

The Challenges and Solutions to Measuring the Impact of a Low Back Pain Disease Management Program

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The Forum '08 - Hollywood, Florida
9/2008

Presenters



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Learning Objectives

-  Evaluate factors that contribute to increased duration of narcotic analgesic usage for individuals with low back pain
-  Identify the five most costly low back pain related medical services
-  Examine an innovative approach that segments a low back pain population into five clinically meaningful categories

Operational Definition of LBP

 Acute vs. Chronic

 **Mechanical (97%)**

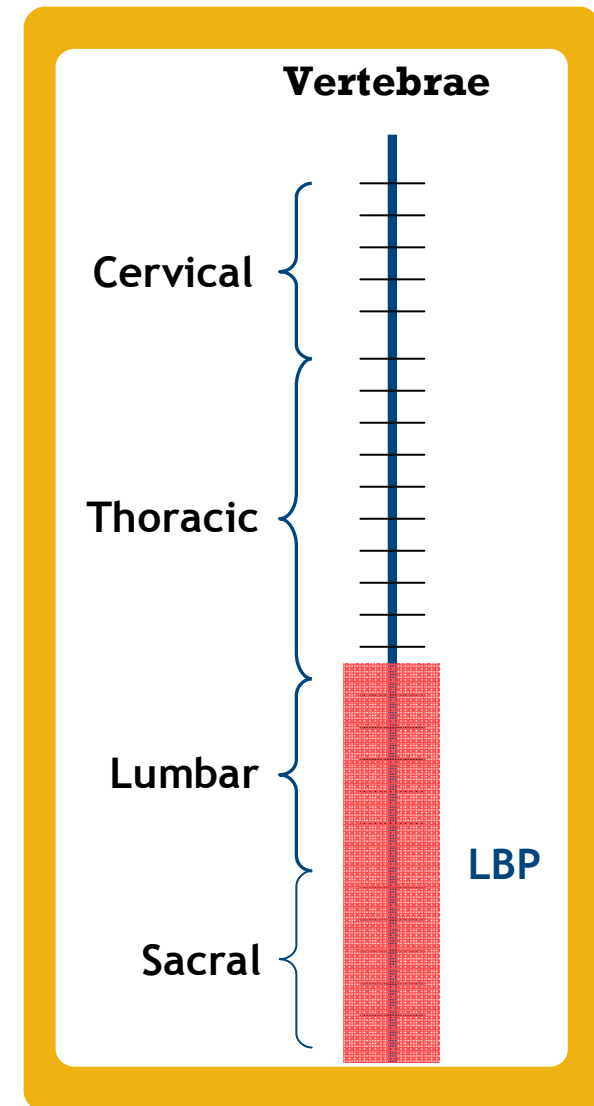
- Lumbar sprain and strains
- Degenerative disc / facets
- Disc herniation
- Others...

 **Visceral (2%)**

 **Non-mechanical spinal(1%)**

 **Psychogenic (<1%)**

**Exclude Visceral, Cervical,
Thoracic, and Psychogenic from
the Discussion**






AHRQ, Evidence Based Guidelines for LBP

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Epidemiology of LBP

- ■ ■ Low back pain is the fifth most common reason for all US physician visits
- ■ ■ Annual “period” prevalence 15-20%; Lifetime prevalence >60%
- ■ ■ Substantial indirect costs related to days lost from work
- ■ ■ Most common cause of disability in the “productive” years
- ■ ■ 100 million workdays are lost annually

Economics of LBP

-  **Direct Costs: Medical Care - Diagnosis, Treatment, and Rehabilitation**
-  **Indirect Costs: Lost Work Output, Lower Wages, Decreased Employer Productivity, Workman's Compensation**
-  **Intangible Costs: Psychosocial Burden, Family Suffering, Economic Hardship**

WHO - The Burden of Musculoskeletal Conditions at the Start of the New Millennium. Technical Report Series 919, Geneva (2003)

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Low Back Pain

Inconsistency between Spending and Health Status

- ■ ■ Variable nature of the condition
- ■ ■ Variation in care among specialties
- ■ ■ Lack of consensus with evidence-based research and best clinical practices
- ■ ■ High prevalence along with indirect and direct cost burdens
- ■ ■ Evaluating LBP DM has challenges



Expenditures and Health Status Among Adults with Back and Neck Problems, JAMA (2008)

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Stakeholder Perspectives



Health Plans

- Cost burden
- DM
- HEDIS Metric for appropriate use of imaging



Employers

- Cost burden
- Presenteeism due to either pain or medication
- Absences potentially leading to short or long term disability



