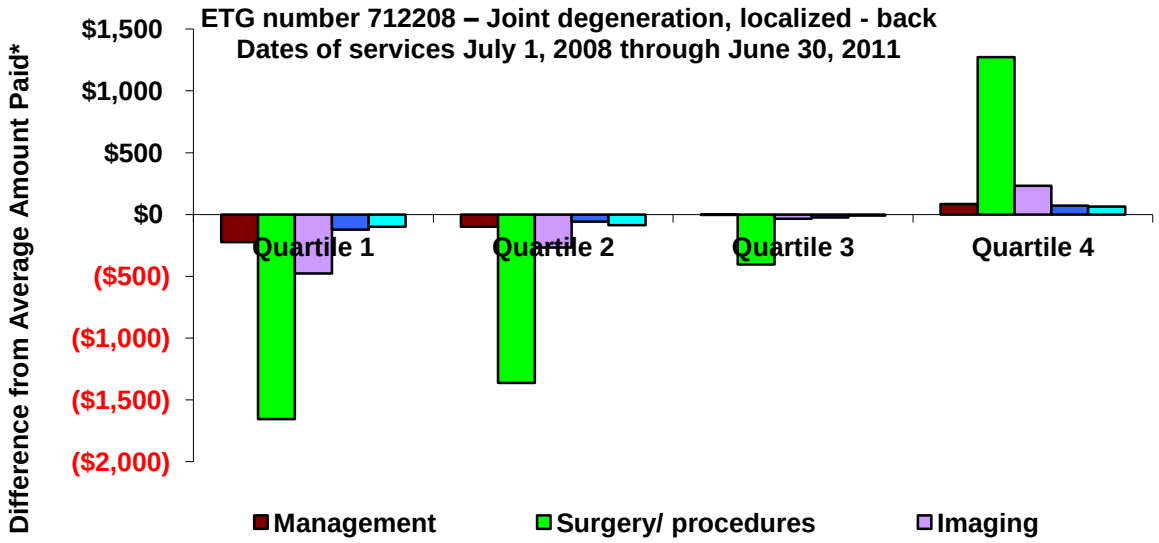
				Key Cost Driver Category (Leading categories of ETG Costs are shaded)					
	ETG Description	Specialty(ies)	Total $ (Million)	Management	Surgery &/or Procedure	Pharmacy	Radiology/ Imaging	Inpatient/ Facility	Lab & Pathology
11	Non-malignant neoplasm of intestines and abdomen	Gastroenterology	$106M		79%				13%
12	Mood disorder, depressed	Internal Medicine	$52M	52%		38%			
		Family Practice	$26M	52%		38%			
13	Mood disorder, depressed	Psychiatry	$157M	50%		43%			
14	Hypertension	Internal Medicine	$267M	41%		33%			
		Family Practice	$87M	44%		30%			
15	Hypertension	Cardiology	$50M	34%		33%			
16	Hypertension	Endocrinology	$8M	34%		41%			
17	Joint degeneration, localized-thigh, hip & pelvis	Orthopedic	$187M		15%			70%	
18	Malignant neoplasm of breast	Surgery General	$164M		55%	12%			
		Plastic Surgery	$90M		38%			30%	
19	Malignant neoplasm of breast	Hematology Oncology	$103M		30%	34%			
20	Cataract	Ophthalmology	$157M	18%	74%				
21	Adult rheumatoid arthritis	Rheumatology	$86M	9%		80%			
22	Non-malignant neoplasm of female genital tract	Ob/Gyn	$174M		40%			25%	
23	Pregnancy, with delivery	Ob/Gyn	$729M		27%			52%	
24	Non-Malignant neoplasm of skin	Dermatology	$90M	36%	43%				
		Plastic Surgery	$13M	18%	65%				
25	Multiple sclerosis	Neurology	$185M			81%	10%		
26	Inflammation of esophagus	Gastroenterology	$64M		48%	16%			
27	Kidney stones	Urology	$101M		51%		18%		
28	Joint degeneration, localized-neck	Surgery Neurological	$59M		23%			53%	
		Orthopedic	$38M		22%			46%	
29	Asthma	Internal Medicine	$66M	29%		48%			
		Pediatrics	$63M	43%		40%			
		Family Medicine	$27M	32%		48%			
30	Migraine headache	Neurology	$36M	32%		35%			
31	Cholelithasis	Gastroenterology	$22M		33%			47%	
32	Cholelithasis	Surgery General	$96M		46%			39%	
33	Hernias, except hiatal	Surgery General	$80M		67%			18%	
34	Inflammatory bowel disease	Gastroenterology	$80M		18%	49%			
35	Psoriasis	Dermatology	$20M	25%		54%			
36	Psoriasis	Rheumatology	$28M	7%		89%			

