Opioid-Sparing Programs: What Can We Learn to Address the Opioid Crisis

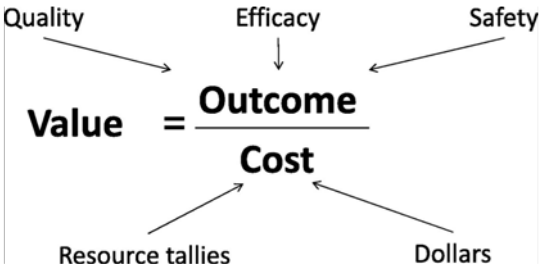
Disclosures

Objectives

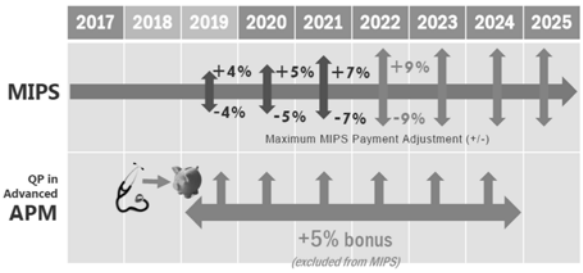
The learner will be able to:

- Describe the role of opioid-sparing techniques in anesthesia
- Describe the outcomes achieved with opioid-sparing compared to traditional techniques
- Differentiate the value of quality versus quantity of anesthesia through opioid-sparing strategies
- Describe the cost-savings opioid sparing techniques generate for hospital systems through a sensitivity analysis
- Translate the economic impact opioid sparing techniques make on the opioid crisis.

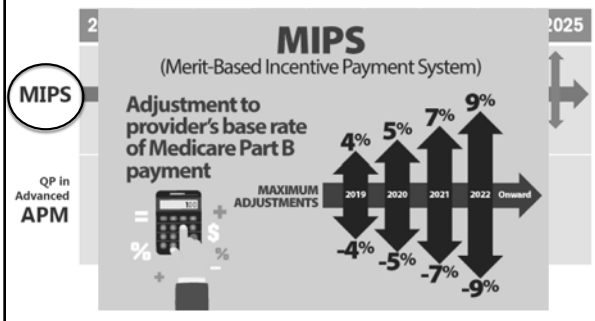
"**Value**" Based Healthcare Delivery *(Not Volume Based)*
Quality (MACRA) NOT Quantity (FFS)



Why is this Important? . . . Economists = MACRA
Medicare Access and CHIP Reauthorization Act

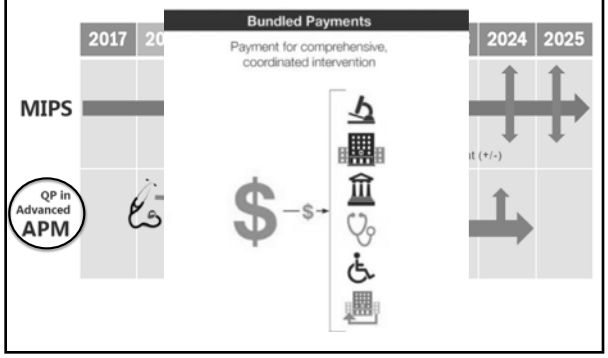


Why is this Important? . . . Transparency



Why is this Important? . . . Transparency

Why is this Important? . . . Transparency



Why is this Important? . . . Transparency

Modern Healthcare

The leader in healthcare business news, research & data

CMS proposal for hospitals to publish prices raises tricky issues

By Harris Meyer | April 25, 2018

Key Indicators for CRNAs

- ☑ **Understand Financial Mechanism**
- ☑ **Develop Internal Strategy**
- ☑ **Determine Objectives and Level of Partnership**
- ☑ **Select Metrics**
- ☑ **Assign Financial Targets and Benchmarks**
- ☑ **Finalize Strategy**

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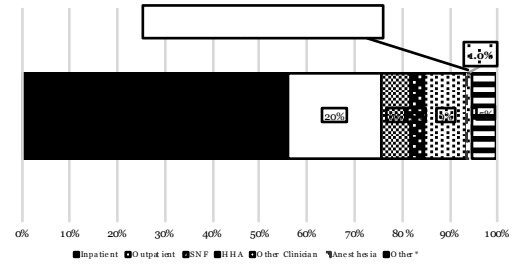
The View of the Attributed Provider: BPCI Major Bowel

Anesthesia Represents a Small Portion of **FFS Payments** in BPCI Major Bowel Episodes

Average Percentage of Payments per BPCI Major Bowel Episode, (N=3,722; Total Average Episode Cost: $41,529)