Providers

- Specialty services
- Alternative Medicine
- Spine Centers of Excellence

Low Back Pain Disease Management

Objectives

- ■ ■ Improve productivity and reduce absenteeism
- ■ ■ Reduce medical costs associated with unnecessary testing and procedures
- ■ ■ Provide decision support for treatment options
- ■ ■ Prevent re-injury
- ■ ■ Improve quality from adhering to evidence based practice
- ■ ■ Address HEDIS measures
- ■ ■ Care Coordination
- ■ ■ Pharmacy



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DM Specific Interventions

-  Predictive Modeling
-  Telephonic Outreach
-  The Surgical Decision Support Tool
-  Health Education
-  Red Flag Symptoms
-  Health Behavior Change
-  Back Pain Plan
-  Oswestry LBP Disability Tool
-  Imaging Management
-  Drug Utilization Review
-  Provider Profiling



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Challenges

 Variation in Care and Reimbursement

 Pre-certs

 Specialties

 Geography

Outcomes Study of a LBP Program

- ■ ■ Population based, actuarially adjusted historical control study
- ■ ■ Requires equivalency between the pre-intervention (BL) and Intervention (Y1) populations
- ■ ■ Examined equivalency from multiple aspects and included trend adjustments in the methodology
- ■ ■ Segmented LBP by ICD-9 after Cherkin and Deyo (1992)

Inclusion/Exclusion Criteria for a LBP DM Program

Inclusion criteria

- Members identified with mechanical LBP condition
- With ≥ 6 member months in the studied year
- Age 18 and above

Exclusion criteria

- DMAA standard exclusions
- non-mechanical LBP specific exclusions

Member Profile

	BL	Y1
LBP Members Identified	9,855	10,781
Member Months (AVE)	11.4	11.6
Age (AVE Years)	47.2	47.4
Gender (Female)	52.2%	53.1%



Identification of LBP based on multiple ICD-9 Codes



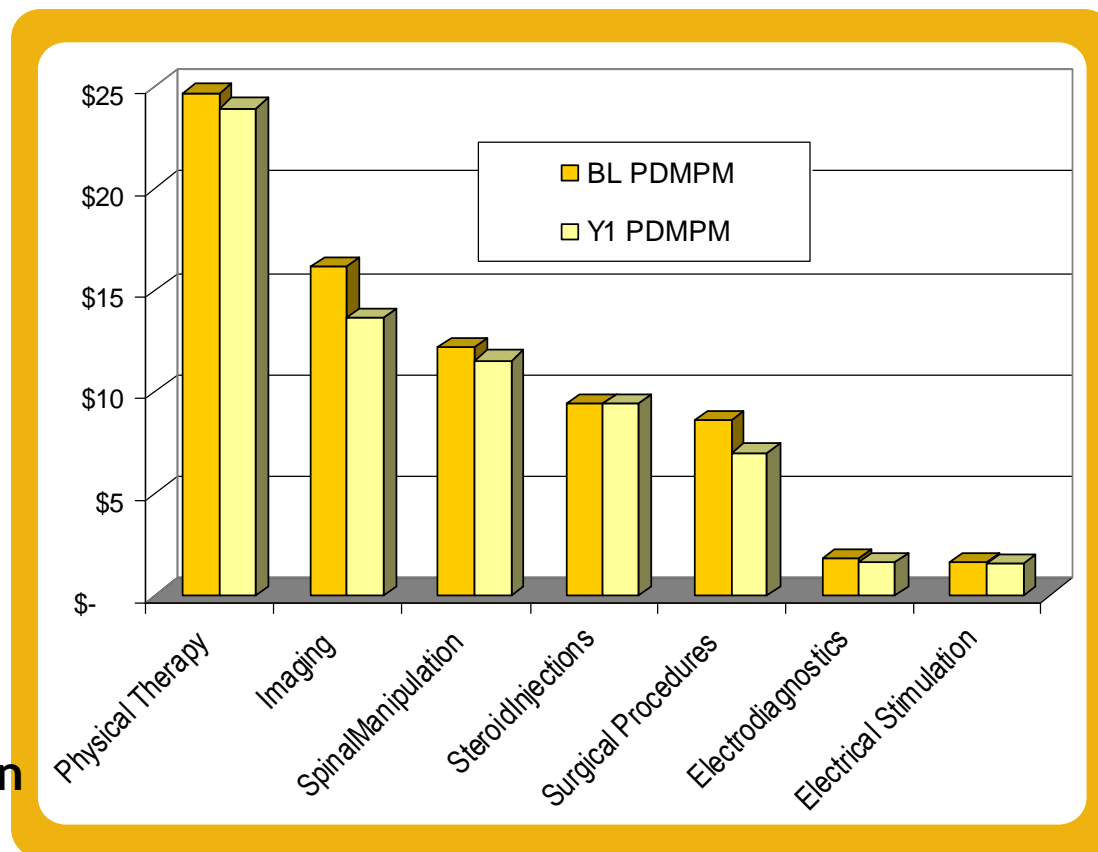
LBP members were identified for each study period in an equivalent manner consistent with DMAA guidelines