Step 2: Key Cost Driver Reports

The next step in the PPVA project was to develop Cost Driver Reports for each of the 36 ETG conditions/specialty combinations selected for more detailed review to understand their key cost driver categories and the range of variation in cost across quartiles of providers. Below are findings from the Cost Driver Reports for Joint Degeneration – Back and Ischemic Heart Disease.

- ***Back Degeneration, localized – back – Episode Treatment Group 712208***

Key Cost Driver(s): The primary cost driver is the surgery/procedure category representing 30% of cost variation. Provider episode volume and average cost per episode are ordered (respectively from lowest to highest) into quartile 1 through quartile 4. Providers in quartile 4 have the highest volume and highest average cost per episode. Note: The facility inpatient has a 58% cost variation, however, surgery/procedures category is the driver for facility inpatient services (70% of total episodes, 100% of quartile 4 episodes). When facility inpatient is removed, the cost variation for surgery/procedures increases to 67% with the imaging category coming in at 16%.



Graph represents top 3 cost driver categories excluding facility inpatient.

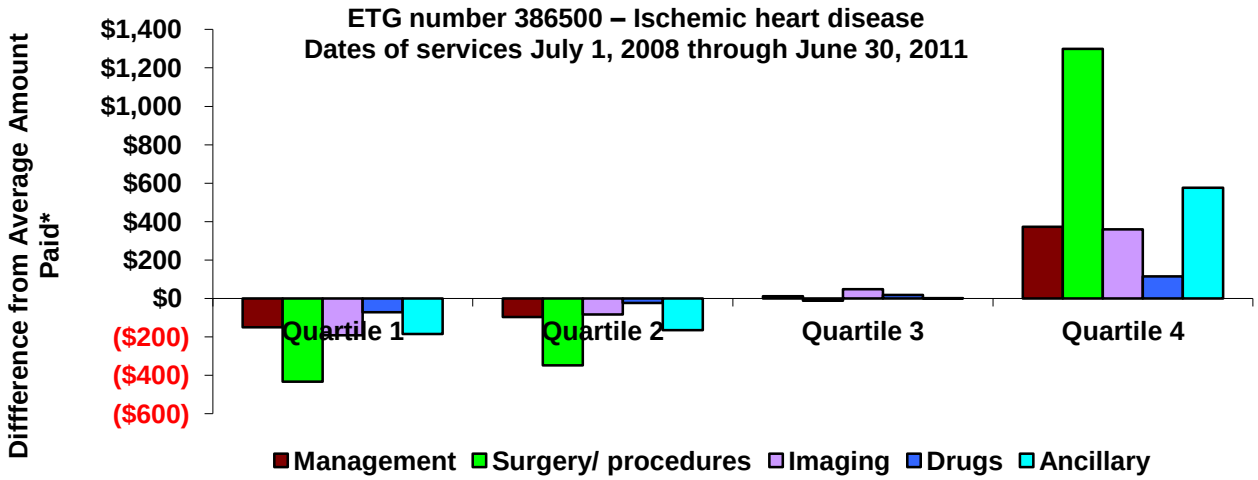
* Amount paid = payer paid + copayment + coinsurance + deductible
Source: MHQP Key Cost Driver Summary Report

Key Cost Driver(s) Drill-Down Analysis

- Analysis shows that with inpatient expenses removed, the majority of variation is accounted for in the surgery/procedures category. Top cost providers do several procedures more frequently than colleagues, most notably single space laminotomy with decompression. The top cost quartile of providers performs twice as many cases per 100 episodes. Total cost generated for this procedure by the top quartile of providers is over $5 million greater than the next most expensive quartile of colleagues. It is possible that this difference reflects the difference between providers who perform this procedure and those who do not (i.e. physicians who refer these patients to colleagues). Further analysis is warranted to explain this practice variation.

