

MODELS OF CARE

Lactation Services across the Continuum of Care

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Background:

Gundersen Lutheran is a 325 bed tertiary care facility with an annual birth rate of approximately 1600. We have had Lactation Consultants available to our inpatient unit for over 30 years. Our goal was to expand our lactation services to our two outpatient clinics where mothers with complex breastfeeding problems could schedule appointments with a lactation consultant. We needed to accomplish this without increasing FTE's. It would also be a new source of revenue. The expanded service to the outpatient setting would support more women in successfully achieving their breastfeeding goals. It is estimated that more than 25% of women stop breastfeeding within the first six weeks. Professional support by lactation consultants can have significant and positive effects on increasing rates and longevity of breastfeeding.

Content/Action:

We have 2.0 FTEs of IBCLC. Beginning in 2008, we shifted 16 hours a week to the two outpatient Pediatric clinics. This provided lactation services two afternoons per week in each clinic. These visits were considered a Nurse Only visit. By 2009, we expanded to three afternoons per week in each clinic. Today Lactation Consultants are in the hospital 0730-1130 seven days a week and in two outpatient clinics 1200-1600 Monday through Friday. Gundersen Lutheran is an integrated health system therefore the lactation consultants can work in both the clinic and the hospital setting. In March of 2010 we began using ICD9 codes and diagnoses for billing for the lactation consultant visits.

Lessons Learned:

- The number of outpatient appointments for lactation consultants have increased from 444 in 2008 to 756 in 2010.
- Women comment that they would not have continued to breastfeed as long as they did without the education and support of the lactation consultants.
- We have identified the most frequent reasons for women seeking lactation consultant services in the outpatient setting as “feeding-problem in newborn” and “dietary surveillance/counsel”.
- Lactation consultant visits need to be billed under a physician order for reimbursement.
- Between March and December of 2010 there was almost \$30,000 billed for lactation consultations. Most insurance companies are paying a portion if not all of the billed amount for lactation services.

Implications for Practice:

- Breastfeeding is one of the most cost effective health promotion activities available.
- Skilled breastfeeding support and education is linked to improved breastfeeding satisfaction of maternal and infant needs and increased longevity of breastfeeding.
- Billing for problems with breastfeeding and lactation is like billing for any other infant/maternal problem.
- The American Academy of Pediatrics, American College of Obstetrics and Gynecology, American Academy of Family Physicians, Academy of Breastfeeding Medicine, World Health Organization, United Nation Children's Fund and many other health organizations recommend exclusive breastfeeding for the first six months of life.
- Breastfeeding protects babies from a range of diseases, particularly gastroenteritis and ear infections.

Quality Assurance Implications for a Human Milk Analyzer. Mitchell Goldstein, Bradley Lang, Dianne Wooldridge, Pamela Ruiz, Tonya Oswalt, Raylene Phillips, Elba Fayard, Ricardo Peverini. Division of Neonatal Medicine, Department of Pediatrics, Loma Linda University Children's Hospital, Loma Linda, CA

Background: Nutritional analysis of human breast milk supplies is important in identifying any possible nutritional deficiencies. Although there is variability in the milk supply and nutritional content which varies according to the time of the day, the analysis of pooled breast milk is a more predictable way of establishing the net caloric content. This allows a more targeted supplementation process. However, the crucial point of how to approach the QI process with regard to supplementation. remains to be defined. Although pre-defined analysis controls are supplied, the need for an external nutritional "referee" cannot be understated.

Content/Action: In 2011, we began using a breastmilk nutritional analysis device (Calais, Metron). Maternal breastmilk was pooled over a specified interval and then analyzed for nutritional content. This allowed for informed supplementation of breastmilk (important with preterm infants) and the presumed elimination of certain supplements when the breastmilk was found to contain more than sufficient for growth (e.g., calories). Soon after starting use of the device, we began to notice possible problems with the reported caloric values. Values of as low as 13 Kcal/oz (historic normal 20 kcal/oz) were reported. The vast majority of non-colostrum milk samples were under 20 kcal/oz. To assess the accuracy of the device, we studied five different commercial formulas (Prosobee 20, Similac 20, Enfamil 20, Premature Enfamil 24, and Enfacare 22). Assuming the accuracy of the commercially supplied product, the breastmilk analyzer reported 3.5 ± 0.25 kcal/oz lower than actual. The machine was re-calibrated and staff received training on use of a different calibration method using a company supplied control.

Lessons Learned: Despite recent advancements in human milk analysis, quality assurance concerns are of major concern as this technology begins to touch broader numbers of patients, families and staff in the NICU setting. Machine calibration is crucial to assure accurate data for nutritional assessment of expressed breast milk; variations in kilocalories, protein, lactose and fat may lead to under or overfeeding of premature infants. Infant feeding programs requiring large amounts of fortification can put infants at risk of serious medical issues such as inadequate growth, crucial in all infants but more so in premature infants (as well as over-nutrition).