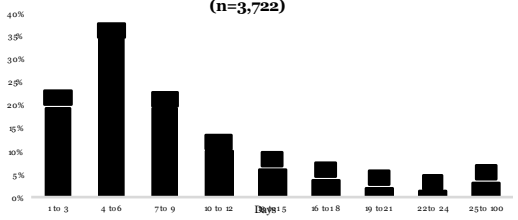


*Other settings include DME, IRF, and LTACH payments
FFS: Fee-for-Service; BPCI: Bundled Payments for Care Improvement
Source: 2016 Medicare Standard Analytic Files (SAFs) 5% SAF sample

The View of the Attributed Provider: BPCI Major Bowel

The Majority of BPCI **Major Bowel Episodes** Include an Inpatient LOS of Less Than 9 Days

Percent of Initial Inpatient Days in BPCI Major Bowel Episodes (n=3,722)



Of these episodes, approximately 17% result in unplanned readmissions

BPCI: Bundled Payments for Care Improvement; LOS: Length of Stay
Source: 2016 Medicare Standard Analytic Files (SAFs) 5% SAF sample

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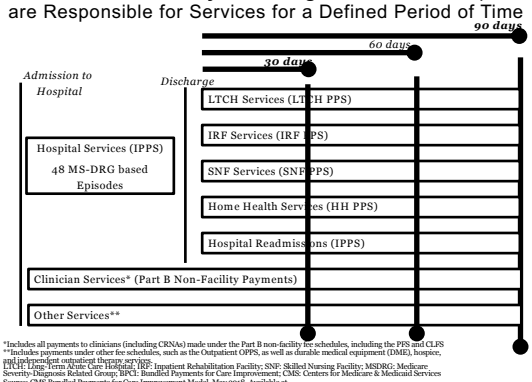
BPCI is a **Bundled Payment Program** Where Participants are Responsible for Services for a Defined Period of Time



*Includes all payments to clinicians (including CRNAs) made under the Part B non-facility fee schedules, including the PFS and CLFS
**Includes payments under other fee schedules, such as the Outpatient OPPS, as well as durable medical equipment (DME), hospice, and independent outpatient therapy services
LTCH: Long-Term Acute Care Hospital; IRF: Inpatient Rehabilitation Facility; SNF: Skilled Nursing Facility; MSDRG: Medicare Severity-Diagnosis Related Group; BPCI: Bundled Payments for Care Improvement; CMS: Centers for Medicare & Medicaid Services
Source: CMS Bundled Payments for Care Improvement Model. May 2018. Available at

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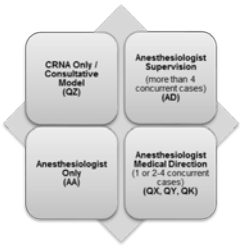
CRNA: Know You **Baseline Value**



Practice Model Reimbursement[1,2]

Practice Model	Anesthesiologist Allowed	CRNA Allowed
CRNA only (No medical direction)	N/A	100%
Anesthesiologist only	100%	N/A
Medical direction	50%	50%
Payment at the medically supervised rate*	3 units (+ 1 unit for induction)	50%

** This is different from the CMS Part A Condition of Participation supervision requirement*

(Base Units + Time Units + Modifying Units) × Conversion Factor = Billed Amount*

CRNA "The Baseline Value" - Professional

- CPT Code: 00844 – Anesthesia for APR
- Base Unit: 7 units
- Time Units: 16 units (4 Hour Procedure)
- Modifiers
  - ASA 3: 1 unit
  - Age > 70 years: 1 Unit
  - Total 25 Units (CMS Anesthesia Conversion Factor (CF) is $22.49)
    - Professional Charges: (25 units) * ($108.00) = $2,700.00
    - Discount Rate = $1053.00

(Base Units + Time Units + Modifying Units) × Conversion Factor = Billed Amount*

CRNA "The Baseline Value" - Technical

- CPT Code: 00844 – Anesthesia for APR
- Technical Charge
  - Technical 01: $1,400 base bundle charge
  - 4 Hour Procedure: 30 minute increments = 8 units
  - Rate per Unit $166.00
  - Discount Rate: 60%
  - Technical Charges: Technical 01 ($1400) + (8 Units * $166.00) = $2,728.00
  - Discount Rate: $1,636.80

(Base Units + Time Units + Modifying Units) × Conversion Factor = Billed Amount*

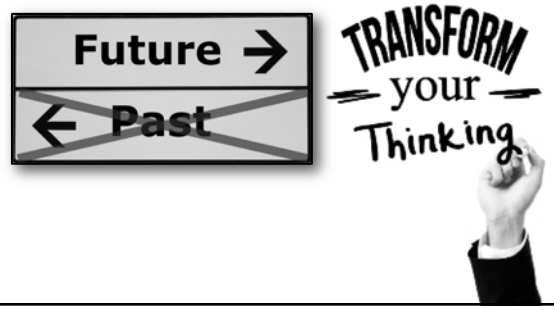
(Base Units + Time Units + Modifying Units) * Conversion Factor = Billed Amount*