- ***Ischemic Heart Disease – Episode Treatment Group 386500***

Key Cost Driver(s): The facility inpatient category has the greatest cost variation, with Quartile 4 costs 65% higher than Quartile 1 costs. Facility inpatient costs occur in 39% of total episodes. When the facility inpatient category is removed, the surgery/procedure category becomes the driver of cost variation with Quartile 4 costs 45% greater than Quartile 1 costs. Other categories with a higher percentage of cost variation include ancillary (20%) and management and imaging (both at 14%).



Graph represents top 5 cost driver categories excluding facility inpatient.

* Amount paid = payer paid + copayment + coinsurance + deductible
Source: MHQP Key Cost Driver Summary Report

Key Cost Driver(s) Drill-Down Analysis

Analysis shows that with facility/inpatient expenses removed, surgery/procedures become the stand-out factor in variation. The combination of ancillary, imaging and management contributes about an equal proportion to the total variation as the surgery/procedures category. Drill down analysis of procedures shows that the most costly item is placement of drug eluting stents which top cost providers are doing in only a few percent more cases, but at a cost of $3.4 million more than third quartile colleagues. In terms of services per episode they do more single vessel stents, left heart catheterizations, and angiography without left heart catheterization than colleagues.

Step 3: Potential Cost Savings

In the next step of the analysis, further drill down of the key cost driver data identified potential cost savings for each of the 36 ETG condition/specialty combinations. Below are findings from the Cost Driver Reports for Joint Degeneration – Back and Ischemic Heart Disease.

The potential savings analysis is available for all the cost driver categories for each ETG, however, for both of these examples, the surgery/procedures cost driver category is illustrated for its estimated savings potential. Although the facility inpatient cost category has a higher percentage of ETG costs than the surgery/procedure category, it is highly dependent on the surgery /procedure episode volume and costs.

Joint degeneration, localized - back

ETG 712208 (5 or more episodes) Dates of services July 1, 2008- June 30, 2011

	Quartile 1	Quartile 2	Quartile 3	Quartile 4	
Episode count	2,129	4,758	11,190	11,493	**Q4-Q1**
Surgery/ procedures	$168	$448	$1,342	$3,066	$2899
		Q2 - Q1	**Q3 - Q2**	**Q4 - Q2**	
Variance per episode		$280	$894	$2,618	
Dollars (variance x episode count)		$1,333,627	$9,999,348	$30,091,969	
Percentage to move		0.33	0.45	0.55	**Total:**
Potential dollars (potential percentage to move x dollars)		$440,097	$4,499,707	$16,550,583	$21,490,386

Estimated Savings Potential* $29,592,724

*(sum potential dollars X multiplier (all episodes/analyzed episodes))

Detailed data provided the additional drill-down analysis to further identify the specific services driving the costs and the variation in the surgery/procedure category: **Laminotomy, Laminectomy and Injections were identified having the highest potential for savings.**

Ischemic Heart Disease

ETG 386500 (5 or more episodes) Dates of services July 1, 2008- June 30, 2011

	Quartile 1	Quartile 2	Quartile 3	Quartile 4	
Episode count	17,172	26,917	18,341	13,310	**Q4-Q1**
Surgery/ procedures	$86	$150	$473	$1,826	$1,740
		Q2 - Q1	**Q3 - Q2**	**Q4 - Q2**	
Variance per episode		$64	$323	$1,677	
Dollars (variance x episode count)		$1,723,180	$5,925,569	$22,315,757	
Percentage to move		0.33	0.45	0.55	**Total**:
Potential dollars (potential percentage to move x dollars)		$568,650	$2,666,506	$12,273,666	$15,508,822