Implications for Practice: The use of commercially available formula as an external control improved our QA process and aided a root cause analysis to find the source of broadly reported decreased nutritional values.

RESEARCH

RESEARCH: The Perinatal Palliative Care Perceptions and Barriers Scale Instrument©: Development and Validation

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INTRODUCTION

Palliative care has traditionally been framed against the background of the elderly in the last stages of life. Moving the discussion into the neonatal arena is both painful and emotion-laden. The public wants to visualize the culmination of pregnancy as a healthy baby welcomed into a loving family. When this outcome is not possible, health providers are placed in the midst of a very stressful and emotional situation. The goal of this study was to develop an instrument for measuring health provider perspectives on perinatal care when it moves into the palliative realm. The desired outcome was to make palliative measures meaningful and healthy for the family and the providers involved in a difficult situation. Perinatal palliative care (PPC) was theorized to involve the care of pregnant women and their families after prenatal testing resulted in a life-limiting fetal diagnosis. Both giving birth to a child with a life limiting condition or termination of pregnancy for fetal anomaly can be emotionally traumatic life events. Clinicians were postulated to face ethical dilemmas that involved approaches to care for this population. The ethical dilemmas were measured on a perceptions scale using items about autonomy, beneficence/maleficence, justice, and respect for human dignity. Barriers were theorized as obstacles to delivering quality PPC and included insufficient education, personal discomfort with the life and death issues, and difficulty garnering team or administrative support for care.

METHODS

The first step in the development of the instrument included a comprehensive literature search identifying issues in the broader arena of palliative care and perinatal loss to discover potential linkages between clinician challenges and patient needs. The two stage study commenced with eleven expert panelists participating in Delphi methodology; three rounds of feedback were used to develop a series of sequential questionnaires which were modified based on the feedback provided. The work culminated in an instrument called the Perinatal Palliative Care Perceptions and Practice Barriers Scale (PPCPBS). Stage Two included a pilot study of the instrument. A total of 264 clinicians completed the survey. Exploratory factor analysis with varimax rotation was used to evaluate the factors and summarize the explained variance achieved by sum scores of the perceptions and barriers scales.

RESULTS

The perceptions scale was reduced to 23 items with a 6 factor solution explaining 67% of the variance with a good internal consistency reliability of 0.77 (Cronbach's alpha). The 22 item barriers scale had a 6 factor solution explaining 71% of the variance with an alpha reliability of 0.83. There were no significant differences between the perceptions of nurses and physicians. ($t=.36$, $df=35$, $p=.72$). Both clinician groups reported a high score on the perceptions scale indicating similar concerns about the suffering experienced by the parents, their need for time to cope, and the need for clinician support of their ethical rights (nurses $M=107.43$, $SD=9.57$; physicians $M=108.59$, $SD=13.33$). Nor were there significant differences in the barriers scores ($t= -1.59$, $df=58$, $p=.12$) indicating similar experiences between nurses and physicians with barriers including site resources, clinician stressors in dealing with the complex issues involved with PPC, time restraints, adverse pressures and societal support for PPC (nurses $M=58.42$, $SD=12.51$; physicians $M=53.38$, $SD=11.46$).

DISCUSSION

Enhancing the quality of end-of-life care is a priority for patients, families and health care providers. Perinatal palliative care is an option which seems to be well received by parents who are given a life-limiting prenatal diagnosis. Although limited information has been reported on this approach to care, it is hoped that a PPC alternative may offer parents support during their crisis and prevent some of the psychological sequelae that can be associated with termination. The PPCPBS adds to the limited body of scientific inquiry regarding the perspective of healthcare providers who serve women experiencing unexpected fetal diagnoses. The instrument provides a venue in which health care workers can express their perspectives and identify concerns about how to support parents effectively through the PPC process.

Examination of clinician perceptions and practice barriers to PPC services is indicated as is exploring a framework to guide clinical practice so providers are supported in their efforts to create a compassionate environment. Results will be useful to explore solutions to facilitate understanding and acceptance of a PPC model. Professional feedback may foster educational programs. In addition, cultivation of multidisciplinary partnerships and identification of resources within the healthcare sector will provide grieving families with the varied support they need. Research results may allow nurses and physicians to engage in clinically relevant and cooperative approaches to care that will ultimately improve outcomes for women and their families.

Until there are instruments which speak specifically to the issues surrounding these types of uncommon situations, research will continue to be inadequate to offer health practitioners an evidence base from which to make informed and considered decisions. As prenatal diagnostics and genetic testing advance, the instrument will be useful for examining trends in clinician perspectives and perceived barriers related to PPC. Health care providers have a duty and privilege to study, promote, understand, and support processes that will bring healing and health to the families they serve.

