JOURNAL OF HEALTH CARE FINANCE

Fall 2017

Prenatal Care Models in a Resident Clinic:

An Analysis of Cost

Jessica J. Leszczynski, D.O., Aultman Hospital and Northeast Ohio Medical University, Department of OB/GYN

Prabhcharan Gill, M.D. Aultman Maternal-Fetal Medicine
Professor & Chair, Dept. ObGyn, College of Medicine, Northeast Ohio Medical University

Michael A. Krew, M.D., M.S. Aultman Maternal-Fetal Medicine
Professor Dept. ObGyn, College of Medicine, Northeast Ohio Medical University

Abstract:

Title: Prenatal Care Models in a Resident Clinic: An Analysis of Cost
Primary Author: Jessica J. Leszczynski, DO **Secondary Authors:** Prabhcharan Gill, MD; Michael A. Krew, MD, MS
Objectives: The objectives of this analysis were threefold. First, we sought to apply basic cost accounting and analysis to a resident clinic setting. Second, we sought to create a model for cost accounting that could be applied to obstetric care. Third, a secondary analysis was generated in order to determine which model of modern prenatal care is most lucrative in the setting of a resident clinic.
Methods: The methods applied can best be described as a basic cost accounting. Background information on the logistics of our resident clinic will be helpful in understanding the methods of this study. This study analyzed costs and revenue from the Aultman Hospital affiliate, My Community Health Clinic, which operates solely as an outpatient, resident-staffed, clinic.

The cost of providing prenatal care in our resident clinic is extrapolated from a fixed budget for resources and the estimated time, in hours, spent providing prenatal care. By using the amount of time available to provide prenatal care and applying the cost budgeted to provide each hour of prenatal care we are able to calculate the revenue generated by prenatal care in the resident clinic. To simplify our calculation of revenue, we equated reimbursement with revenue. Furthermore, we used Medicaid reimbursement for our revenue equivalent.

Three models of prenatal care were analyzed: traditional prenatal care, low-visit prenatal care, and group prenatal care. For each model of prenatal care, the time spent for each visit and the number of hours available for prenatal care each year were used to calculate the number of patients that could be seen each year for that particular model. After figuring out patient care hours, cost of running the clinic per hour, and reimbursement per patient care hour, the revenue for the clinic can be extracted for each prenatal care model. Our secondary objective was to determine if increasing the number of patients seen with the group prenatal care model would significantly change yearly revenue or decrease the current revenue deficit that our clinic suffers from. In order to analyze potential change in revenue, the same calculations used for 6 patient group were then applied to a theoretical 8 patient group and 10 patient group for the 2 hours of allotted group care. The change in revenue for larger groups was then added to the revenue for 2 hours of traditional prenatal care added to the 2-hour group sessions. This allowed for increased revenue and decreased cost to revenue deficit.
Results: For traditional care model $558,720 in revenue is possible for one year. The traditional prenatal care model ultimately yielded a negative value of $222, 597.70 or a 28% deficit on an annual basis. For the low visit model and group prenatal care (when combined with traditional care) a 31% deficit resulted for both of these models.
The secondary analysis revealed that increasing patient group size to 10 patients would cut our yearly deficit in half, resulting in a 14% deficit. Increased group size therefore has the potential to increase revenue by 17%.
Conclusions: Understanding health care costs in a resident clinic can be achieved with a basic cost analysis. Each year the highlighted resident clinic operates at a deficit in order to provide prenatal care. Without decreasing our fixed costs, opportunity for increased revenue lies with increasing patient volume, especially while utilizing group prenatal care.