- Professional Charge: $1,053.00
- Technical Charge: $1,636.80
- Revenue Total: $2,689.80

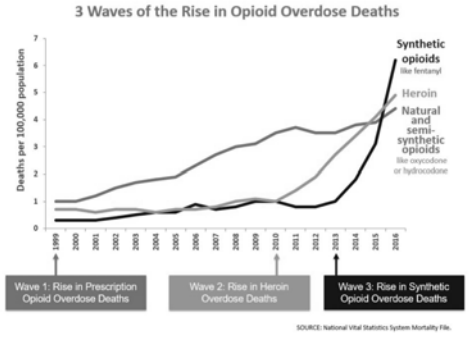
A CRNA's Baseline Value

APR Colon Surgery – 4 Hour Duration

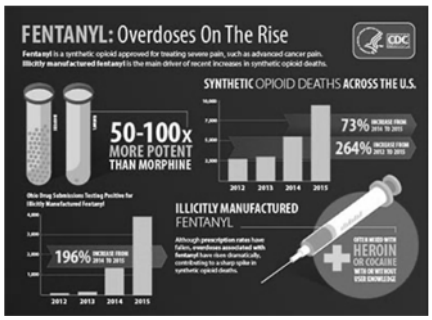
The Role of the CRNA: Addressing the Opioid Crisis



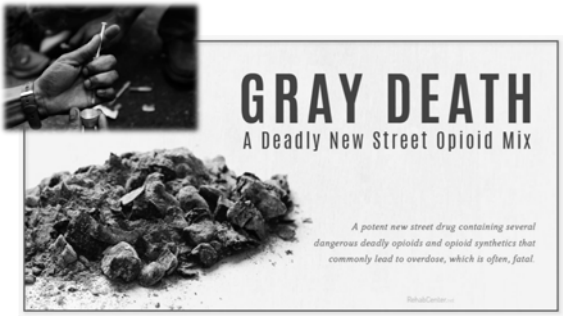
Opioid Crisis



Opioid Crisis



Government Policy: Help or Hinder?



Government Policy: Help or Hinder?

- Background on Impact in the Healthcare Sector
  - Only **4 major companies manufacture** synthetic injectable Opioids
  - **Profit margins** on injectables are low
  - Pfizer is 60% of **market share**
  - 2016-2017: Contaminates and sterility . . . Reduced manufacturing
  - **Trump** Declares . . . Opioid Crisis
    - **DEA Response**:
      - 2017: Reduce Opioid Manufacturing 25%
      - 2018: Reduce Opioid Manufacturing 20% more
        - » Despite **insufficient supplies** for hospital systems

Government Policy: Help or Hinder?

HEALTH CARE

In the midst of a massive opioid crisis, hospitals are experiencing an opioid shortage

By Aaron Schachter
May 14, 2018 | 5:22 PM

4 Steps in Determining Value: Opioid-Sparing

1. Define the Problem & State the Objective

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

4 Steps in Determining Value: Opioid-Sparing

1. Define the problem & State the Objective
   - Are Opioid-Sparing strategies a cost-effective method for reducing symptom burden and minimizing surgical & associated complications?

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

4 Steps in Determining Value: Opioid-Sparing

1. Define the problem & State the Objective
2. Identify the **perspective and alternative interventions** to be compared;
   - Patient/Societal
   - Healthcare Practitioner
   - Hospitals or Hospital systems
   - Third-Party payers

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

Patient Perspective

- What **costs Directly & Indirectly affect** the patient?
  - Functional Status/Symptom Burden
  - Out-of-Pocket (example: deductible)
  - ***Lost Income***: Patient & Caregiver
  - Transportation to Health Services
  - Patient Satisfaction (Note: CMS)

- **Relevant Consequences** include:
  - Therapeutic Effectiveness
  - Adverse Events (Burden & Rescue)***
    - Determinants of ***Patient Satisfaction***

It is about the Patient Experience.

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

"The Patient Experience"

- What does "The Patient Experience Mean"?

IHI: Triple Aim "The Patient Experience"

- What does "The Patient Experience Mean"?

"A national study revealed that patients who reported being ***most satisfied with their doctors*** actually had ***higher healthcare and prescription costs***. They were ***more likely to be hospitalized*** than patients who were not as satisfied. Worse, the most satisfied patients were significantly more likely to ***die in the next four years***."

The Problem With Satisfied Patients

A misguided attempt to improve healthcare has led some hospitals to focus on making people happy, rather than making them well.