The Effect of Pregnancy Intention on Maternal Behaviors and Satisfaction with Care

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Introduction: National data estimates that half of all pregnancies to women age 15–44 are unintended. Unintended pregnancies are associated with an increased risk of morbidity for the mother as well as individual health behaviors during pregnancy associated with adverse birth outcomes. Further inquiry regarding pregnancy intention may identify women in need of additional support services and help reduce perceived resistance to behavior change. This study examined the association of pregnancy intention with the following behaviors; adequacy of prenatal care, cigarette smoking, utilization of WIC services and breastfeeding as well as perceived satisfaction with their prenatal and delivery care.

Methods: Face-to-face interviews of 493 primarily Medicaid eligible women in Indianapolis, Indiana during their postpartum hospital stay were conducted to assess their degree of satisfaction with prenatal care and pregnancy intention, stratified into wanting to be pregnant *now*, *later* or *never*. Behavior related items were obtained from linked birth certificate data.

Results: A greater proportion of younger women wanted to be pregnant *later*, a greater proportion of African-Americans *never* wanted to be pregnant, a greater proportion of divorced and never married women wanted to be pregnant *later* or *never*, and as parity increased the percentage of unintended pregnancies increased. Multivariate analyses

found that women never wanting to be pregnant were twice as likely to underutilize prenatal care, twice as likely to smoke while pregnant, half as likely to utilize WIC services and half as likely to recommend their providers to friends or relatives compared to women with a planned pregnancy. Finally, women wanting to be pregnant later were half as likely to rate the overall hospital care and prenatal care provider as high.

Discussion: This study provided valuable insights into how a socially and economically at-risk group of women perceived their pregnancy and how these perceptions influenced important maternal behaviors and their satisfaction with the care they received. The results emphasize the importance of prenatal care providers being more aware that differences in patient behavior vary by intention of pregnancy. Some of the resistance health care providers experience when encouraging positive maternal behaviors may be due to ambivalent and unresolved feelings about the pregnancy. Providing them an opportunity to voice their concerns and feelings may help address these issues and reduce resistance to care. Assessing patients' pregnancy intent could better identify those women needing additional support services to boost their healthy behaviors and satisfaction with care. This study also demonstrated the value of more specific stratification of pregnancy intention.

Title: Exploring the Use of Human Milk as Oral Care for Mechanically Ventilated Very Low Birth Weight Preterm Infants

Authors: Shelley Thibeau, MSN, RNC & Cindy Boudreaux, APRN, IBCLC

Introduction- Ventilator associated pneumonia (VAP) is considered the second most prevalent hospital acquired infection (HAI) in the United States. Accounting for 15% of all HAIs, costs for VAP treatment are estimated between \$30,000 - \$40,000 / case with risk of mortality ranging 10 % - 40 % depending on co-morbidities. In 2003, the CDC published guidelines for the prevention of VAP which outline the three best practices for the maintenance of sterility of equipment, prevention of person to person microbial transmission, and prevention of aspiration. Research to date supports that the most prevalent mechanism of lung infection in critical care ventilated patients is aspiration of oropharyngeal organisms. Although the CDC does not recommend the use of any specific oral decontaminant agent for intensive care patients, many intensive care units use 0.12% chlorhexidine for oral rinse. In the neonatal intensive care unit, VAP is also a risk for mechanically ventilated preterm infants as the need for ventilator support may extend for weeks until extubation is possible. The VAP prevention bundle established in the adult population is applicable to these preterm infants; however, currently available oral care products including chlorhexidine are not safe for the preterm infant. An emerging theoretical perspective on the oropharyngeal administration of colostrum to preterm infants provides scientific evidence of the transfer of immune protection to the preterm infant which was used to support the administration of human milk as oral care in the VAP prevention bundle. The purpose of this study was to explore the outcomes of mechanically ventilated preterm infants ≤ 1500 grams in a regional level III neonatal unit before and after the implementation of oral care with human milk as part of the VAP prevention bundle.

Methods Oral care with human milk was implemented as part of the VAP prevention bundle in a level III regional neonatal intensive care unit in the fourth quarter of 2007. Using retrospective data the primary outcome variables included: the incidence of positive tracheal aspirate cultures, incidence of positive blood cultures, ventilator days, and length of stay. These outcome variables were compared between eligible infants (≤ 1500 grams) admitted January 1, 2006- December 2007 to those admitted June 1, 2008- December 31, 2009. Secondary outcome variables included: gestational age, birth weight, gender ethnicity, maternal age, premature rupture of membranes, incidence of maternal chorioamnionitis, maternal antimicrobial therapy at time of delivery, antenatal steroids administration, number of days of antimicrobial therapy in infant, presence of co-morbidities in infant (congenital anomalies), dose of surfactant. Data analysis included frequencies and distributions to summarize sample characteristics and variables of

interest. Appropriate correlations between primary and secondary variables were completed as well as tests for differences pre and post human milk intervention.