LBP Specific Medical Procedure

Cost Drivers

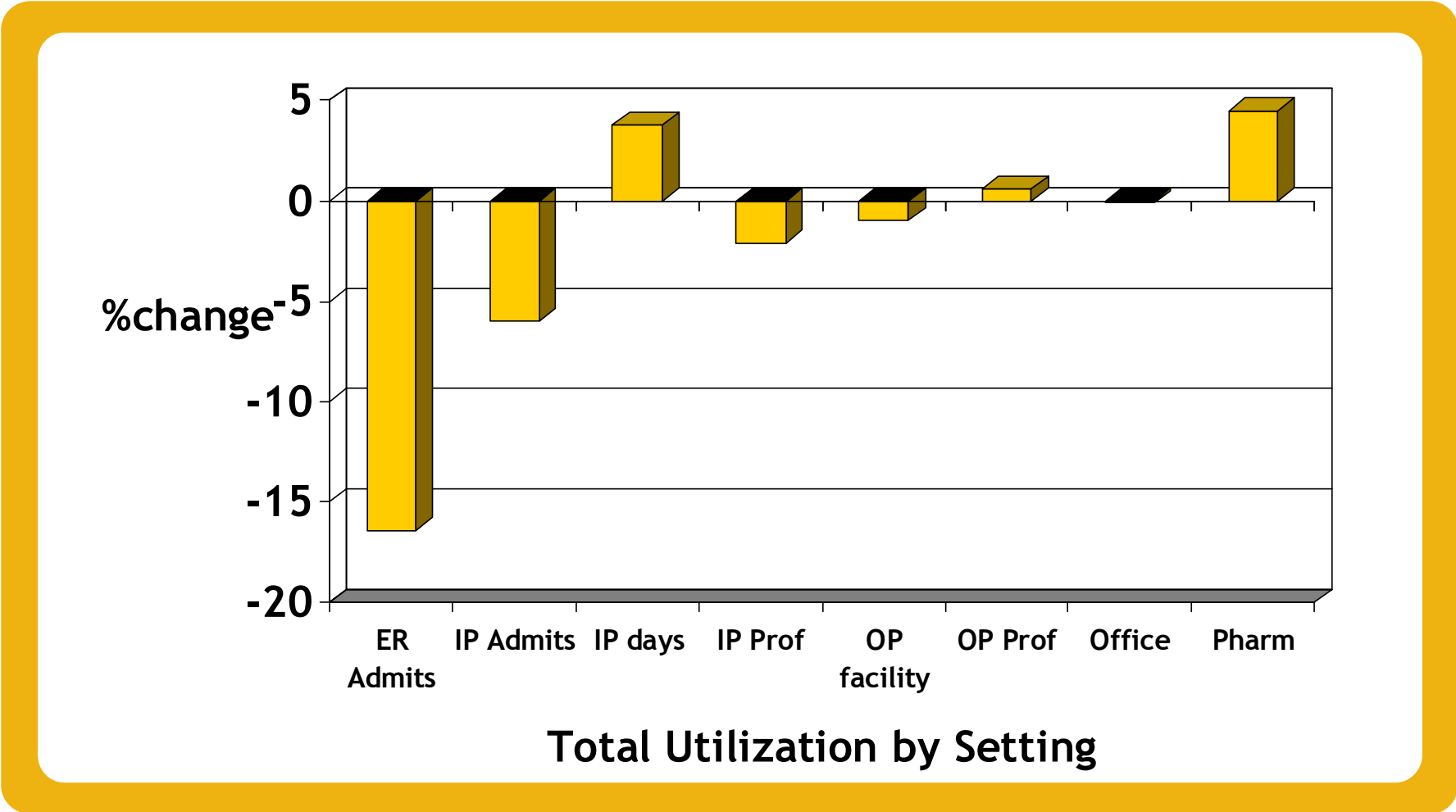
Ordered by Descending Costs

- Physical Therapy
- Imaging
- Spinal Manipulation
- Steroid Injections
- Surgical Procedures
- Electrodiagnostics
- Electrical Stimulation



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Total Utilization: Baseline to Program Year



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LBP Specific Utilization

Costs are trend adjusted

	BL	Y1	%Change
Members	9,855	10,781	
MemberMonths	112,627	124,422	
LBP Physical Therapy	289	312	7.9% ↑
LBP Chiropractic	226	259	14.8% ↑
LBP Surgery	14	11	-20.6%
LBP X-ray	156	144	-7.6%
LBP CT	13	11	-12.5%
LBP MRI	88	85	-3.0%

