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World Class Deliveries: Developing and Testing an Innovative Vaginal Delivery Safety Checklist

Significance

Top 4 root causes of maternal and perinatal death and injury are:

1. Human factors errors
2. Communication failures
3. Assessment deficiencies
4. Leadership failures

Checklists in non-obstetric areas have:

- Reduced human error
- Standardized processes
- Improved team performance
- Improved patient outcomes

Current obstetric checklists:

- Focus on technical rather than non-technical skills from root causes
- Address only a single complication rather than multiple complications
- Not designed to prospectively guide care for vaginal delivery teams (as events unfold).

Goals & Objectives

Develop & test a vaginal delivery safety checklist (VaDS):

- Based on evidence
- Focuses on root causes
- Facilitates team communication & teamwork
- Reduces human errors
- Used prior to birth by entire delivery room team
- Addresses the most common complications associated with vaginal delivery (not singular focus)
- Be easy, convenient, and helpful

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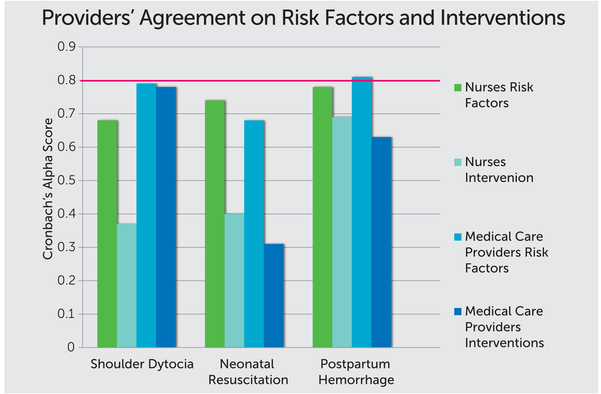
Research Design – 3 Phases

PHASE 1-DEVELOP VaDS AND ESTABLISH CONTENT VALIDITY

1. Created VaDS using evidence-based literature.
2. Identified top 3 emergencies associated with vaginal delivery:
   - Shoulder Dystocia (SD)
   - Neonatal Resuscitation (NNR)
   - Postpartum Hemorrhage (PPH)
3. Ascertained common risk factors and management strategies for each emergency.
4. Determined content validity -10 nursing experts and 10 medical care provider experts rated each item on the checklist for relevance.
5. Assessed agreement among and between healthcare providers using Cronbach's alpha.

Results of VaDS Raters



DISCUSSION: RESULTS PHASE 1

- Cronbach's alpha scores above .80 indicate acceptable agreement among raters.
- Expert ratings for each emergency were remarkable for lack of agreement, especially interventions.
- These differences indicate teams may not have a shared mental model of the patient or situation.
- Result? Miscommunication, inefficient team work and poorer patient outcomes.
- These findings highlight the need for VaDS.

VaDS Pilot

PHASE 2-PILOT THE VaDS

Used in 36 births at two Level III Centers.

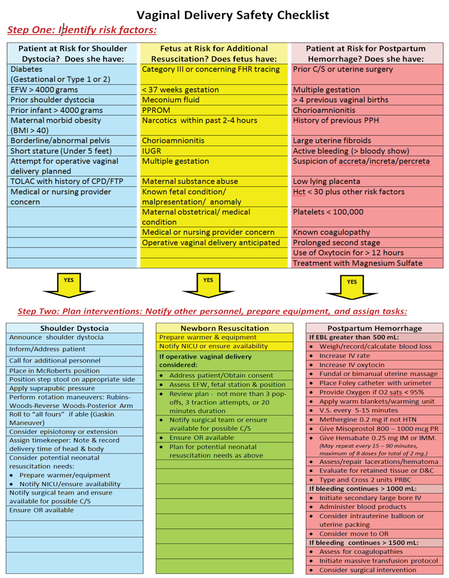
- Delivery teams utilized the VaDS during a pre-delivery brief.
- Team reviewed the "RISK" items on the checklist together to determine if the patient was at risk for SD, NNR, PPH.If risk factors were present, the team planned potential interventions using "INTERVENTION" side of the VaDS.

VaDS reviewed twice:

1. Prior to delivery
   - At a convenient & meaningful time
   - Outside of the patient room
   - When new team member assumes care
2. Close to the delivery -the team asks:
   - *"Has the checklist changed?"*
   - If "yes" team re-reviews item & plans

Following every delivery, surveys were completed by each team member:

- Time to complete VaDS
- VaDS usefulness, feasibility
- Effect on teamwork



Vaginal Delivery Safety Checklist

Step One: Identify risk factors:

Patient at Risk for Shoulder Dystocia? Does she have:	Fetus at Risk for Additional Resuscitation? Does fetus have:	Patient at Risk for Postpartum Hemorrhage? Does she have:
Diabetes (Gestational or Type 1 or 2)	Category III or concerning FHR tracing	Prior C/S or uterine surgery
EFW > 4000 grams	< 37 weeks gestation	Multiple gestation
Prior shoulder dystocia	Meconium fluid	> 4 previous vaginal births
Prior infant > 4000 grams	PPROM	Chorioamnionitis
Maternal morbid obesity (BMI > 40)	Narcotics within past 2-4 hours	History of previous PPH
Borderline/abnormal pelvis	Chorioamnionitis	Large uterine fibroids
Short stature (Under 5 feet)	IUGR	Active bleeding (> bloody show)
Attempt for operative vaginal delivery planned	Multiple gestation	Suspicion of accreta/increta/percreta
TOLAC with history of CPD/FTP	Maternal substance abuse	Low lying placenta
Medical or nursing provider concern	Known fetal condition/ malpresentation/ anomaly	Hct < 30 plus other risk factors
	Maternal obstetrical/ medical condition	Platelets < 100,000
	Medical or nursing provider concern	Known coagulopathy
	Operative vaginal delivery anticipated	Prolonged second stage
		Use of Oxytocin for > 12 hours
		Treatment with Magnesium Sulfate