The Atlantic

Health economics in Enhanced Recovery After Surgery programs

Stowers, Marinus D. J; Lemanu, Daniel P; Hill, Andrew G
Canadian Journal of Anesthesia/Journal canadien d'anesthésie, 02/2015, Volume 62, Issue 2

Systematic Review

Purpose: Evaluate cost-effectiveness of ERAS Programs

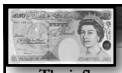
Findings: 17 studies identified on ERAS cost-effectiveness report:

1. Cost Savings
2. "Expedited Recovery"
3. Morbidity & Complication Reductions

Problem: Studies ***only focused*** on in-hospital **Direct** costs

*"**Cost data** for individual studies were **POORLY** detailed"*

Limitations: *Quality of Life (QoL) & Indirect Cost* not studied

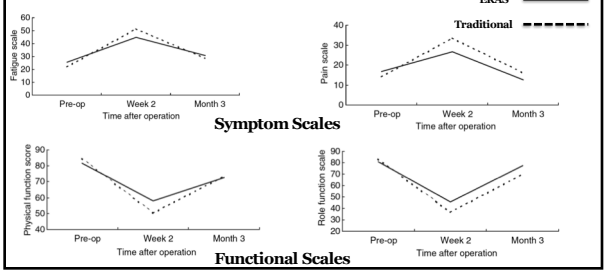


The influence of an Enhanced Recovery Programme on clinical outcomes, costs and quality of life after surgery for colorectal cancer

King, P. M; Blazeby, J. M; Ewings, P; ongman, R. J; Kipling, R. M; Franks, P. J; Sheffield, J. P; Evans, L. B; Soulsby, M; Bulley, S. H; Kennedy, R. H
Colorectal Disease, 07/2006, Volume 8, Issue 6

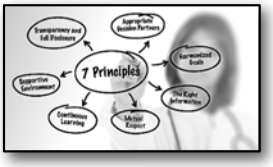
Purpose: Evaluate health economic outcomes & QOL of ERAS Programs

Findings specific to QOL: EORTC QLQ-C30/QLQ-CR38



Health Practitioner

- **Cost to provider** may include:
  - Hospitalization (LOS)
  - **Pharmacy (i.e. Formulary)**
  - Supplies (i.e. Pumps)
  - Quality Metrics



- **Outcome of Interest** include:
  - Adverse Events (i.e. FPPE & OPPE)
  - **Physician Compare (www.CMS.gov)**
  - Therapeutic Effectiveness
  - Patient Satisfaction (Note: CMS)

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

Hospital System

- **Expenditures** include:
  - Length of Stay
  - Adverse Events & related Morbidity
  - 30 Day Readmission (Note: CMS)

- **Outcome of Interest** include:
  - Adverse Events
  - Therapeutic Effectiveness
  - Patient Satisfaction (Note: CMS)

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

Cost impact analysis of **Enhanced Recovery** After **Surgery program** implementation in **Alberta colon cancer patients**

Nelson, G; Kiyang, L N; Chuck, A; Thanh, N X; Gramlich, L M
Current oncology (Toronto, Ont.), 06/2016, Volume 23, Issue 3

What we Know!
(n = 790)

- **LOS:**
  - 1.5-2.0 day reduction
    (p < 0.05)
- **Complication Rate:**
  - 13% reduction overall
    (p < 0.05)
- **Readmission Rate:**
  - reduction overall
    (p = 0.1172)

TABLE II Change in length of stay over time, after implementation of the Enhanced Recovery After Surgery (ERAS) program

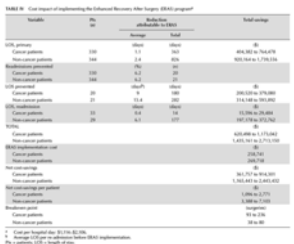
Time since implementation and patient group	Pts (*n*)	Length of stay (days)		*p* Value
		Mean	Median	
Before ERAS				
Cancer patients	68	9.5±11.5	7.0	
Non-cancer patients	48	8.8±7.3	5.5	
After ERAS				
Overall				
Cancer patients	330	8.4±12.7	5.0	0.0012
Non-cancer patients	344	6.4±8.2	4.0	0.0041

Cost impact analysis of **Enhanced Recovery** After **Surgery program** implementation in **Alberta colon cancer patients**

Nelson, G; Kiyang, L N; Chuck, A; Thanh, N X; Gramlich, L M
Current oncology (Toronto, Ont.), 06/2016, Volume 23, Issue 3

- **LOS & Readmission Reduction:**
  - $620,498-$1,173,042
- **ERAS Implementation Cost:**
  - **$258,741**
- **Net Cost-Savings:**
  - **$361,757-$914,301/383**
  - **$944,535-$2,387,208/1K**
- **Net Cost-Savings per Patient:**
  - **$1,096-$2,771/Patient**
- **Break-Even Analysis:**
  - Cancer Patient: **93-236 cases**