Note: utilizations are presented as annualized per 1000 unit (1000 PMPY)

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LBP Pharmacy

 “Therapy of Choice”

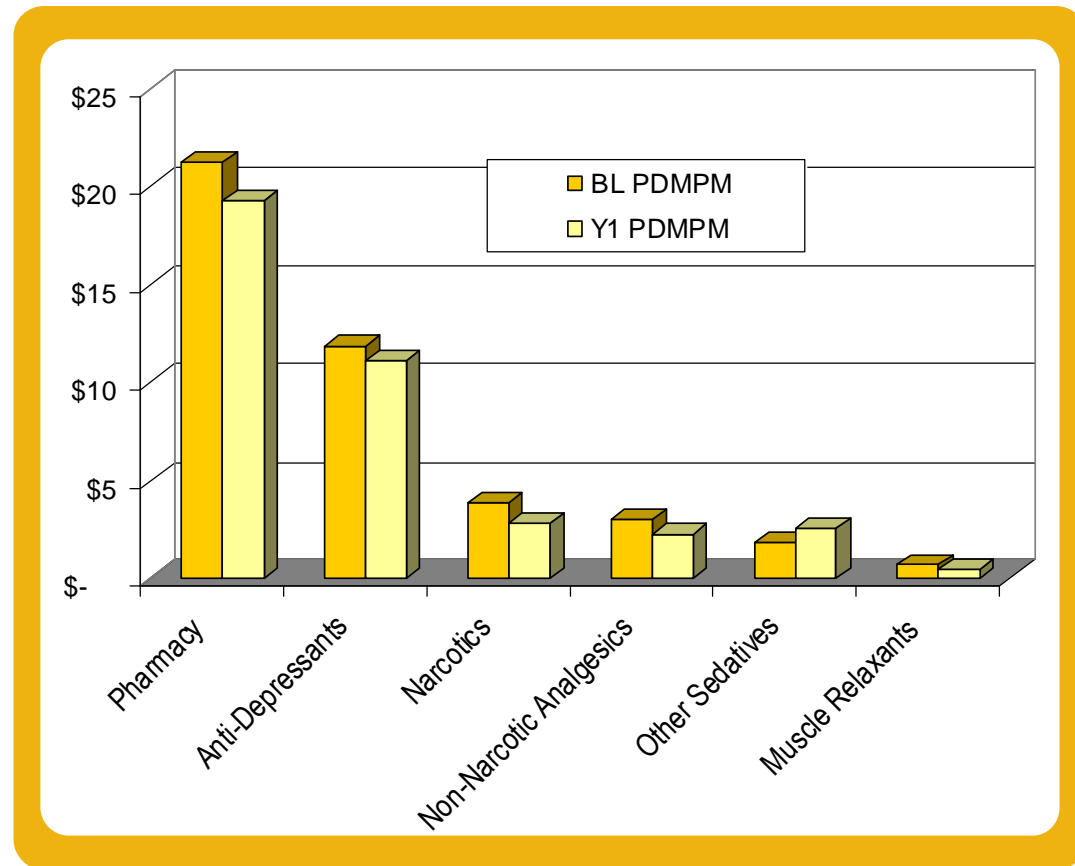
Narcotic Regression BL Year

 Any Narcotics

- ↑ Depressed
- ↑ Office Visit
- ↑ ER Visit
- ↑ IP Admit
- ↑ MRI/CT
- ↑ Spine Injection
- Less Chiro

