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OCTOBER 11-14, 2018

Calculating the Financial Impact of Cesarean Birth Reduction in your Practice

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Springfield MA

October 13, 2018

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PRESENTER INFORMATION

Susan DeJoy, CNM, PhD, received Bachelor of Science degrees from SUNY Geneseo and SUNY Downstate in biology and nursing, a Master of Science in Nursing with a concentration in midwifery from the University of Pennsylvania, and a doctorate in Epidemiology and Biostatistics at the University of Massachusetts School of Public Health and Health Sciences.

Dr. DeJoy has been a practicing certified nurse midwife since 1982, and at Baystate Medical Center in Springfield MA since 1986. She developed the Baystate Midwifery Education Program in 1991, and served as its Director until 1996. She was Chief of the Division of Midwifery and Community Health at Baystate Medical Center until January 2017, developing a full scope midwifery practice, a midwifery triage program, and a collaborative clinical teaching program for residents and medical students. She is an Assistant Professor in the University of Massachusetts Medical School and is on faculty at the Baystate Midwifery Education Program and the Tufts University School of Medicine. Dr. DeJoy was inducted into ACNM Fellowship in 1997. She leads the Reducing Primary Cesareans Quality Project at Baystate.

SESSION DESCRIPTION

Title: **Calculating the financial impact of cesarean birth reduction in your practice**

Abstract: Demonstrating the financial impact of lower cesarean birth rates is a powerful tool for supporting midwifery practice and physiologic birth. We will present an Excel template, pre-populated with formulas, which can be used by any practice or birth service to calculate dollars saved when NTSV cesarean rates are reduced. Included are hospital side costs and provider side income for both mom and baby. The Excel spreadsheet will be shared for use by all participants.

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LEARNING OBJECTIVES

1. Define components of estimating cost of cesarean and vaginal births, and where to find this information.
2. Identify fiscal partners who can provide financial data needed for the calculations.
3. Discuss concepts of charge, payment, cost, and gross collection rate.
4. Outline formula for calculating number of primary and repeat cesareans prevented when cesarean birth rate is reduced.
5. Discuss how to present these results for maximum impact.

THIS EDUCATIONAL ACTIVITY OFFERS 0.1 OF CE CREDITS, PLEASE COMPLETE THE SESSION EVALUATION

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- The entire Baystate Reducing Primary Cesareans Team

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Baystate Medical Center

Springfield, MA 01199

- 716 Bed Tertiary Care Referral Center
- Flagship of Baystate Health, Inc.
- Admissions/year: 42,000
- Annual Surgical volume: 29,000
- UMass Medical School - Baystate
- Member CoTH 9 Residency Programs, 290 Residents & Fellows
- 1,200 Member Medical Staff, 500 Faculty Physicians and Advanced Practitioners
- Level 1 Trauma Center
- IHI Mentor Hospital
- Magnet Facility
- **Over 4,000 deliveries per year**

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Why is Financial Impact Important?

Money

Profit

Fiscal Efficiency

Quality

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Concepts and Components of a Financial Impact Analysis

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1. Charge, Payment, Cost

- Charge
  - What a hospital/provider charges for a service or service bundle
- Payment
  - What the hospital/provider actually gets paid for the service(s) rendered
  - Highly variable – contracts, discounts, insurer
- Cost
  - The *actual cost* of delivering the service

Example - Steak

Charge = Sticker Price = $12

Cost to produce = $8.50

Payment:

1. Mon & Thurs, 0800-1037 = $14.95; other hrs = $13.79
2. Third Tues q month = $7.95
3. Other Tues = $9.10
4. Weds, over 65 = $11.50; 55-65 = $11.48; 25-45 = $10.49; no payment if <25yo
5. Fri, registered Democrats = $9.79; registered Republicans = $10.42; Independents cannot purchase on Fridays.
6. And 49 more rules…

2. How Hospitals Figure Out Costs of Care

- Decision Support Software
  - McKesson Performance Analytics
- All service items for a patient stay get assigned a cost, *based on real cost*
- All service items are assigned to a Clinical Cost Group
  - Labor & Delivery, Nursing, Pharmacy, Supply, Surgery, Anesthesia
- Provider costs not included – not usually hospital supported

3. Develop Cost Report

- Resource Consumption Profile (RCP)
  - Examines patient utilization and cost of clinical services
  - For any predefined patient population
    - Ex: childbirth, hip replacement, pneumonia
  - *By MS-DRG*
    - Medicare Severity Diagnosis Related Groups
    - Classify all hospital cases
- Total Cost includes **all costs** associated with the service, from *clinical costs* (nursing, supplies, pharmacy) to the *overhead costs* (medical records, facilities, finance, administrative).

The Question

What is the **total** cost savings when a patient has a routine vaginal delivery instead of a primary cesarean section?