What we **Do Not** Know!
(n = 790)



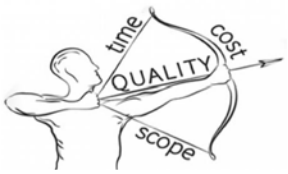
4 Steps in Determining Value: Opioid-Sparing

1. Define the problem & State the Objective
2. Identify the perspective and alternative interventions to be compared
3. Identify and measure: **Outcomes and QOL** of each alternative

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

Identify and **Measure Outcomes**

- Costs are measured over a "relevant time period"
  - **Shot-Term Outcomes**
    - Anesthetic Agents
    - PACU Stay
    - PONV
    - PORD
    - POI
    - SSI
  - **Long-Term Outcomes**
    - Length of Stay
    - Symptom Burden
    - Re-Admission Rate
    - Patient Satisfaction
    - Delayed Return to Work



Standardization of care: impact of an enhanced recovery protocol on length of stay, Complications, and Direct Costs after Colorectal Surgery

Thiele, Robert H; Rea, Kathleen M; Turrentine, Florence E; Friel, Charles M; Hassinger, Taryn E; McMurry, Timothy L; Goudreau, Bernadette J; Umapathi, Bindu A; Kron, Irving L; Sawyer, Robert G; Hedrick, Traci L.
Journal of the American College of Surgeons, 04/2015, Volume 220, Issue 4

- **Mean LOS:**
  - 2.2 day reduction
    (p < 0.05)
- **Complication Rate:**
  - 47% reduction overall
    (p < 0.05)
- **SSI Rate:**
  - 60% reduction overall
    (p < 0.05)
- **Readmission Rate:**
  - 41% reduction overall
    (p = 0.1)

What we Know!
(n = 207)

Table 4. Clinical Outcomes before and after ER Protocol Implementation

Outcomes	Before ER protocol (n = 98)	After ER protocol (n = 109)	p Value
Length of stay, d, mean ± SD (median)	6.8 ± 4.7 (5)	4.6 ± 3.6 (3)	0.0002
Open	7.5 ± 5.3 (6)	5.2 ± 4.4 (4)	0.007
Laparoscopic	5.5 ± 2.6 (5)	3.8 ± 2.1 (3)	0.003
Readmission	17 (17)	10 (9)	0.1
Ileus	27 (28)	18 (17)	0.06
Unplanned intubation	2 (2)	1 (1)	0.60
Death	0	0	1.0
Superficial/drop SSI	10 (10)	4 (4)	0.09
Organ space SSI	10 (10)	4 (4)	0.09
Any SSI	20 (20)	8 (7)	0.008
Thromboembolic event	4 (4)	3 (3)	0.71
Progressive renal insufficiency	0	0	1.0
Acute renal failure	0	0	1.0
Urinary tract infection	3 (3)	1 (1)	0.35
Myocardial infarction	1 (1)	1 (1)	1.0
Postoperative bleeding	12 (12)	6 (6)	0.13
Sepsis	1 (1)	2 (2)	1.0
Pneumonia	1 (1)	3 (3)	0.62
Unplanned return to OR	7 (7)	5 (5)	0.56
Any complication	30 (30)	16 (15)	0.007
Mean 30-d direct cost, mean ± SD	20,435 ± 12,857	13,306 ± 9,263	0.001

Data are presented as n (%) unless noted otherwise.
ER, enhanced recovery; OR, operating room; SSI, surgical site infection.

Standardization of care: impact of an enhanced recovery protocol on length of stay, Complications, and Direct Costs after Colorectal Surgery

Thiele, Robert H; Rea, Kathleen M; Turrentine, Florence E; Friel, Charles M; Hassinger, Taryn E; McMurry, Timothy L; Goudreau, Bernadette J; Umapathi, Bindu A; Kron, Irving L; Sawyer, Robert G; Hedrick, Traci L.
Journal of the American College of Surgeons, 04/2015, Volume 220, Issue 4

- **Mean 30-day Direct Cost Reduction:**
  - $7,129 per patient
- **Mean Total Cost Reduction:**
  - $6,567 per patient
- **Net Cost-Savings for ERAS Group:**
  - **$777,061 per 109 patients (or $7,129,000 per 1000)**
- **Mean LOS:**
  - 2.2 day reduction
    (p < 0.05)

What we **Do Not** Know!
(n = 207)

n = 109

Increased Bed Capacity:
- 261 available patient bed-days
- 47.5 additional patients

Sensitivity Analysis n = 1000

- 2,394 available patient bed-days
- 435 additional patients

CRNA VALUE: Disproportionate Beyond Peri anesthesia

4 Steps in Determining Value: Opioid-Sparing

1. Define the problem & State the Objective
2. Identify the perspective and alternative interventions to be compared
3. Identify and measure outcomes of each alternative
4. Identify & measure **costs of all alternatives**

Concerns about quality of pharmacoeconomic analyses. (2013). *PharmacoEconomics & Outcomes News*, (671), 1.