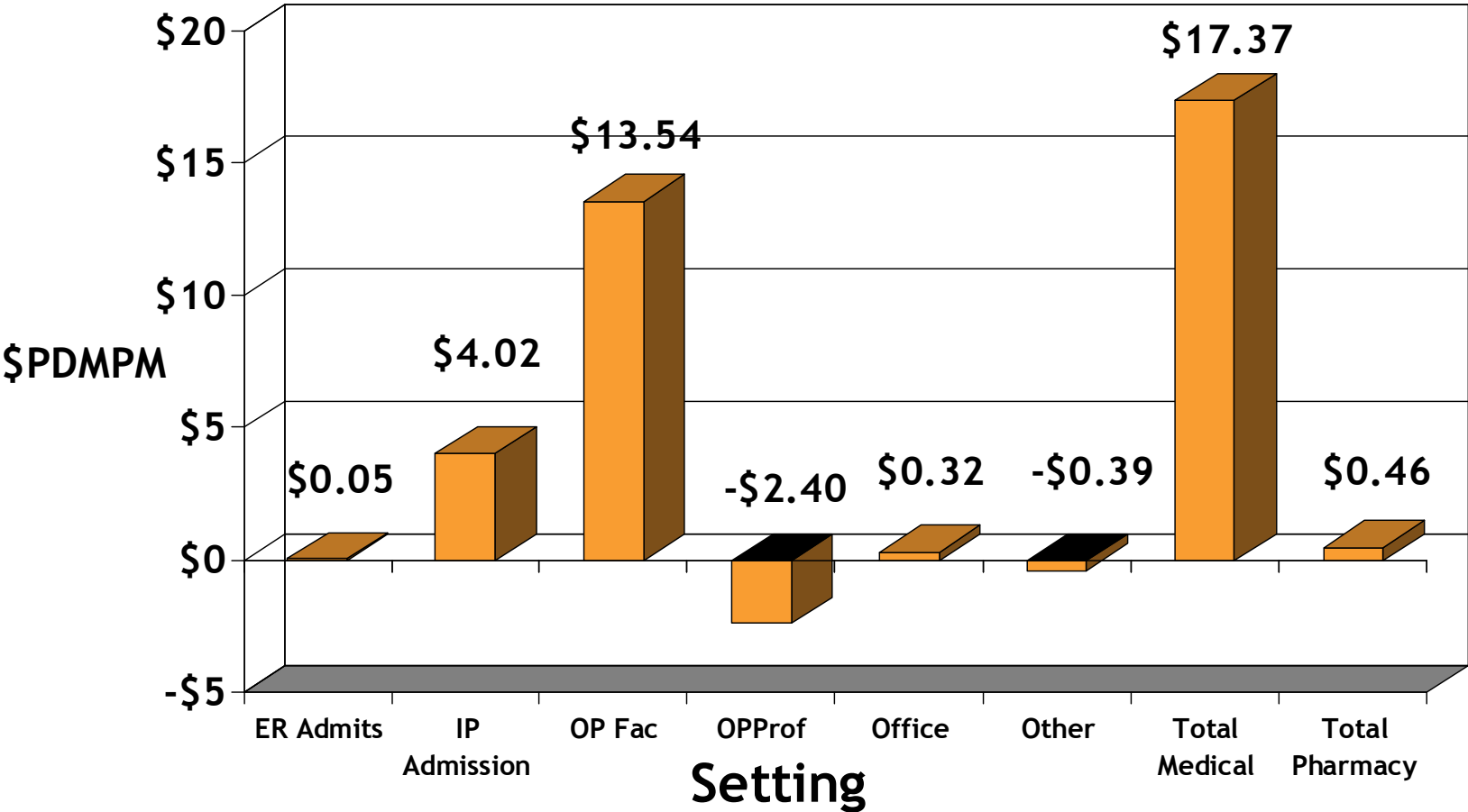
 Any Narcotic >30 D duration

- ↑ Even more depressed
- ↑ IP Admit
- ↑ Injection
- Less Chiro



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Gross Savings by Setting



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LBP Related Pharmacy

Costs are trend adjusted

	BL	Y1	%Change
Members	9,855	10,781	
MemberMonths	112,627	124,422	
Analgesic Cost	\$ 5.01	\$ 2.64	-47.3%
Narcotic Use	308	154	-49.9%
Narcotic Cost	\$ 2.82	\$ 1.63	-42.2%
Narcotic Days	16,437	9,200	-44.0%



Note: utilizations are presented as annualized per 1000 unit (1000 PMPY)

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Trend Adjusted Total-Cost Savings and ROI

outliers capped at 100k

	HMC Standard Saving Methodology	
	BL	Y1
LBP members	9,855	10,781
Total member months	112,627	124,422
<u>ROI Analysis</u>		
Cost PDMPM adjusted by trends	\$410.56	\$392.74
Gross saving PDMPM		\$17.83
Program Fee PDMPM		\$5.61
Net Saving PDMPM		\$12.22
ROI		3.18

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Clinically Meaningful - LBP Groupings