Introduction:

It's no secret that the U.S. struggles to control health care costs. It is more important than ever to attempt to understand and analyze this complex challenge. The AMA Journal of Ethics published an article in November of 2015 remarking on the prevalence of the question: "How much does it cost?" asked daily in hospitals and offices nationwide.[1] Physicians are no longer exempt from discussions on controlling the cost of providing care as reimbursement and payment structures are evolving to meet the demands of keeping hospitals financially afloat. A poll of almost four thousand U.S. physicians on their views of controlling health care costs demonstrated that physicians believe they now have a duty to address cost in their everyday practice.[2]

Typically, the ever-increasing cost of health care has been blamed on the rise in our aging population or on the upsurge of our unhealthy American lifestyles and its consequences. However, in 2013, maternity and newborn care was responsible for the largest area of both commercial and state Medicaid program payouts to U.S. hospitals. The annual estimation of health care cumulative cost of prenatal, antenatal, and postpartum care in the U.S. is over $50 billion annually.[3]

There is insufficient data regarding controlling the cost of prenatal care available to slow the financial hemorrhage. In general, there are three models of prenatal care used in this country to care for pregnant women. Traditional care model consists of fourteen obstetric visits to a health care provider. Low-visit or reduced-visit, prenatal consists of seven total visits. Group prenatal care, or Centering pregnancy has also been used with increasing popularity. This group prenatal care consists of one visit to establish care and seven, two-hour group sessions. Many articles have been published on the most effective prenatal care model in regard to maternal and fetal outcomes. The consensus is that perinatal outcomes and patient satisfaction are similar regardless of model of prenatal care.[4] If these models of prenatal care yield similar results, then an analysis of cost would be the logical next step in optimizing care. This study sought to conduct a simple cost accounting for each of the three models of prenatal care. It was hypothesized that group prenatal care would best utilize resources and minimize cost in an outpatient setting.

Materials and Methods:

The methods applied can best be described as a basic cost accounting. This study analyzed costs and revenue from the My Community Health Center, Department of Obstetrics and Gynecology, which operates solely as an outpatient clinic. This clinic is financially separate from, but affiliated with Aultman Hospital, in Canton, Ohio. The hospital employs the resident physicians that make up the clinic providers. The clinic does not receive reimbursement from the deliveries or care provided during inpatient hospital admissions.

---

[1] Arora, V; Moriates, C.: Shiah, N. "The Challenge of Understanding Health Care Costs and Charges." *AMA Journal of Ethics.* November 2015, Volume 17, Number 11: 1046-1052.doi: 10.1001/journalofethics.2015.17.11.stas1-1511.

[2] Tilburt JC, Wynia MK, Sheeler RD, et al. (2013). Views of US physician about Controlling Health Care Cost. *JAMA*, (310(4)), 380–388. https://doi.org/10.1001/jama.2013.8278

[3] Rosenthal, Elisabeth. (2013, June 30). Paying Till it Hurts: Cash on Delivery. *NY Times*. Retrieved from www.nytimes.com/2013/07/01/health/american-way-of-birth-costliest-in-the-world.html

[4] Smith WJ, & Blackmore CC. (1998). Economic analyses in obstetrics and gynecology: a methodologic evaluation of the literature, *91*(3), 472–8.

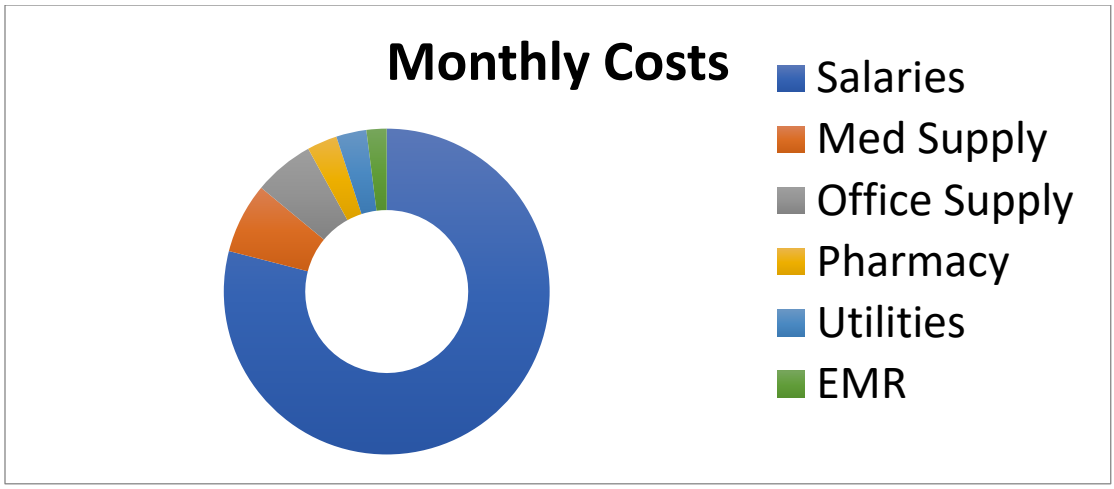
Actual cost and revenue data from 2015 were utilized to determine certain mathematical assumptions for the purpose of this model. The cost of providing prenatal care in the resident clinic was extrapolated from a fixed budget for resources and the estimated time, in hours, spent providing prenatal care. The knowledge of time available to provide prenatal and the cost to provide each hour of prenatal care allowed for calculation of the revenue generated by prenatal care in the resident clinic. To simplify the calculation of revenue, we equated reimbursement with revenue. Furthermore, we used state issued insurance/Medicaid reimbursement for a revenue equivalent. This was a reasonable estimate as seventy percent of the clinic patients are Medicaid insured and fourteen percent are uninsured, making the vast majority of revenue for the clinic generated by Medicaid patients.