Estimated Savings Potential* $116,901,267

*(sum potential dollars X multiplier (all episodes/analyzed episodes))

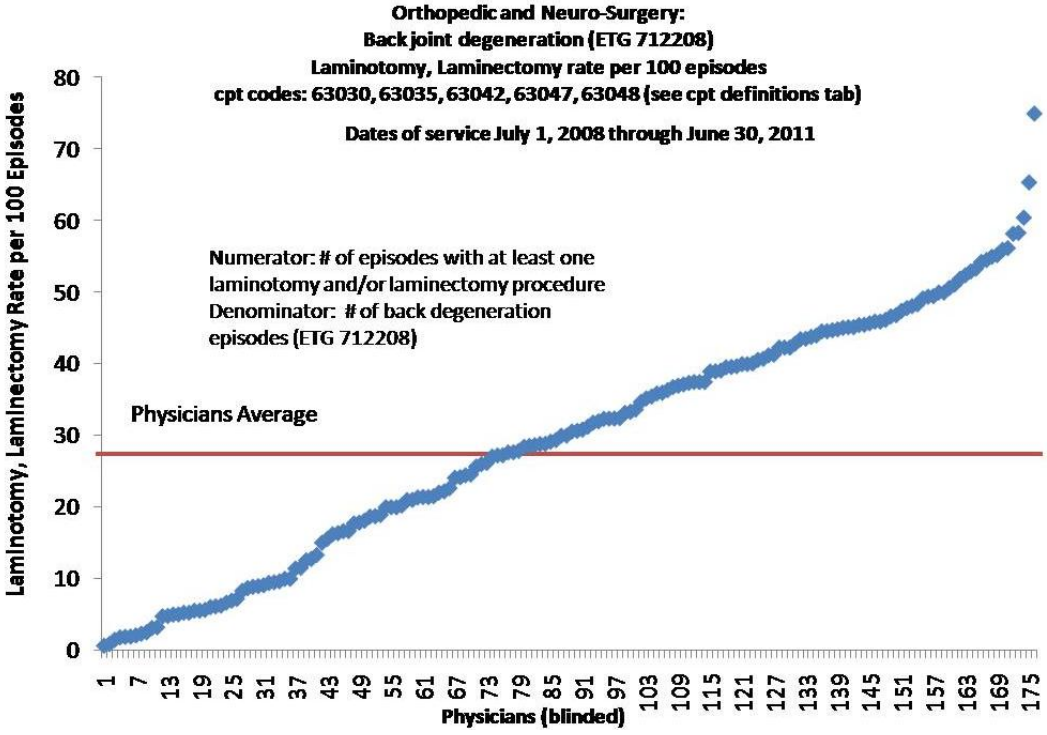
Detailed data provided the additional drill-down analysis to identify further the specific services driving the costs and the variation in the surgery/procedure category: **Catheterization with and without Stents were identified having the highest potential for savings.**