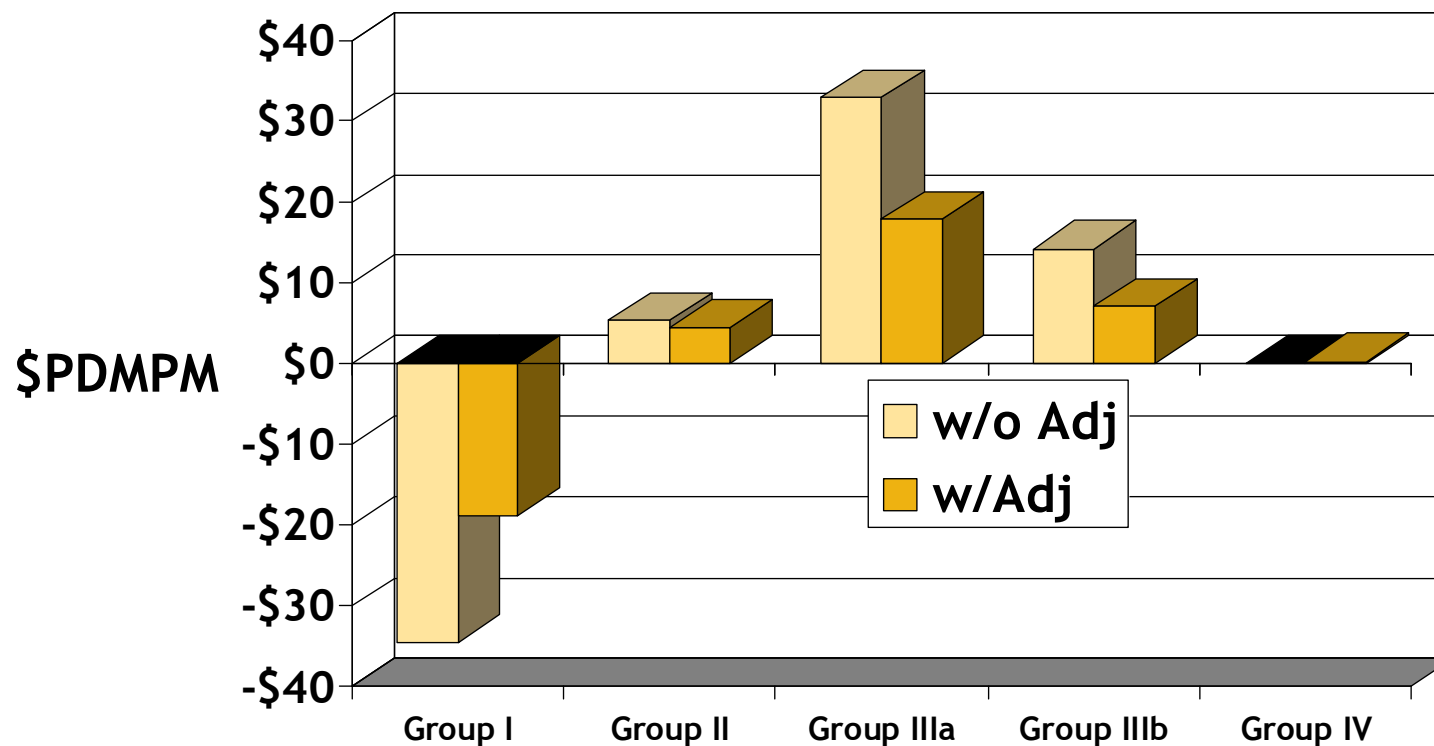
Cherkin & Deyo(1992), Vogt(2005)

Group	Example Clinical Description
I - No neurological findings	Lumbago, sprains, strains, usually short term
II - Neurological findings	Sciatica
IIIa - Lumbar spine structural disorders (congenital)	Scoliosis, spondylolisthesis, many don't require treatment
IIIb - Lumbar spine structural disorders (acquired)	Lumbar canal stenosis, gradual weakening of structure, wear and tear related, IE. Taxi drivers
IV - Due to other causes	Post-op, psychogenic pain, non-specific pain

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PDMPM Savings Adjusted by Clinical Grouping Shifts

Outliers capped at 100k



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Clinical Grouping Based Savings

Outliers capped at 100K

	BL		Y1		
LBP Members	9,855		10,781		
MemberMonths	112,627		124,422		PDMPM Savings
Clinical Grouping	BL		Y1		Group's Contribution to Savings Y1 weight adj.
	MM%	\$PDMPM	MM%	\$PDMPM	
Group I	45.4%	\$319.13	50.3%	\$356.59	-\$18.85
Group II	12.9%	\$350.53	12.7%	\$315.41	\$4.45
Group IIIa	21.0%	\$421.99	17.4%	\$319.79	\$17.81
Group IIIb	20.5%	\$637.08	19.4%	\$600.73	\$7.06
Group IV	0.11%	\$741.50	0.14%	\$583.02	\$0.23
<i>formula</i>	A	B	C	D	CxB-CxD
	100.0%		100.0%		\$10.70
				ROI	\$1.91