Traditional Methodology: Direct Cost

Drug	Cost per Unit	Units	Total Cost
Midazolam	$2.40	1	$2.40
Famotidine	$2.53	1	$2.53
Sufentanil	$8.00	3	$24.00
Propofol	$2.30	1	$2.30
Cis-Atracurium	$24.40	3	$73.20
Glycopyrrolate	$46.75	1	$46.75
Neostigmine	$52.85	1	$52.85
Desflurane	$6.99	6	$41.94
Crystalloid	$1.95	3	$5.85
Ondansetron	$0.70	2	$1.40
Bupivicaine	$36.64	1	$36.64
Hydromorphone	$8.08	1	$8.08
		Total Cost	**$297.94**

ERAS Methodology: Direct Cost (**The Alternative**)

Drug	Cost per Unit	Units	Total Cost
Gabapentin	$12.00	1	$12.00
Celebrex	$4.15	1	$4.15
Tramadol	$7.35	1	$7.35
Acetaminophen	$35.40	3	$106.20
Alvimopan	$700.00	1	$700.00
Dexmedetomidine	$31.92	1	$31.92
Propofol	$2.30	9	$20.70
Ketamine	$21.24	1	$21.24
Lidocaine 0.4%	$2.53	1	$2.53
Albumin 5%	$83.72	3	$251.16
Glycopyrrolate	$46.75	1	$46.75
Neostigmine	$52.85	1	$52.85
Crystalloid	$1.95	1	$1.95
Ondansetron	$0.70	2	$1.40
Bupivicaine	$36.64	1	$36.64
Liposomal Bupivicaine	$285.00	1	$285.00
Hydromorphone	$8.08	1	$8.08
		Total Cost	**$1,428.30**

Variable Cost of Adverse Drugs Events (ADE)

- PONV
- Ileus
- Respiratory Depression
- Immobility/DVT
- Urinary Retention
- Mental Status Change
- Increased LOS
- 30 Day Readmission

Post-Operative Nausea & Vomiting (PONV)

Post-Operative Nausea & Vomiting (PONV)

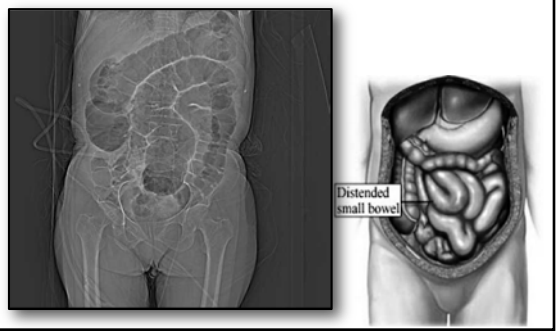
- **15%-33% occurrence** surgical outpatients
- Adjusted **incremental cost $75** (95% CI - $67-$86) per patient
  - **$87.12 per patient** today
- Average **Delayed Discharge** by 60 minutes (234 min. versus 171 min.)
- **Lasting Effects**: up to 72 hours
- **Quality of Life**: lower for PONV – **The Intangible**!
  - Only 49% rate 1 for PONV versus 94% rated 1 for POD 1 to 3
    - Most Patients experiencing PONV at 72 hours

REPORTS OF ORIGINAL INVESTIGATIONS

A time-motion economic analysis of postoperative nausea and vomiting in ambulatory surgery

Ivan Parra-Sanchez, MD · Rania Abdallah, MD · Jing You, MS · Alex Z. Fu, PhD · Martin Grady, MD · Kenneth Cummings III, MD · Christian Apfel, MD · Daniel I. Sessler, MD

Post-operative Ileus (POI)



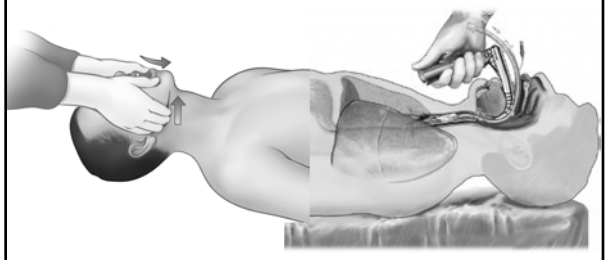
Post-Operative Ileus (POI)

- **Occurrence:** 10-40% in patients undergoing Radical Cystectomy
  - **Average Occurrence Rate**: 15.6%
  - POI Contributes to 50-70% of all complications
  - **Increases LOS:** mean of **4 days** (Range: 3-10 days)
    - **Doubles the cost** of Hospital Stay
  - **Cause:** Opioid binding to gastrointestinal mu-receptors
  - Additional **Overall Cost** due to POI**: $10,246.00 per event**