All three of the aforementioned models of prenatal care were analyzed. For each model of prenatal care, the scheduled time spent for each visit and the numbers of hours available for prenatal care each year were found. The number of patients that could be seen each year for each model was calculated. After patient care hours, cost of running the clinic per hour, and reimbursement per patient care hour were known, the revenue generated by each care model could be deduced.

First, time, in hours, spent providing prenatal care was estimated. Our resident clinical obstetric care consists of four residents, four mornings per week, for four hours of patient care. There are approximately 209 business days per year, which means that there are 56 patient care hours per week. The time spent providing prenatal care was estimated to be 2,912 patient care hours each year.

Traditional	**Low Visit**	**Group - 6 patients**
Scheduled Time per Patient Visit		
New OB =0.5 hr	New OB = 0.5 hr	New OB =0.5
Return = 0.25 hr	Return = 0.25 hr	Return = 0.33
Patient Care Time per Patient per Pregnancy		
0.5 + 13(0.25) = **3.75hr/pt**	0.5 + 6(0.25) = **2 hr/pt**	0.5 +10 (0.33) = **3.8hr/pt**
Potential Patients per Scheduled Time		
2,912 pt hrs/yr /3.75hr/pt **=776 pts/year**	2,912/ 2.0 **=1,456 pts/year**	1456/ 3.8 **=383pts/yr**

Second, cost of providing prenatal care per hour was calculated. The cost of providing prenatal care in our resident clinic is extrapolated from a fixed budget for resources.



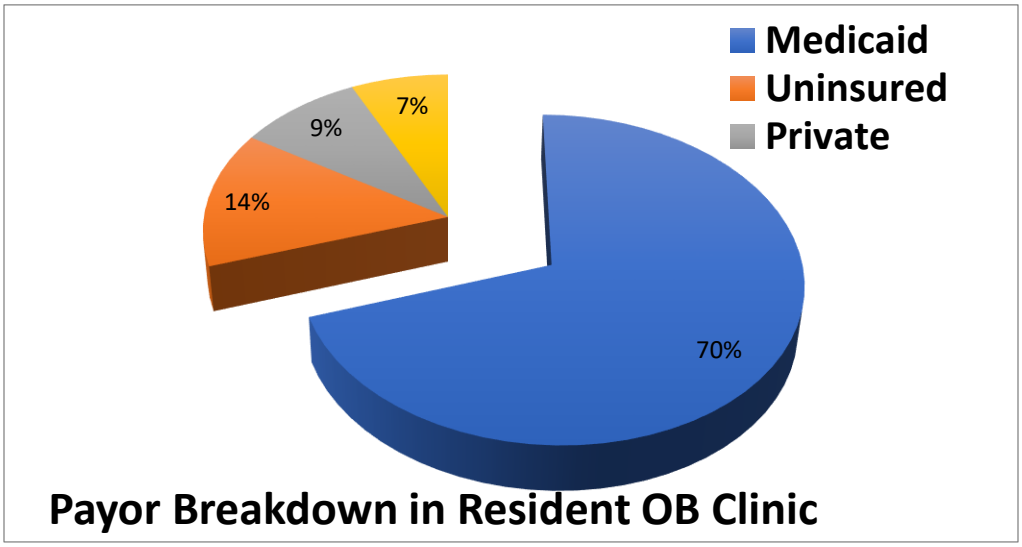
The clinic maintains a budget for staffing salaries, medical supplies, office supplies, pharmacy costs, building utilities, and electronic medical record software/leasing, etc. The majority of the budget is dedicated to salaries. The 2015 annual cost report for the resident clinic reported that the cost to run the clinic for one year was $1,951,425.36. That number was divided in half, as half the patient hours are spent providing prenatal care, making the cost to provide obstetric care for one year $781,317.70. Using the number of business days per year, the cost to run the obstetric clinic for one day is $3,738.36. And the cost to provide prenatal care for one hour in the resident clinic is $934.59.