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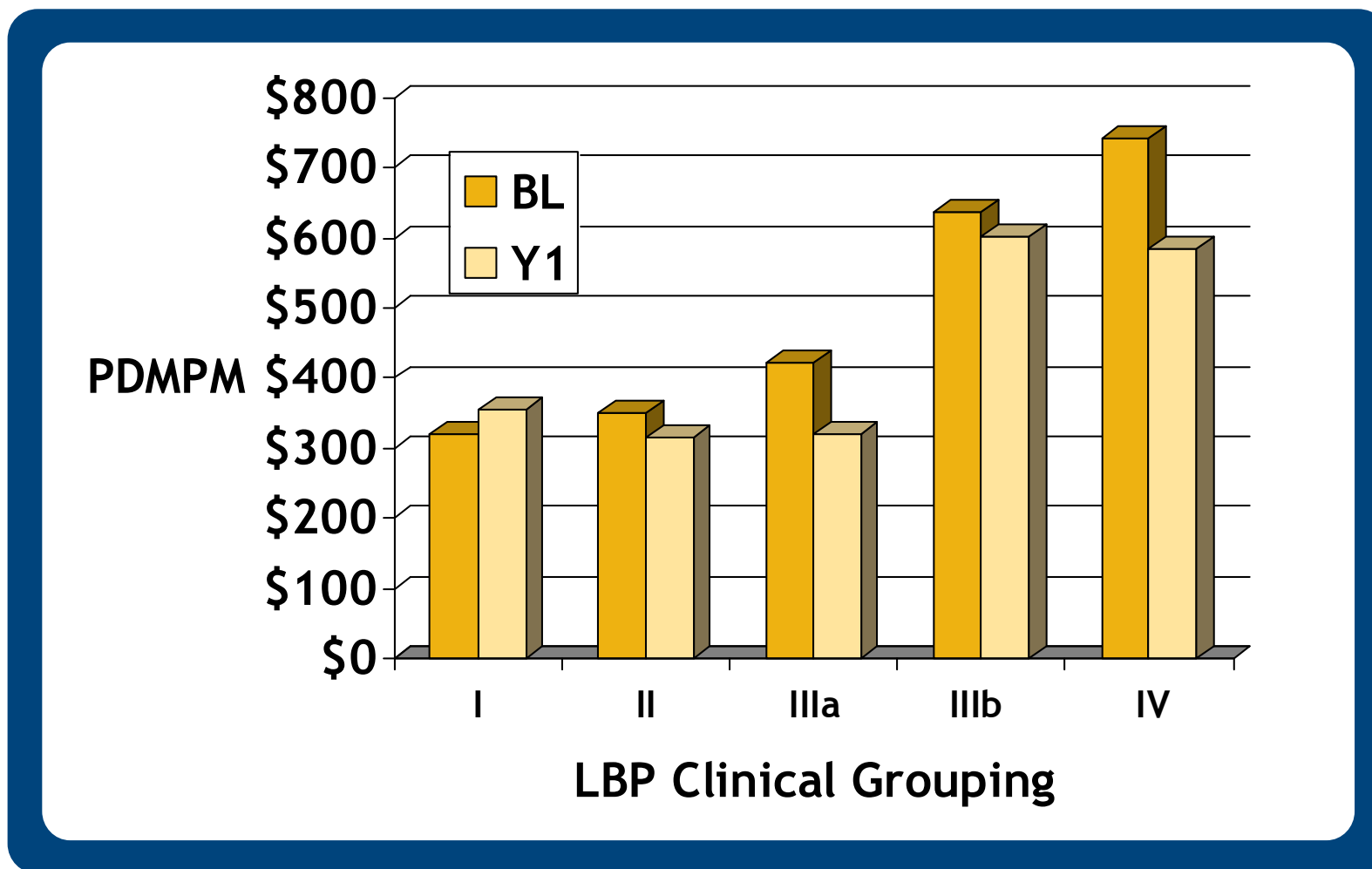
Savings with Clinical Grouping Shift Adjustment

Outliers capped at 100k

	BL		Y1		PDMPM Savings	
LBP Members	9,855		10,781			
MemberMonths	112,627		124,422			
Clinical Grouping	BL		Y1		Group's Contribution to Savings <i>unadjusted</i>	Group's Contribution to Savings <i>Y1 weight adj.</i>
	MM%	\$PDMPM	MM%	\$PDMPM		
Group I	45.4%	\$319.13	50.3%	\$356.59	-\$34.51	-\$18.85
Group II	12.9%	\$350.53	12.7%	\$315.41	\$5.38	\$4.45
Group IIIa	21.0%	\$421.99	17.4%	\$319.79	\$32.86	\$17.81
Group IIIb	20.5%	\$637.08	19.4%	\$600.73	\$14.15	\$7.06
Group IV	0.11%	\$741.50	0.14%	\$583.02	-\$0.05	\$0.23
<i>formula</i>	A	B	C	D	AxB-CxD	CxB-CxD
	100.0%		100.0%		\$17.83	\$10.70
				ROI	\$3.18	\$1.91