Preparing the Analysis

1. Define the Population

- NullipTermSingletonVertex patients only
- Mothers: as defined by MS-DRG
  - Vaginal Deliveries
    - 774 = Vaginal Delivery w/complicating diagnosis
    - 775 = Vaginal Delivery w/o complicating diagnosis
    - 767 = Vaginal Delivery w/sterilization &/or D&C
    - 768 = Vaginal Delivery w/other OR procedure &/or D&C
  - Cesarean Section: with service item for 'primary c/section' on the bill
    - 765 = Cesarean Section with CC &/or MCC
    - 766 = Cesarean Section w/o CC &/or MCC

- Babies – matched to their mother
- Providers:
  - Obstetrical/midwifery privileges
  - Bill for deliveries – CPT codes
    - 59510- routine ob care with cesarean delivery, global
    - 59410 – routine ob care with vaginal delivery, global
    - May look at others for non-global, limited PNC, various complications of deliveries
- Timeframe – needed to get a representative sample
  - Depends on delivery volume
  - We used 6 months

2. Exclusions

- Types of patients whose cost of care would not be included in the analysis
  - Multiple births
    - Both the mother and the babies
  - Length of Stay (LOS) Outliers
    - Outliers were greater than 3 standard deviations from the mean LOS of each group
    - Both the mother and the baby were excluded
  - Baby Exclusions
    - MS-DRG 790 Extreme Immaturity or Respiratory Distress Syndrome were excluded

4. Estimating Professional Income

- What a provider gets paid for a delivery
- Complicated:
  - Usually bundled with antepartum and postpartum
  - Different payments by different insurers
  - Different payments by different insurance products
  - Different payments by provider type
  - May not have access to this for community practices

Performing the Cost Savings Analysis

1. Develop a Resource Consumption Profile (RCP) for the DRG Groups

- RCPs include *hospital* costs of:
  - Anesthesia
  - Diagnostics
  - Labor & delivery bundle
  - Nursing
  - Pharmacy
  - Supplies/surgery/other
- The DRG Groups:
  - Primary C-section Mothers
  - Vaginal delivery Mothers
  - Primary C-section Babies
  - Vaginal delivery Babies

Remember…

- The RCPs are used to compare the average *Total Cost* of care between clinical groups
- Captures the difference in Total Cost between
  - Vaginal deliveries and Vaginally delivered babies
  - Primary Cesarean deliveries and Primacy Cesarean delivered babies

2. Determine Cases

- Pull all cases with MS-DRGs in timeframe
- Determine mean length of stay (ALOS)
- Exclude cases where LOS is 3 standard deviations greater than mean

Details and Results of Cost Savings Analysis

Vaginal Deliveries vs. Primary C-sections: FY17 Q2

DRG DISTRIBUTION FOR THE MOTHERS INCLUDED IN THE ANALYSIS

****Deliveries of babies in DRG 790 & LOS outliers (greater than 3 standard deviations from the mean) are excluded*

	Vaginal Deliveries		Primary C-sections	
	DRG	*Count*	*DRG*	*Count*
W/ COMPLICATION	774	187	765	108
W/O COMPLICATION	775	912	766	162
W STERILIZATION &/OR D&C	767	39	---	---
W O.R. PROC EXCEPT STERIL &/OR D&C	768	4	---	---

THE AVERAGE LOS OF THOSE INCLUDED AND THE NUMBER OF MOTHERS EXCLUDED

ALOS	2.56	ALOS	4.35
Exclusions	37	Exclusions	31

HOSPITAL COST

COST BUCKETS - A SUMMARY OF THE AVERAGE TOTAL COST FOR MOTHERS (ULTIMATELY, THE AVERAGE TOTAL COST GETS USED)

Cost Groups	*Cases*	*Average Total Cost*	*Cases*	*Average Total Cost*	*Average Difference*
ANESTHESIA	850	$98.85	267	$ 134.47	$36
DIAGNOSTICS	1052	$99.91	270	$ 284.87	$185
LABOR & DELIVERY	1142	$2,953.67	270	$ 626.85	($2,327)
NURSING	1142	$2,461.74	270	$ 4,197.38	$1,736
PHARMACY	1140	$223.13	270	$ 492.59	$269
SUPPLY	1138	$61.40	270	$ 176.53	$115
SURGERY	44	$125.86	270	$ 3,617.10	$3,491
ALL OTHER	531	$104.63	107	$ 137.28	$33
Totals/Averages	**1142**	**$6,140**	**270**	**$9,667**	**$3,527**

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Babies born via Vaginal Delivery vs. Primary C-section: FY17 Q2

DRG DISTRIBUTION FOR THE MOTHERS INCLUDED IN THE ANALYSIS

****Babies in DRG 790 & LOS outliers (greater than 3 standard deviations from the mean) are excluded*

	Vaginal Deliveries		Primary C-sections	
	DRG	*Count*	*DRG*	*Count*
DIED/TRANSFERRED TO ACUTE CARE FACILITY	789	8	789	1
PREMATURITY W MAJOR	791	24	791	13
PREMATURITY W/O MAJOR	792	26	792	17
FULL TERM NEONATE W MAJOR	793	82	793	45
NEONATE W OTHER SIGNIFICANT	794	293	794	86
NORMAL NEWBORN	795	693	795	106