- **Prevention:** Alvimopan which binds to gastrointestinal mu-receptors
- **Direct Cost:** $700 per hospital stay
- **Results:** 50% Rate Reduction in POI to 7.8%

Alvimopan for prevention of postoperative paralytic ileus in radical cystectomy patients: a cost-effectiveness analysis

Respiratory Depression: ORAE



Respiratory Depression:

- N = **319,898**
- Incidence: **3.3%** (12.2% Overall)
- Cost: **$155.33 per patient**
- LOS: **3.3 Days**
- 30-Day Readmission: 6.4%

PHARMACOECONOMICS AND OUTCOMES IN PAIN AND PALLIATIVE CARE

Effect of Opioid-Related Adverse Events on Outcomes in Selected Surgical Patients

Gary M. Odierda, Tong J. Gan, Bernadette H. Johnson, and Scott B. Robinson

Post-Operative Urinary Retention (POUR)

Postoperative Urinary Retention (POUR)

- **Occurrence:** 2.1%, based on the Surgical Care Improvement Project
  - **Sample Size**: **415,409** surgical patients
  - **Study:** 43,030 developed POUR
    - POUR Contributed **9.2%** of Urinary Tract Infections
  - **Increases LOS:** mean of 1.1 days
  - CAUTI Literature: **$1357 per incidence**

National incidence and outcomes of postoperative urinary retention in the Surgical Care Improvement Project

Alex K. Wu, M.D.[a,*], Andrew D. Auerbach, M.D.[a], David S. Aaronson, M.D.[a,b]

[a]Department of Urology, University of California San Francisco, San Francisco, CA, USA; [b]Department of Urology, Kaiser Permanente Medical Group, Oakland, CA, USA

Variable Cost Benchmarks

Incidence: Variable Cost Per Episode

Incidence	Cost Per Episode	Probability
Respiratory Depression	$568.00	3.30%
PONV	$87.12	15.00%
Post-Operative Ileus	$10,247.00	15.60%
Urinary Retention	$1,357.00	2.00%
Mental Status Change	$2,500.00	15.00%
DVT	$4,159.00	2.20%
30-Day Readmission	**$11,200.00**	5.40%
Length of Stay	$2,064.00/Day	10.0 Days

Cost Benefit & Cost Effectiveness

A Factor of 5.6

Traditional Strategy	Incidence	Opioid-Sp
8.00%	Pruritus	**0.00%**
3.30%	Respiratory Depression	**0.00%**
15.00%	PONV	7.50%
15.60%	Post-Operative Ileus	7.80%
2.00%	Urinary Retention	**0.00%**
15.00%	Mental Status Change	3.00%
2.20%	DVT	1.00%
5.40%	30-Day Readmission	**0.00%**
10.0 Days	Length of Stay	**7.00 Days**
$1,379.38	Cost Per Episode (Probability)	$247.69

CRNA: Baseline Value for CPT: 00844

Professional

- Base Units: 7 Units
- Time Units: 16 Units
- Modifiers: 2 Units
- CF: 108.00
- Bill: $2,700.00
- Discount Rate: 0.39
- Revenue: $1,053.00

Technical

- Bundle: 1,400.00
- Time Units: 8 Units
- Conversion: 166.00
- Bill: $2,728.00
- Discount Rate: 0.60
- Revenue: $1,636.80

Total Revenue: $1053.00 + $1,636.80 = $2,689.80

Assume 1,000 Cases: $2,689,800.00

Traditional Anesthesia: Cost per 1000 Poor Quality

Variable Cost

- LOS (7 Days): $14,448,000.00
- PONV: $ 13,068.00
- POI: $ 1,598,376.00
- ORADE: $ 5,125.89
- POUR: $ 124,844.00
- 30 Day: $ 604,800.00
- Total: $ 16,118,413.89

Fixed Cost

- Anesthesia: $293.23 per case
- Traditional: $ 297.94
- Total: $591.17 per case
- 1000 Case: $591,170.00

Opioid Sparing Anesthesia: Cost per 1000 Poor Quality

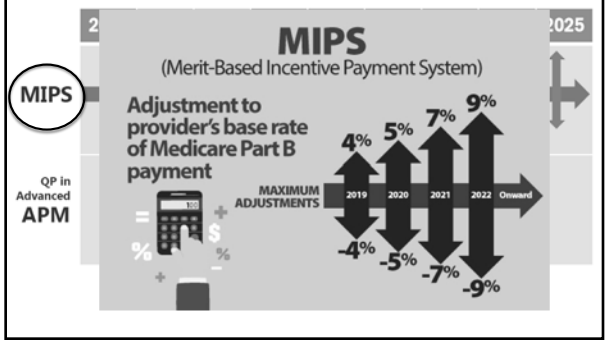
Variable Cost

- LOS (3 Days): $ 6,192,000.00
- PONV: $ 6,534.00
- POI: $ 799,188.00
- ORADE: $ 0.00
- POUR: $ 28,497.00
- 30 Day: $ 0.00
- Total: $ 7,026,219.00