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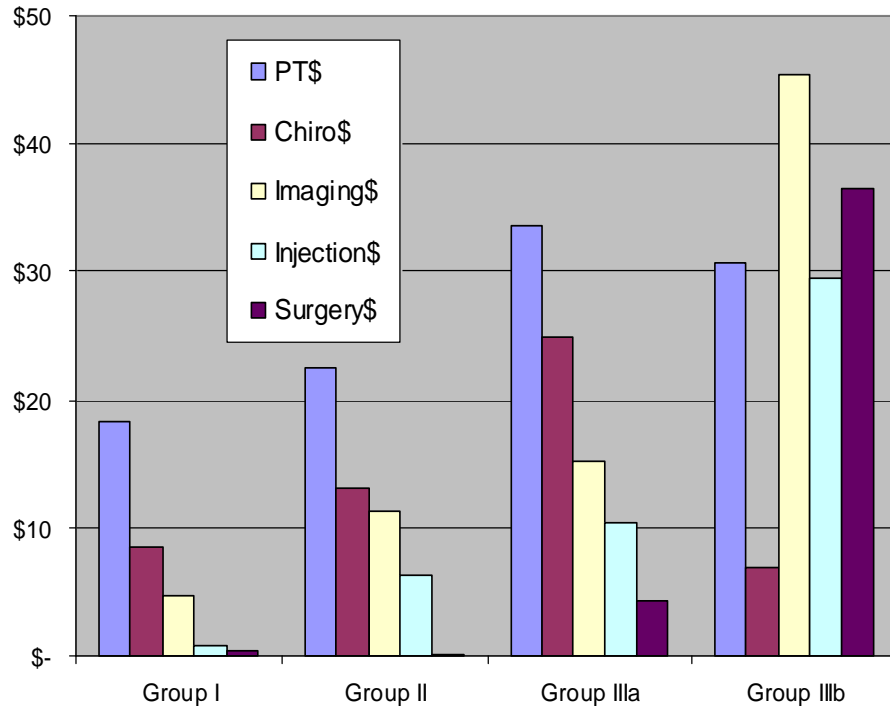
PDMPM Costs from Baseline to Program Year



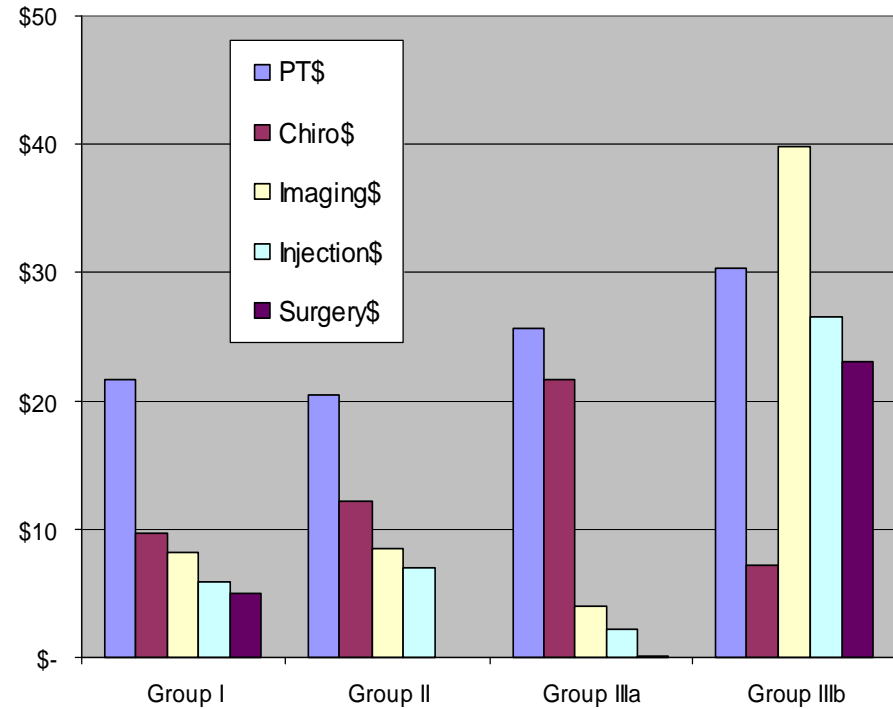
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Costs by LBP Specific Utilization

LBP - PDMPM Medical Claims Cost - BL



LBP - PDMPM Medical Claims Cost - Y1



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In Closing

- ■ ■ Attained a high unadjusted ROI of 3.18. However, we adjusted the ROI to 1.91 after equilibrating the BL and Y1 populations based on LBP clinical groupings.
- ■ ■ Decreases in surgeries and radiology utilization may have contributed to the cost savings.
- ■ ■ Demand and Supply side opportunities exist for cost savings for LBP.
- ■ ■ Segmenting LBP populations into clinically meaningful groupings may help isolate the impact of certain aspects of the program intervention to show impact.

**Questions
and
Thank You**



Steps in Evaluation

1. Determine time frame
2. Gather medical and pharmacy claims
3. Examine “Clean” data
4. Identify target population
5. Apply trend to baseline
6. Calculate cost and savings