THE AVERAGE LOS OF THOSE INCLUDED AND THE NUMBER OF MOTHERS EXCLUDED

ALOS	2.38	ALOS	4.52
Exclusions	53	Exclusions	37

HOSPITAL COST

COST BUCKETS - A SUMMARY OF THE AVERAGE TOTAL COST FOR MOTHERS (ULTIMATELY, THE AVERAGE TOTAL COST GETS USED)

Cost Groups	*Cases*	*Average Total Cost*	*Cases*	*Average Total Cost*	*Average Difference*
DIAGNOSTICS	1119	$228.01	267	$497.51	$269
NURSING	1123	$2,593.82	267	$5,141.90	$2,548
PHARMACY	1116	$40.69	266	$102.98	$62
ALL OTHER	387	$177.00	119	282.00	$105
Totals/Averages	**1123**	**$3,039**	**267**	**$6,025**	**$2,985**

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PROFESSIONAL COMPONENT. THE AVERAGE CHARGES X THE GROSS COLLECTION RATIO

Vaginal Deliveries vs. Primary C-sections: FY17 Q2

PROFESSIONAL (B-SIDE)	Vaginal Deliveries		Primary C-sections		
	Cases	*Average*	*Cases*	*Average*	*Average Difference*
ACTUAL COLLECTION	**946**	**$1,894**	**217**	**$2,122**	**$228**

PROFESSIONAL COMPONENT. THE AVERAGE CHARGES X THE GROSS COLLECTION RATIO

Babies born via Vaginal Delivery vs. Primary C-section: FY17 Q2

****Babies in DRG 790 & LOS outliers (greater than 3 standard deviations from the mean) are excluded*

PROFESSIONAL CHARGES	Vaginal Deliveries		Primary C-sections		
	Cases	*Average Charges*	*Cases*	*Average Charges*	*Average Difference*
CHARGES	**660**	**$938**	**188**	**$1,613**	
GROSS COLLECTION RATIO		**0.4379**		**0.4379**	
ESTIMATED COLLECTION		**$411**		**$706**	**$296**

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Target reduction in # of primary C-sections

MOTHER	*Avg Cost*		*Reduction*	*Total Reduction*
HOSPITAL (Total Cost)	$3,527	x	1	$3,527
PROFESSIONAL (Collection)	$228	x	1	$228
MOTHER TOTAL	**$3,299**			**$3,299**

BABY	*Avg Cost*		*Reduction*	*Total Reduction*
HOSPITAL (Total Cost)	$2,985	x	1	$2,985
PROFESSIONAL (Collection)	$295	x	1	$295
BABY TOTAL	**$2,690**			**$2,690**

The savings associated with one mother-baby pair being a vaginal delivery instead of primary c-section

TOTAL	*Avg Cost*		*Reduction*	*Total Reduction*
HOSPITAL (Total Cost)	$6,513	x	1	$6,513
PROFESSIONAL (Collection)	$523	x	1	$523
GRAND TOTAL	**$5,990**			**$5,990**

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Total Impact of Reduction of Primary Cesareans in First Year (2016) NTSV C/Sec Rate ↓14% (31.1% to 26.7%)

	AVG COST	# REDUCED	TOTAL SAVINGS
MOTHER	3,299	69	$227,656
BABY	2,690	69	$185,633
TOTAL	5,990	69	***$413,289***

Summary of BMC Initial Results

- BMC NTSV Cesarean section rate
  - 2015 = 31.1%
  - 2016 = 26.7%

  - 14% decrease amounted to 69 cesarean sections converted to vaginal deliveries

  - **$462,000 in cost savings**

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Further Cost Savings Analysis

- What is downstream effect of preventing additional c/sections when primary c/section is not done?
  - Calculate risk of a primary c/sec in a multipara
  - Calculate possibility of VBAC
  - BMC example:
    - 95% x 69 = 66 potential repeat c/secs
    - VBAC rate = 7%: 7% x 66 = 5 vaginal deliveries
    - So, prevented 61 repeat c/sections
    - *Additional cost savings* ***$409,188***

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How Can *YOU* Do This?

- Get a 3-4 people team
  - Financial analyst; clinical decision support
  - Health Care Quality
  - YOU!
  - Nursing, physician colleague
- Use our processes, spreadsheets
  - Don't reinvent the wheel
- Run your own numbers

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- Publicize and promote the results
  - Grand Rounds, Quality Rounds
  - Dept mtgs, nursing mtgs
  - Post on L&D
  - Hospital publications and websites
  - Submit for awards

Questions?

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