

Decreasing variability: a systematic approach to streamlining care and outcomes of cesarean section (C-section) procedures



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Our journey to improving care delivery:

Problem	To decrease the variability in care delivery to improve the standard of care and the outcomes of the patients undergoing a cesarean section (c-section) procedure. Two key goals were to achieve adoption of the care plan bundle and to reduce length of stay.
Key participants involved	Physicians, nursing, pharmacy, lactation team, discharge planning, informatics, PI, and patient/family.
Goal	<ol style="list-style-type: none">1. Increase the percentage of C-section cases utilizing bundle criteria streamlining the process.2. Decrease C-Section LOS (length of stay)
Interventions	<ol style="list-style-type: none">1. Implement PowerPlan™ care bundles2. Expand clinical decision support – alerts such as allergies, sepsis, VTE prevention, to include fetal demise within the EHR, on dashboards, and mobile devices3. Device integration for vital signs and fetal monitoring, bedside specimen collection and scanning, human milk/formula management4. Add compliance measures to MD contracts5. Conduct ERAS pilot

LOS / Compliance

- The overall LOS for the C-section population with the implementation of the PowerPlan™ decreased from 3.0 days in FY 2017 to 2.30 days in 2020 pre-COVID. There is a slight increase noted in LOS in Q1 2020. The Premier benchmark is 2.81 days.
- C-section bundle compliance goal is 80% and we have consistently remained > **90%**.
- Noted:
 - No maternal deaths
 - No VTEs
 - Successful ERAS C-Section pilot



PowerPlan/Process Education

- ▶ Lunch and learns
- ▶ Classroom time
- ▶ On-line formats – EBCC education
- ▶ Healthcare Organization continuing education website
- ▶ WINK – “What I Need to Know”

Challenges

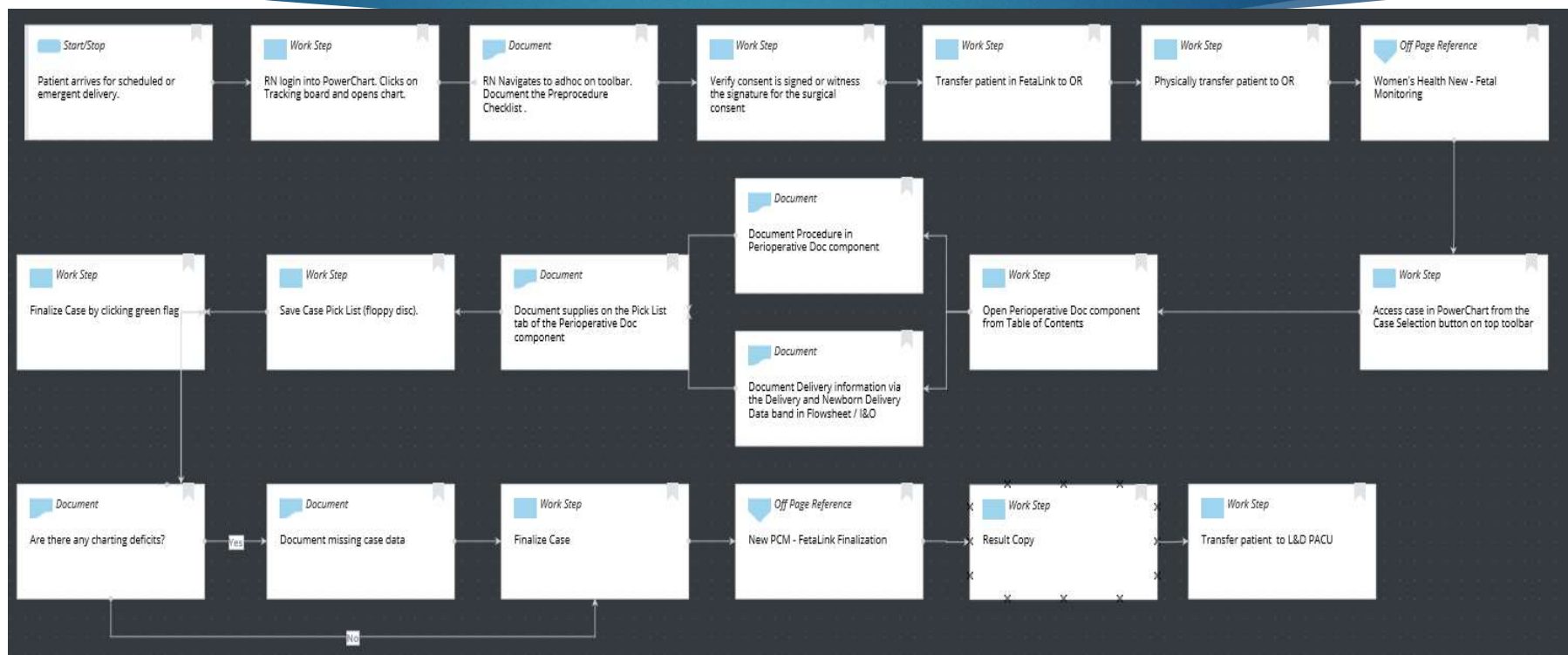
- ▶ Complexity of maternal child documentation
- ▶ Multiple moving parts of technology: FetaLink; Airstrip; Milk Management; Specimen Collection; Blood Transfusion; Anesthesia; Pain Control; VTE prevention; Infection Prevention
- ▶ Integration of documentation for mother, single and occasional multiple births