Lastly, we estimated the revenue generated by the prenatal care provided. To simplify our calculations, we did not include several variables into our estimation of revenue. The negligible variables include OB nurse visits, patients with commercial insurance reimbursement, “no show” visit rate, and non-stress tests.

The two models of prenatal care that we utilize in the clinic are the traditional and group prenatal care models. The traditional model includes one new appointment and thirteen return appointments. The group prenatal care includes one new appointment and ten group appointments. Our average group size for centering is currently six patients. An analysis of the low-visit model, which could potentially be utilized with low risk patients in the resident clinic, was also carried out. If utilized, this would consist of one new appointment and six return appointments.

The time spent for each visit and the numbers of hours available for prenatal care in one year were used to calculate the number of patients that could be seen by utilizing each particular model. For traditional and low-visit models, new visits are given a half hour scheduled slot, and return visits are allotted fifteen minutes. Group prenatal care is allotted the same half hour new visit and twenty minutes for return group visits, based on a group size of six patients. Group prenatal care is scheduled for two hours per morning, with the remaining two hours available for the resident to see traditional fifteen minute appointments. With 2,912 patient hours in a year, traditional care includes 3.75 hours per patient for their entire pregnancy, allowing for 776 patients to be seen each year with traditional prenatal care. 1,456 patients could be seen each year with the low visit model. And 383 patients could be seen each year with group prenatal care.

To simplify our calculation of revenue, we equated reimbursement with revenue. Furthermore, we used Medicaid reimbursement for our revenue equivalent. This was a reasonable estimate as 70% of our patients are Medicaid insured and 14% are uninsured making the vast majority of revenue for the clinic generated by our Medicaid patients. Medicaid reimburses approximately $70 for a new visit and $50 for a return visit. Group prenatal care has additional billing modifiers that increase reimbursement for five of the return visits. An additional $14 is given on return visit one for smoking cessation education. $12 is reimbursed for nutritional classes during the second visit. $48 is given for visit five for childbirth preparation and $12 for revisiting that information during the sixth session. Lastly, for the ninth visit, infant safety education results in an additional $12 of reimbursement per patient. The reimbursement available for each model per year of patient care was then calculated using the aforementioned dollar amounts of reimbursement per visit. Traditional prenatal care in our clinic provides $558,720 per year. The low visit model, if utilized by our clinic, would provide $538,720 per year. Group prenatal care, with six-patient groups, would provide $256,158 per year of reimbursement. When group prenatal care and traditional prenatal care are combined each morning, as they are in our clinic, $535,518 would be made. If group prenatal care were combined with the low visit model, $525,518 would be reimbursed.



Traditional Model	Low visit Model	Group Model
New OB: $70	New OB: $70	New OB: $70
Return: 13($50)	Return: 6($50)	Return: 10($50)
		Modifiers: $98.82
=$720/pt	=$370/pt	=$668.82/pt
x 776pt/yr	x522pt/yr	x383pt/yr
=$558,720/yr	=$538,720/yr	=$256,158.06/yr
+Group Model	+Group Model	
=$535,518.06	=$525,518	

After determining patient care hours, cost of running the clinic per hour and reimbursement per patient care hour, the revenue for the clinic can be known for each prenatal care model. For