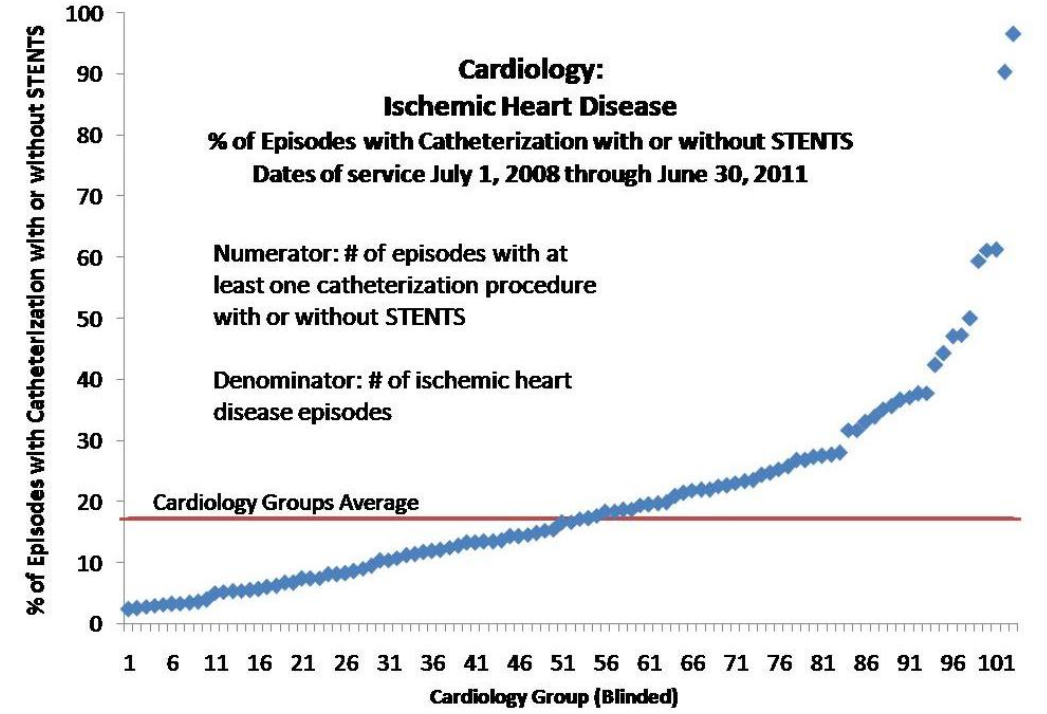
Step 4: Detailed Variation Curves: 11 variation curves were generated with physician level detail.

As a result of reviewing the cost driver reports and potential savings, MHQP and the PPVA Combined Leadership Group recommended the following 11 ETGs be analyzed further to understand the specific variation in practice among individual providers across Massachusetts. Eleven detailed variation curves were developed to understand the extent of variation among providers within a particular service or activity (within an ETG) identified as a key driver of cost.

Condition Episode Treatment Group	**Specialties**	**Key Driver Category**	**Service/Activity**
Back joint degeneration (ETG 712208)	Orthopedic/ Neurosurgery	Procedural	% of episodes with surgery
Knee joint degeneration (ETG 712202)	Orthopedic	Procedural	% of episodes with knee replacement
Non MalignantNeoplasm of Skin (ETG 668200)	Dermatology	Procedural	% episodes with excision, destruction, shaving
Cataract (ETG 351700)	Ophthalmology	Procedural	% of episodes with surgical procedure
Ischemic Heart Disease (ETG 386500)	Cardiology groups	Procedural	% of episodes with cath/stent
Ischemic Heart Disease (ETG 386500)	Family Practice/ Internal Medicine	Imaging	SPECT verses regular exercise test (and concurrent echo's, color flow, wave)
Kidney Stones (ETG 587800)	Urology	Procedural	% of episodes with lithrotripsy % of episodes stent insertion
Hernias, except hiatal (ETG 476600)	General Surgery	procedural	% of episodes with repair
Mood disorder, depressed (ETG 238800)	Psychiatry	management	% of episodes with 90807(includes medical evaluation)
Pregnancy, with delivery (ETG 601100)	Ob/Gyn	imaging	Increased frequency of fetal biophysical profile ultrasound
Hypertension (ETG 388100)	Family Practice/ Internal Medicine	imaging	Endocardiography

Below are variation curves for Joint Degeneration – Back (Laminotomy and Laminectomy) and Ischemic Heart Disease (Catheterization with and without Stents)





Note: *In most Cardiology Groups, a limited number of practitioners perform the catheterizations and insertion of stents. For these reasons, to further inform the analysis, all practitioners wereassociated with the Cardiology Group in which they practiced, where possible.*

IV. Next Steps - Physician Engagement

The two specialty procedures areas highlighted in this report were chosen for future discussions with and among providers about changes in practice that would help to ensure patients receive the right care, at the right time and in the right place, by reducing unnecessary overuse and underuse of services.