Adoption / Governance

- ▶ EBCC is the common path for clinical care redesign
- ▶ The interdisciplinary approach is standard process for BHSF
- ▶ Adoption opportunities are identified and addressed with data through governance



Sample Workflow



PowerPlan™ Build & Design

The screenshot displays a hierarchical tree of clinical components in the PowerPlan software. The components are organized into several levels:

- EBCC ANES OB Pre-Cesarean Section_B (Planned Pending)** (highlighted with a red box)
 - Patient Care
 - Phase to be initiated when patient arrives to unit
 - Perip
 - Continuous Infusions
 - Lactat (lactal)
 - EBCC ANES OB Post-Cesarean Section_B (Planned Pending) (highlighted with a red box)
 - Medications
 - sodium
 - famol
 - Laboratory
 - EBCC
- EBCC OB L&D Cesarean Delivery Preoperative_B** (highlighted with a red box)
 - Admit/Transfer/Discharge/Status
 - Transfer Patient
 - Patient Care
 - Phase to be initiated when patient arrives to unit
 - Vital Signs with Pulse Oximetry
 - Monitoring
 - Pi
 - M
 - Vi
 - Fetal Monitoring
 - +1 hr Vi
 - +2 hr Vi
 - +4 hr Vi
 - +4 hr Rx
 - +28 hr Vi
- EBCC OB Postpartum Cesarean Delivery Admission_B** (highlighted with a red box)
 - Admit/Transfer/Discharge/Status
 - Transfer Patient
 - Patient Care
 - Witness signature
 - Communication Order
 - Perinatal Care Quality Measures
 - Lines/Tubes/Drains
 - Peripheral IV
 - Saline Lock Convert From IV
 - Saline lock with routine flush
 - Communication Order
 - Catheter-associated urinary tract infection (CAUTI) is management of incontinence

Figure 2

Maintaining the Evidence

• Once the power plan has been selected, you can right-click and select "Evidence-based Information" from the drop-down menu to have access to the eWINK+.

The screenshot displays a web-based medical application interface. On the left is a navigation menu with categories like 'Patient Summary', 'Medications', and 'Orders'. The main area shows 'Orders & Plans of Care' with a list of plans. A right-click context menu is open over a plan, with a blue arrow pointing to the 'Evidence-based Information' option. The menu also includes 'Reference Information...', 'Remove', 'Add Comment', and 'Save as My Favorite'. The background shows various medical orders and a patient care plan.

Driving Compliance

Lines/Tubes/Drains			
<input checked="" type="checkbox"/>		Urinary Catheter Insertion	▼ Inc
<input checked="" type="checkbox"/>		Peripheral IV	Ins
<input type="checkbox"/>		Lactated Ringers Injection intravenous solution (lactated ringer's bolus)	1,0 Tot
Activity			
<input checked="" type="checkbox"/>		Bedrest with Bathroom Privileges	
<input type="checkbox"/>		Up ad Lib	
<input type="checkbox"/>		Bedrest	
<input type="checkbox"/>		Core Measure - A contraindication for VTE prophylaxis must be selected if NOT ordering a	
<input type="checkbox"/>		Below the Knee Intermittent Pneumatic Compression ...	▼ Co
<input type="checkbox"/>		VTE Prophylaxis Contraindication Mechanical and Ph...	

Clinical Decision Support

The *****Urinary Catheter Alert***** will fire when accessing the patient's chart if the appropriate Urinary Catheter Continuation order has not been renewed (i.e. after 24 hours or 7 days).