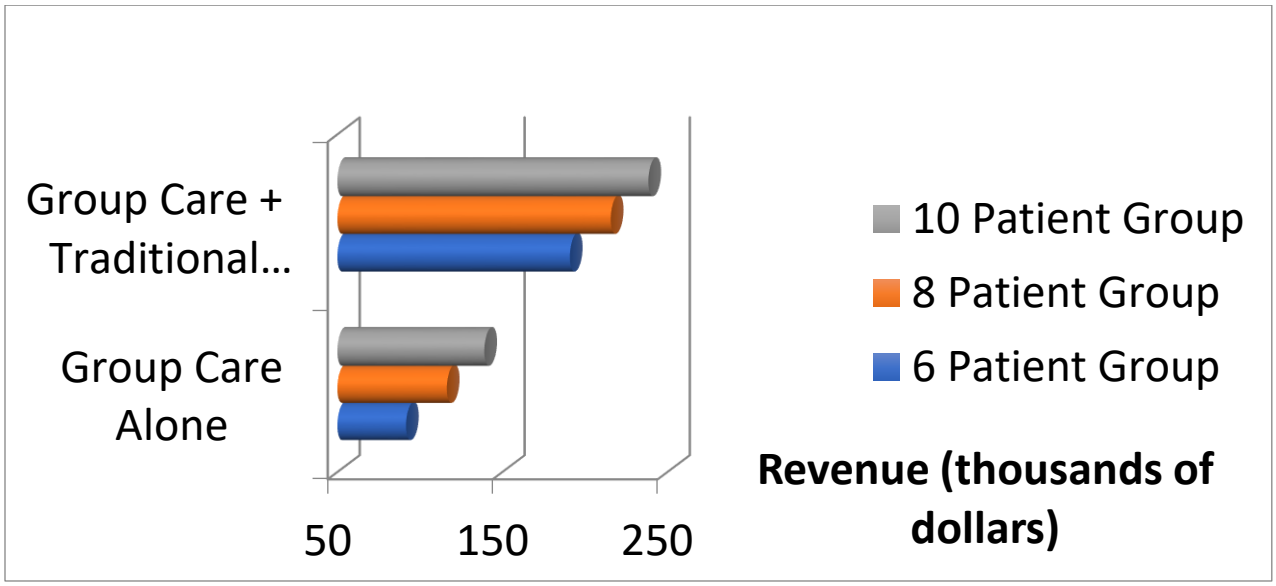
traditional care model $558,720 in revenue is possible for one year. The cost for the clinic for one year was then subtracted from the revenue. The traditional prenatal care model ultimately yielded a negative value of $222, 597.70 or a twenty-eight percent deficit on an annual basis. For the low-visit model and group prenatal care (when combined with traditional care) a thirty-one percent deficit resulted for both of these models.

The secondary outcome analyzed was to determine if increasing the number of patients seen with the group prenatal care model would significantly change yearly revenue or decrease the current deficit. Currently group care averages six patients per group session in the resident clinic. We sought to calculate the difference in revenue possible if group sizes were increased to eight or ten patients. The change in revenue for larger groups was then added to the revenue for two hours of traditional prenatal care added to the two-hour group sessions. Increasing patient group size to ten patients in addition to two hours of prenatal care each morning would decrease yearly deficit to a fourteen percent deficit. Increased group size therefore has the potential to increase revenue by seventeen percent.

Results:

For traditional care model, $558,720 in revenue is possible for one year. The traditional prenatal care model ultimately yielded a negative value of $222,597.70 or a twenty-eight percent deficit on an annual basis. For the low visit model and group prenatal care (when combined with traditional care) a thirty-one percent deficit resulted for both of these models.

Our secondary objective was to determine if increasing the number of patients seen with the group prenatal care model would significantly change yearly revenue or decrease the current deficit. We sought to calculate the difference in revenue possible if group sizes were increased to eight or ten patients. Increasing patient group size to ten patients would cut our yearly deficit in half, resulting in a fourteen percent deficit. Increased group size therefore has the potential to increase revenue by seventeen percent.



Discussion:

This study specifically sought to better understand a resident clinic's delivery of prenatal care and controlling costs for a largely underserved population. Our findings demonstrate that it is possible to better understand the financial aspects of health care, even in a resident clinic setting, through a cost analysis model. This study highlighted the fact that there is room for to control cost and increase revenue by increasing the size of groups in group prenatal care models. Through relatively straightforward calculations, a significant amount of data can be obtained and analyzed to improve understanding and practice of obstetrical care.