Fixed Cost

- Anesthesia: $293.23 per case
- Opioid Spare:$ 1,428.30
- Total: $1,721.52 per case
- 1000 Case: $1,721,530.00

Why is this Important? . . . Transparency



Traditional Anesthesia: Cost per 1000

Variable Cost

- LOS (7 Days): $14,448,000.00
- PONV: $ 13,068.00
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- Total: $ 16,118,413.89

Fixed Cost

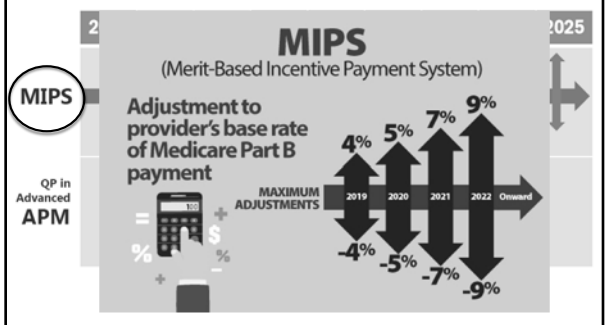
- Anesthesia: $293.23 per case
- Traditional: $ 297.94
- Total: $591.17 per case
- 1000 Case: $591,170.00

Professional Revenue: $1,053.00 per case
Per 1,000 Cases: $1,053,000.00
MIPS: (Penalty 4%) $ 42,120.00
$1, 010,880.00

Technical Revenue: $1,636.80 per case
Per 1,000: $1,636,800.00
MIPS: (Penalty 12%) $ 148,608.00
$1, 488,192.00

Revenue: $2,499,072.00 / 1000 cases

Why is this Important? . . . Transparency



Opioid Sparing Anesthesia: Cost per 1000

Variable Cost

- LOS (3 Days): $ 6,192,000.00
- PONV: $ 6,534.00
- POI: $ 799,188.00
- ORADE: $ 0.00
- POUR: $ 28,497.00
- 30 Day: $ 0.00
- Total: $ 7,026,219.00

Fixed Cost

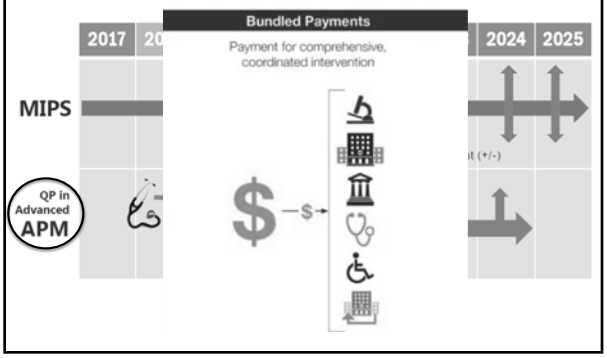
- Anesthesia: $293.23 per case
- Opioid Spare:$ 1,428.30
- Total: $1,721.52 per case
- 1000 Case: $1,721,530.00

Professional Revenue: $1,053.00 per case
Per 1,000 Cases: $1,053,000.00
MIPS: (**Bonus** 4%) $ 42,120.00
$1,095,120.00

Technical Revenue: $1,636.80 per case
Per 1,000: $1,636,800.00
MIPS: (**Bonus** 12%) $ 196,416.00
$1,833,216.00

Revenue: $2,928,336.00 / 1000 cases

Why is this Important? . . . Transparency



Opioid Sparing Anesthesia Vs Traditional: Net

Variable Cost

- LOS (3 Days): $ 8,256,000.00
- PONV: $ 6,534.00
- POI: $ 799,188.00
- ORADE: $ 5,125.89
- POUR: $ 96,347.00
- 30 Day: $ 604,800.00
- **Total: $ 9,092,194.11**

Fixed Cost

- Opioid Spare: $1,721,530.00
- Traditional: $ 591,170.00
- **Net Fixed Cost:$1,130,360.00**

- Net Overall Savings in hospital per 1,000 cases Exceeds $7,000,000.00

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- Overall **net Anesthesia Revenue** $429,264.00 per 1000 cases

Summary

- Review the importance of Economic in Healthcare as a driver for decision-making
- 4 step approach to economic analysis
- Discussed the translation of outcomes into economic burden
- Identified the some opportunity gaps in the literature