The screenshot shows a Cerner alert with the following text:

***** URINARY CATHETER 24HR ALERT *****

Your patient [redacted] has a Urinary Catheter Continuation 24hr order that, according to Joint Commission guidelines needs to be re-evaluated.

One of the following actions is required at this time:

- Place a Urinary Catheter Discontinuation order
- or
- Cancel/Reorder the current Urinary Catheter Continuation 24hr order.

Sample Alerts

Clinical Decision Support Alerts / Advisors

Subject	Event Date/Time
Septic Shock Alert	8/10/2016 2:32:17 PM
SIRS Alert	7/25/2016 5:11:26 PM
Sepsis Alert	7/21/2016 10:31:17 AM
Sepsis Alert	7/21/2016 8:25:47 AM
Sepsis Alert	7/20/2016 4:14:39 PM
SIRS Alert	7/20/2016 10:43:49 ...

Select the desired **VTE Prophylaxis** pharmacological and mechanical prophylaxis, ambulation, and labs.

***Recommended Pharmacologic Therapy**

Delay (from now)

enoxaparin 40 MG, Inj, SQ, Q 24 Hr
 heparin 5,000 UNITS, Inj, SQ, Q 8 Hr

***Recommended Mechanical Therapy**

Discern: OBED, Veronica (1 of 1)

Medication Alert

Pregnancy Warning

NAME: OBED, Veronica SEX: Female HEIGHT: 170 cm
 LOCATION: BH_ZEL AGE: 38 Years WEIGHT: 86 kg

Pregnancy Lactation Alert

oxycodone-acetaminophen

Discern: TEST, NATALIE (1 of 1)

Lactation Alert

Lactation/Breastfeeding Warning

Discern: Open Chart - Testing, BHMaki (1 of 1)

Missing Actual Weight

It appears that Testing, BHMaki has not yet been weighed. This is required for accurate...

Discern: Open Chart - Tditest, Soniamommy (2 of 2)

Fetal Death

DISCERN ALERT

This patient has experienced a fetal/neonatal death. Please ensure all communications and interactions with the patient and family are appropriate to the situation.

