Nursing Surveillance in an Obstetric Setting

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Background

- Cesarean birth (CB) is a public health issue placing both the mom and infant at increased risk for severe morbidity and mortality globally.
- Preventing the first CB is a primary strategy in reducing the overall CB rate.
- The birth outcome of cesarean or vaginal birth may be influenced by the nurse's role in the surveillance of fetal heart monitoring and interventions based upon interpretation.
- Detection and treatment of category II patterns may be an effective strategy in reducing the incidence of primary cesarean births women who nulliparous, term with single infant in vertex position (NTSV).

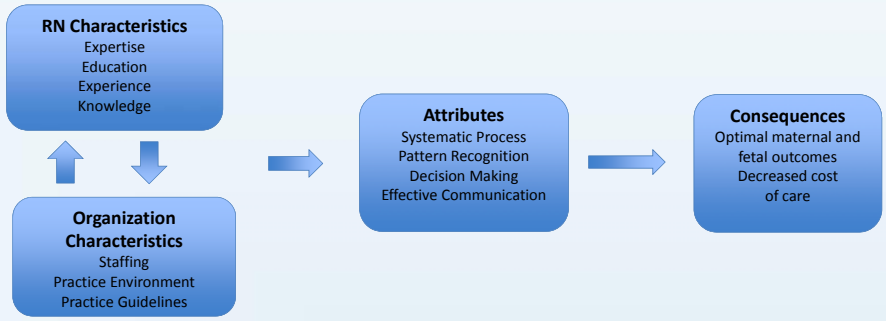
Purpose

- Examine nursing documentation of fetal heart rate (FHR) tracing and interventions (nursing surveillance) in response to identification of a FHR tracing consistent with category II pattern.
- Identify whether nursing surveillance and frequency of category II patterns increase the risk of cesarean birth in women are NTSV.

Methods

- Design: Cross-sectional, correlational
- Sample: Nulliparous mothers > 37 weeks gestation, NTSV delivered at a large, nonprofit community hospital in Southern California. Exclusion criteria: Scheduled cesarean delivery, non-NTSV, high-risk pregnancy, or fetal anomalies.
- Procedures: Retrospective data collection. Three months of Hospital's Perinatal Download database (PDD) provided data related to each inclusion criterion except length of EFM which was obtained from the patient's EMR.
- Measures: *Category II FHR tracings* defined by characteristics of FHR, baseline variability, decelerations, presence absence of accelerations. *Nursing Interventions:* oxygen supplementation, maternal reposition, IV fluid bolus, Pitocin adjustment.
- Analysis: Descriptive & Multivariate

Nursing Surveillance Conceptual Framework



Results

- Sample Characteristics (N = 457)
  - Ethnically diverse 5.5% Black, 1.1% NAAN, 45.5% White, 13.4% Asian/Pacific Islander, 31.7% Hispanic.
  - Mean age 28.8 ± 5.65 years
  - Mean maternal BMI 30.2 ± 5.5 kg/m^2
  - Induction 30.6%
  - Cesarean birth 29.5%
  - Pitocin augmentation 40.5% (excluded pit induced)

- Q1. Is there a difference in patient characteristics between mothers who give vaginal or cesarean birth?

	Vaginal (n = 322)	Cesarean (n = 135)	*F (df)*	χ^2	*p*
Age in years (SD)	28.2 (5.6)	30.27 (5.7)	12.46(1)		<.01
Body Mass Index (kg/m^2) (SD)	29.5 (4.6)	31.83 (5.5)	20.17(1)		<.01
Race				3.35(4)	.50
Ethnicity				.004(1)	.95
Induction (%)	89 (27.6)	51 (37.8)		4.60(1)	.03
Artificial Rupture of Membranes (%)	151 (47.5)	57 (42.2)		1.06(1)	.30
Pitocin Augmentation (%)	130 (40.4)	55 (40.7)		.01(1)	.94
Epidural (%)	293 (91)	117 (86.7)		1.93(1)	.17

- Q2. Does the frequency of Category II FHR pattern predict the outcome of mode of birth (vaginal versus cesarean)?

Predictor	*b*(SE)	Wald	Odds Ratio	95% Confidence Interval		*p*
				Lower	Upper	
Category II	.40(.03)	1.38	1.04	.973	1.114	.241
Nursing Intervention	.12(.04)	8.37	1.12	1.038	1.213	.004

Model (likelihood ratio) chi-square = 14.32, *df* = 2, *p* = .001; Nagelkerke R^2 = .04; Percent correctly classified = 70.2%

- Q3. Does the frequency of Category II pattern and type of nursing treatment increase the odds for cesarean birth?

Predictor	*b*(SE)	Wald	Odds Ratio	95% Confidence Interval		*p*
				Lower	Upper	
Category II FHR	.04(.04)	1.41	1.04	.97	1.12	.235
O2 Administered	-.14(.26)	.29	.87	.52	1.45	.592
Maternal Reposition	-.43(.25)	2.94	.65	.40	1.06	.087
IV Fluid Bolus	-.30(.25)	1.46	.74	.46	1.21	.227
Adjust Pitocin	-.15(.23)	.43	.86	.55	1.35	.512

Model (likelihood ratio) chi-square = 17.14, *df* = 5, *p* = .01; Nagelkerke R^2 = .05; Percent correctly classified = 70.2%

Implications

Nursing Practice: Nursing intervention or decision-making was correlated with pattern recognition. Type of nursing intervention while not statistically significant was identified as inversely estimating the risk for cesarean birth. In contrast increased nursing interventions was a predictor of cesarean birth. Nursing practice may benefit from a more well-defined process in the evaluation of FHR tracing; current guidelines for nursing intervention may need to be more clearly defined and associated with occurrence, as well as type of category II FHR pattern.

New Knowledge: Nursing surveillance conceptual framework may provide opportunities for examining nurse's contribution to improving outcomes in the obstetrical setting

Future research:
- Relationship of nursing surveillance antecedents to birth outcome.
- Type of nursing intervention, proportion of category II patterns improved with nursing intervention
- Frequency of category II characteristics among women who had induction vs. spontaneous labor.

Limitations: Sample size, single hospital setting, retrospective nature, and manual abstraction of data

References/Acknowledgments

References available on handout.

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