For the initial topic areas of focus [i.e., Orthopedics/Neuro-Surgery – Laminotomy/Laminectomy and Cardiology/Ischemic Heart Disease – Catheterization with or without Stents] goals and next steps specific to the orthopedics/neuro-surgery, and cardiology communities will include:

- Widespread education and understanding of PPVA,
- Training providers in how to communicate with front line physicians in the respectful use of PPVA in identifying explainable and unexplainable variation,
- Identifying and convening specialty providers and societies in collaborative discussions to develop broad-based initiatives that support reducing unexplained or unnecessary variation (e.g., developing evidence-based community standards, promoting specialty society discussions and peer learning sessions to share best practices),
- Working with physician organization leaders to provide detailed reports for their specialists, specifically involved in the two conditions initially identified for greater focus (Orthopedists and Cardiologists),
- Implementation of initiatives and overall monitoring of the impact on quality and savings which would optimally include a refresh/update of the MA APCD data and PPVA, and
- Collaborative dialogue between providers and payers in joint efforts to reduce unexplained variation.
- Collaborative dialogue between providers and patients regarding consumer communications/education.

V. Obtaining PPVA Data

Data are available for health plans and provider organizations for the following uses:

- Internal education, understanding and analyses of the PPVA data available,
- Provider engagement regarding performance improvement and practice pattern variation,
- Implementation of internal quality improvement projects which address and reduce unexplained variation, and
- Collaboration among multi-stakeholders (provider groups, health plans and other stakeholders) to develop initiatives that will address and reduce unexplained variation in order to reduce overall costs, promote efficient use of resources and improve health outcomes.

Please contact Janice Singer, jsinger@MHQP.org, for more information on how to obtain general reports or provider identified data for your organization. Data use policies and fees may apply for specific reports/data. Training is available and may be required to obtain or use the data specifically with your providers.

VI. Appendix A: PPVA Reports - Reports and Data Detail Available

A. *Cost Analysis Blueprint*

- This report sorts conditions from largest to smallest by dollars spent. It includes for each condition, costs for individual service categories such as management, pharmacy, radiology and lab services.
- The Cost Analysis Blueprint helps guide the process for selecting which ETGs to analyze further.

B. *Key Cost Driver Reports (*selected by MHQP's PPVA Stakeholders group)

- These reports identify ETGs with the highest levels of clinical variation and the services responsible for driving variation, with a focus on one or more areas (i.e. Cardiology, GI, Neck and Back).
- Each Key Cost Driver Report analyzes one specialty/condition combination and includes the following sections:
  - **Clinical Findings**: Text file created by FMA Medical Directors with description of findings and possible action items.
  - **Key Cost Driver Summary**: Graphs and tables showing key cost drivers and variation across quartiles. An individual Key Cost Driver Report contains information for a single condition and single specialty combination.
  - **Diagnosis List**: A table of all diagnoses, by quartile sorted by number of episodes, percent of quartile and diagnosis expense.
  - **Age Distribution Analysis**: Evaluates if there is a significant patient age distribution difference among quartiles.
  - **Quartile List**: Shows each individual practitioner's average total episode cost, arranged from lowest to highest, and quartile assignment.
  - **Services Table**: Detailed underlying services making up the elements of the summary graph. This table allows understanding of the key cost drivers at the service level.
  - **Severity Distribution**: For ETG Versions 7.x. Using a scale of 1 to 4 (1 being least); helps explain episode cost variation within an ETG.

- ***Potential Savings***
  - Key findings from the Key Cost Driver Reports which identify specialties and conditions with potential cost savings opportunities associated with areas/activities with greatest variation.

C. *Utilization Curves*

- 11 graphic representations of utilization rates with background data selected from the cost driver reports. Each report illustrates the utilization rate for the entire panel of physicians with a single data point for each. These graphs are particularly helpful in the physician engagement process. Data detail by provider (blinded) is available. Availability of unblindedprovider data may be consideredupon request for organizational leaders meeting specific data use criteria and training requirements in how to share PPVA data with frontline clinician.