Physicians are being tasked with understanding the finance of their productivity and practice no matter what their practice model entails. Most physicians graduate from their residency program and embark on their chosen specialty with little understanding of cost, productivity or revenue. It is expected that physicians follow the steep learning curve that they are accustomed to in order to navigate the world of billing, coding, patient volume, RVUs, etc.

There have been some studies published on increasing revenue and controlling cost when delivery obstetric care by utilizing mid-level providers. [reference] The majority of these studies have been carried out in hospital employed practice or critical access hospitals. There is no data on utilizing a resident physician clinic or on the revenue opportunities generated by this group of providers. There is also a noticeable gap in resident physician education when it comes to the financial realm. This gap in understanding highlights the needs for simple cost accounting models in order to begin the education process earlier for residents. There is little published on business model and financial aspects of resident physician clinics. Resident-staffed clinics have a unique cost structure and patient population.

Resident clinic traditionally provide care to underserved populations, largely dependent on state-issued Medicaid. Operating a financially successful resident clinic has been traditionally blamed on low reimbursement, poor follow up, poor documentation, and especially poor patient volume. However, by better understanding health care cost in a resident clinic, models of prenatal care can be utilized to make residents more efficient, generate more revenue, and delivering more prenatal care that women need.

Conclusion:

Ultimately, this study shows that understanding cost in a resident clinic can be achieved with basic cost accounting. Each year the resident clinic operates at a deficit in order to provide prenatal care. Without decreasing fixed costs, opportunity for increased revenue lies with increasing patient volume, especially in terms of group prenatal care volume. Increasing prenatal group size number to ten patients plus two hours of traditional care would decrease the deficit by 50%. Resident physicians have the opportunity to better understand cost and to work toward a profitable clinic practice through cost analysis.

References:

1) Arora, V; Moriates, C.: Shiah, N. "The Challenge of Understanding Health Care Costs and Charges." *AMA Journal of Ethics.* November 2015, Volume 17, Number 11: 1046-1052.doi: 10.1001/journalofethics.2015.17.11.stas1-1511.

2) Drummond MF, O'Brien B, Stoddart GL, Torrance GW. Methods for the economic evaluation of health care programmes. 2nd edition. Oxford. Oxford University Press. 1997

3) Edward Vanderbeck. (2013). *Principles of Cost Accounting*. Retrieved from books.google.co.uk

4) Farmer, Anne. (n.d.). The "ABC'S" of Physician Cost Accounting. *TriNet Healthcare Consultants, Inc*. Retrieved from https://www.managedcaremag.com/archives/1997/5/master-abcs-activity-based-costing

5) Finkler, S.A, And D.M. Ward. Essentials of Cost Accounting for Health Care Organizations, 3rd edition. Gaithersburg, MD: Aspen Publishers

6) Gesse, Theresa, Golembeski, Susan, & Potter, Jonell. (1999). Cost Analysis of Prenatal Care Using the Activity-Based Costing Model: A Pilot Study, *8*(2), 20–27.

7) Mooney, S. E., Russell, Michelle A., Prairie, Beth, Savage, Clara, & Weeks, William. (2008). Group Prenatal Care: An Analysis of Cost. *Aspen Publishers*.

8) Rosenthal, Elisabeth. (2013, June 30). Paying Till it Hurts: Cash on Delivery. *NY Times*. Retrieved from www.nytimes.com/2013/07/01/health/american-way-of-birth-costliest-in-the-world.html

9) Smith WJ, & Blackmore CC. (1998). Economic analyses in obstetrics and gynecology: a methodologic evaluation of the literature, *91*(3), 472–8.

10) Tilburt JC, Wynia MK, Sheeler RD, et al. (2013). Views of US physician about Controlling Health Care Costs. *JAMA*, (310(4)), 380–388. https://doi.org/10.1001/jama.2013.8278

11) Ward, Nathan, Bayer, Steven, Ballard, Mark, Patience, Troy, Hume, Roderick, & Calhoun, Byron. (1999). Impact of Prenatal Care with Reduced Frequency of Visits in a Residency Teaching Program, *44*(10).