YES YES YES

Step Two: Plan interventions: Notify other personnel, prepare equipment, and assign tasks:

Shoulder Dystocia	Newborn Resuscitation	Postpartum Hemorrhage
Announce shoulder dystocia	Prepare warmer & equipment	If EBL greater than 500 mL:
Inform/Address patient	Notify NICU or ensure availability	• Weigh/record/calculate blood loss
Call for additional personnel	If operative vaginal delivery considered:	• Increase IV rate
Place in McRoberts position	• Address patient/Obtain consent	• Increase IV oxytocin
Position step stool on appropriate side	• Assess EFW, fetal station & position	• Fundal or bimanual uterine massage
Apply suprapubic pressure	• Review plan - not more than 3 pop-offs, 3 traction attempts, or 20 minutes duration	• Place Foley catheter with urimeter
Perform rotation maneuvers: Rubins-Woods-Reverse Woods-Posterior Arm Roll to "all fours" if able (Gaskin Maneuver)	• Notify surgical team or ensure available for possible C/S	• Provide Oxygen if O2 sats < 95%
Consider episiotomy or extension	• Ensure OR available	• Apply warm blankets/warming unit
Assign timekeeper: Note & record delivery time of head & body	• Plan for potential neonatal resuscitation needs as above	• V.S. every 5-15 minutes
Consider potential neonatal resuscitation needs:		• Metheregine 0.2 mg if not HTN
• Prepare warmer/equipment		• Give Misoprostol 800 – 1000 mcg PR
• Notify NICU/ensure availability		• Give Hemabate 0.25 mg IM or IMM. *(May repeat every 15 – 90 minutes, maximum of 8 doses for total of 2 mg.)*
Notify surgical team and ensure available for possible C/S		• Assess/repair lacerations/hematoma
Ensure OR available		• Evaluate for retained tissue or D&C
		• Type and Cross 2 units PRBC
		If bleeding continues > 1000 mL:
		• Initiate secondary large bore IV
		• Administer blood products
		• Consider intrauterine balloon or uterine packing
		• Consider move to OR
		If bleeding continues > 1500 mL:
		• Assess for coagulopathies
		• Initiate massive transfusion protocol
		• Consider surgical intervention

Step Three: Debrief adverse events or unexpected outcomes.

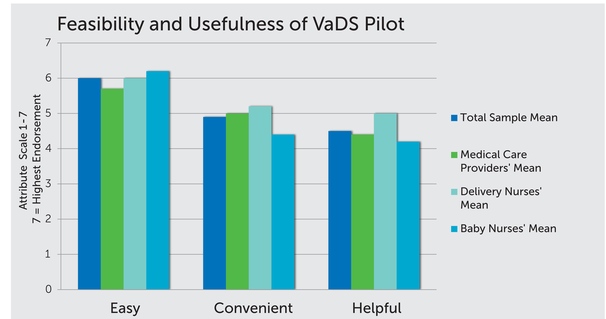
Results of VaDS Pilot

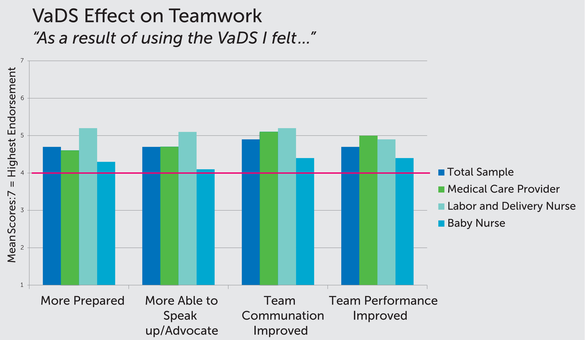
PHASE 3-DETERMINE EFFECT OF VaDS ON DELIVERY TEAMS' DECISION-MAKING

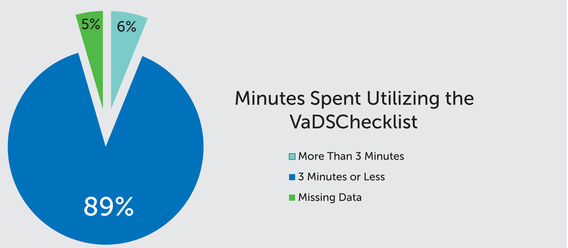
- Teams at a tertiary academic center (who'd never seen the VaDS) assessed 15 cases for possible birth complications first without, then with the VaDS.

RESULTS

- Without - teams took up to 40 minutes to decide. Identified 54 potential complications, yet only 17 related to vaginal delivery emergencies.
- With VaDS - discussions were focused, took < 10 mins. Two cases of SD that had occurred in the actual deliveries were identified when VaDS used.







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