Results- Infant age and weight were homogenous among the before (n= 70) and after (n=68) samples. Mean gestational age was 26.1 weeks and 26.6 weeks respectively. Likewise, mean birth weight was 840 grams and 863 grams. There were no statistically significant differences in ventilator days, χ^2 (46, n=115) = 46.223, $p=.46$, and length of stay, χ^2 (75, n=115) = 78.778, $p=.36$, between groups. Of the maternal variables, only the incidence of chorioamnionitis was statistically increased after the intervention, χ^2 (1,n=138)=14.404, $p<.001$. However, the decrease in the number of positive tracheal aspirates, $z = -4.214$, $p<.001$, and the number of positive blood cultures, $z = -4.257$, $p<.001$, was significant after implementation of oral care with human milk for mechanically ventilated preterm infants.

Discussion-This is the first study to compare infant outcomes related to mechanical ventilation before and after implementation of oral care with human milk as part of the VAP prevention bundle. Two previous studies have explored the safety and feasibility of using human milk as oral care but incidence of positive tracheal aspirates and blood cultures were not reported. Limitations of this research are the small sample size and the lack of control for confounding variables such as HAI prevention best practices. However, this regional level III unit reports hand hygiene compliance rates between 75%-95%/month among all care providers and has participated in a national collaborative to reduce central line infections. Further research is needed using larger sample sizes from different neonatal units to determine whether using human milk for oral care in the VAP prevention bundle can significantly improve outcomes for the vulnerable mechanically ventilated preterm infant.

Process Improvement in Daily Note Writing Using Statistical Text Mining to Track Compliance to New Joint Commission Standards In the Neonatal Intensive Care Unit Mitchell Goldstein^{1,2}, Herbert Vasquez^{1,2}, Bruce Sindel¹, Mita Shah¹, Gilbert Furman¹, Clark Ochikubo¹, Gilbert Martin^{1,2}, Perpetua Lawas-Alejo¹, Linda Yang^{1,2}, Elba Fayard¹, Richard Peverini¹. Division of Neonatology, Citrus Valley Medical Center, West Covina, CA, Division of Neonatology, Department of Pediatrics, Loma Linda University Children's Hospital, Loma Linda, CA.

Introduction: The use of unapproved abbreviations is a significant concern in the Neonatal Intensive Care Unit. In 2001, The Joint Commission (TJC), formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), issued a Sentinel Event Alert on the subject of medical abbreviations, and just one year later, its Board of Commissioners approved a National Patient Safety Goal requiring accredited organizations to develop and implement a list of abbreviations not to use. In 2004, TJC created its "do not use" list of abbreviations (see next page) as part of the requirements for meeting that goal. In 2010, this was integrated into the Information Management standards as elements of performance.

Within our practice, we had commonly used the abbreviation "cc" for cubic centimeter as the equivalent of the Joint Commission preferred "mL" or milliliter. In 2010, coincident with the recommendation of the commission, we began a process of encouraging our member physicians to switch to using the accepted abbreviations. Compliance was difficult to measure because daily physician notes are written in MS Word 2003 format which was difficult to parse manually since some daily notes exceeded over twenty pages in length and over 4500 such documents were generated over the index (study) period. Furthermore, some physicians might be predicted to be less or more compliant with the group directive. Complicating this further, some notes might contain both accepted and unaccepted abbreviations, and notes from the beginning of the year might not have any accepted abbreviations because of a delay in implementation.

Methods: To provide better insight into whether we were improving as a group, we used the text miner capacity of Statistica to analyze all of the patient care notes generated in the year 2010. Notes were stored on a networked drive and grouped by directory according to the month in which they were created. Once the notes were analyzed by the text miner, we decided to conduct a controlled analysis, looking at trends in use of the abbreviations “cc” and “ml” compared to changes in month, physician, and two other control variables from the list “MS” and “IU”.

Because of the complexity of the model, we needed a nonparametric regression procedure that made no assumptions about the underlying relationship between the dependent and independent variables: A Multivariate Adaptive Regression Splines (MARSplines) was used to analyze the sample.

Results: Definitive trends can be noted using these techniques. By way of trending the sample from January to December specific patterns common to one or many notes could be identified and trended to improving compliance to TJC requirements.

Discussion: As various facets of the new healthcare plan come to the forefront, the meaningful use of a computerized health information system is one that will produce some degree of frustration. Use of Text Mining Statistical Analysis can identify areas of focus that can be used to increase a clinician’s attention to producing notes that meet current TJC criteria and at the same time qualify meaningful use.