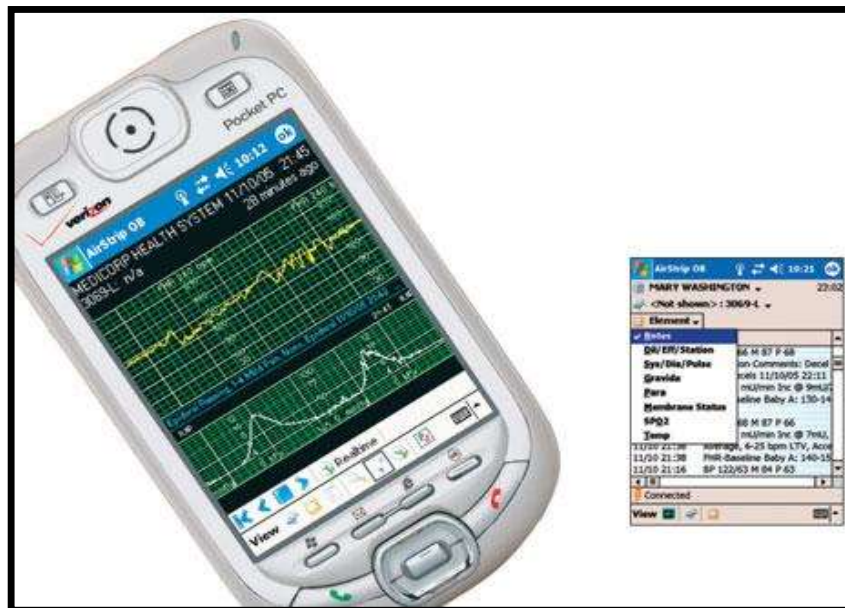
Additional Integration

➤ FetaLink



Additional Integration

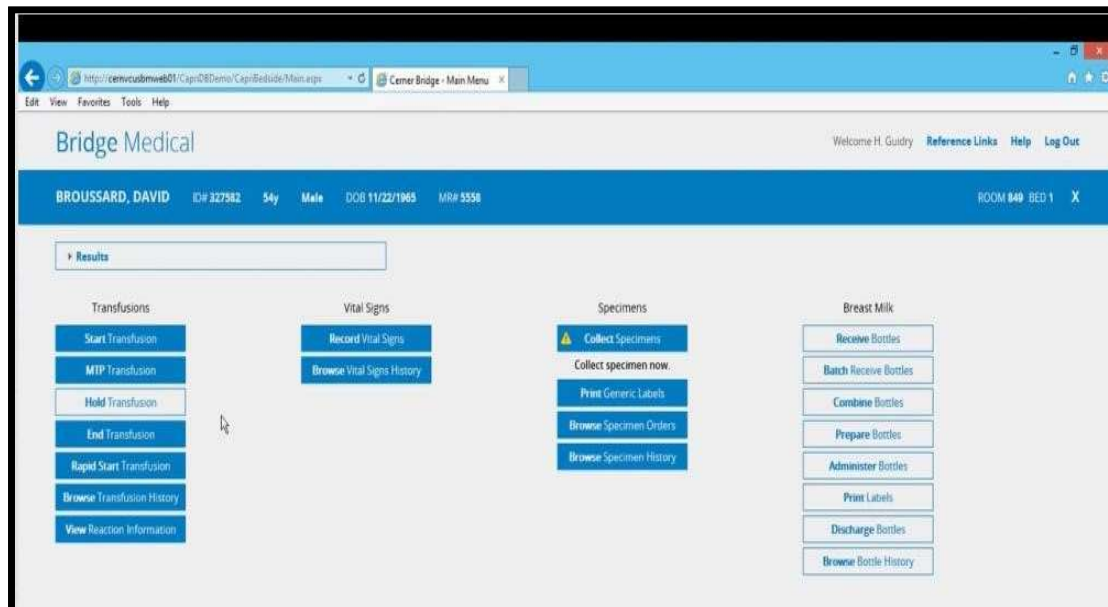
➤ Airstrip Mobile Fetal Monitoring



Additional Integration

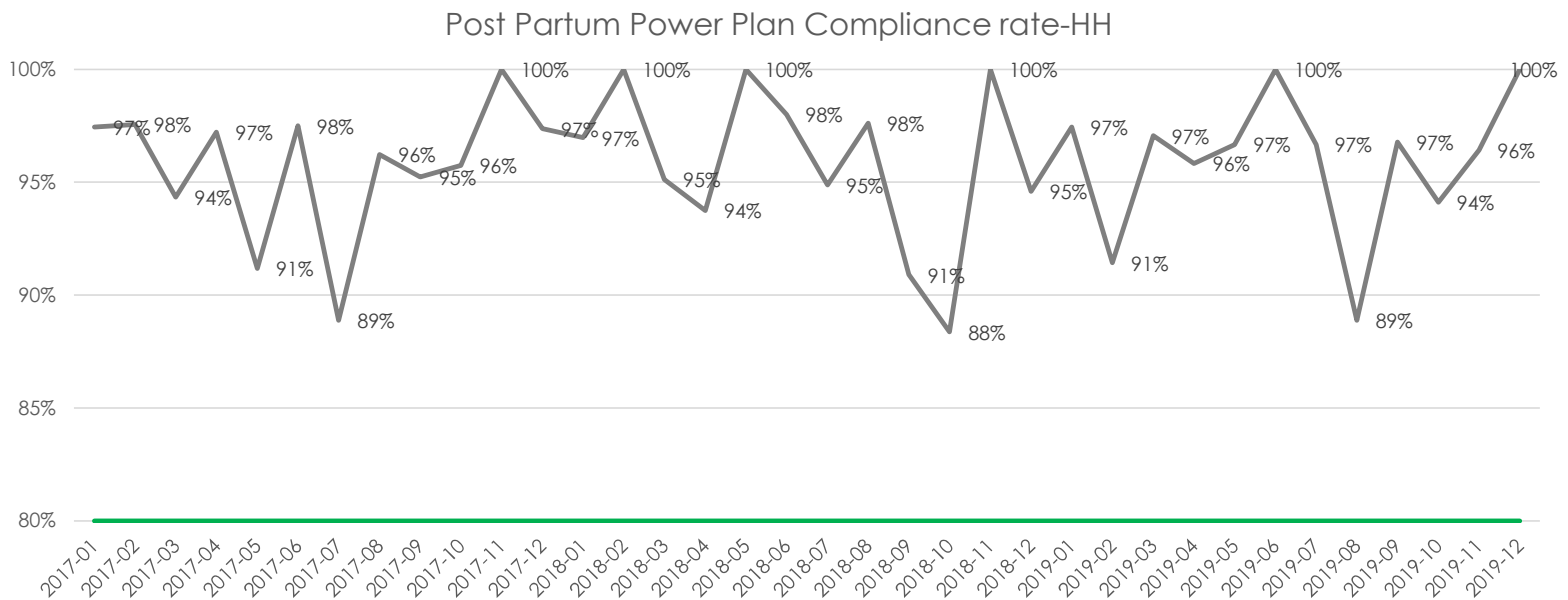
➤ Cerner Bridge Medical

Breast Milk; Blood transfusion ; Specimen Collect



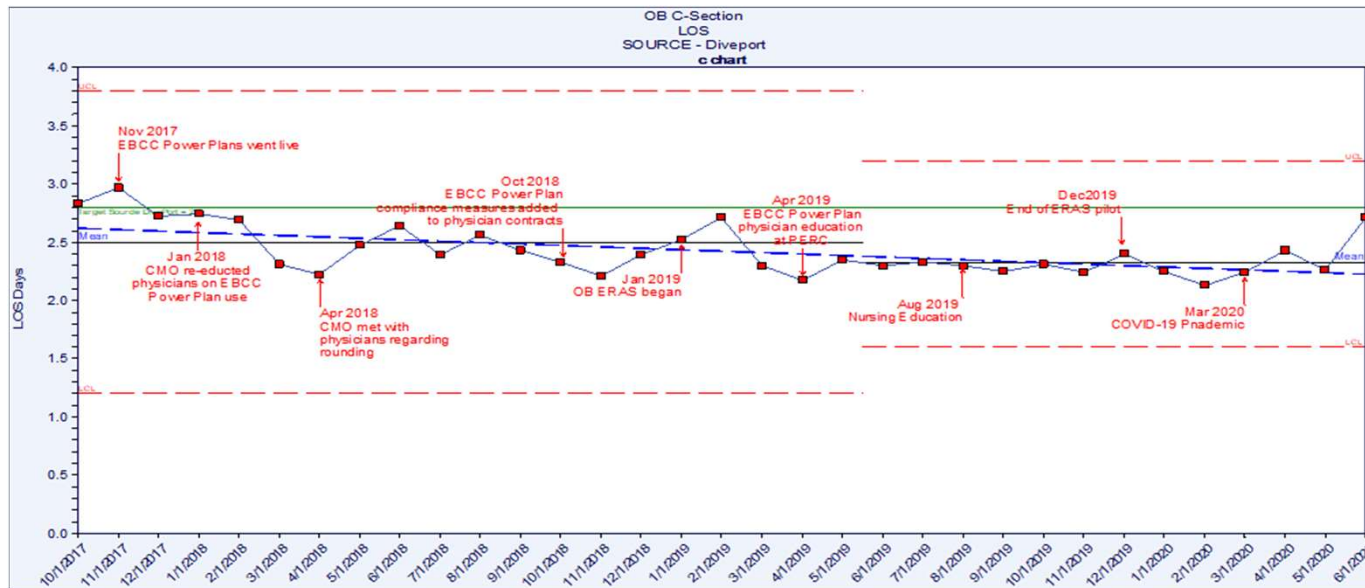
Exceed Compliance Goal

80% Compliance Goal



Length of Stay

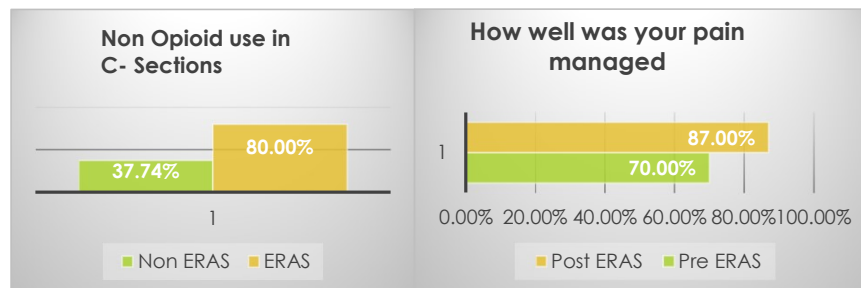
Length of stay below benchmark



C-Section ERAS Pilot

January 2019 – August 2019

HH FY 2019 (Oct-August)	Total ERAS Cases	Current FYTD LOS	Variable Cost per Case (ERAS)	Total Non-ERAS Cases	Current Non-ERAS LOS	Non-ERAS Variable Cost per Case
OB Elective C-section	30	1.98	\$4125.80	53	2.29	\$9037.00



Goals / Achievements

- ✓ LOS below premier benchmark
- ✓ Compliance above goal
- ✓ Zero VTEs
- ✓ Zero maternal deaths
- ✓ Successful ERAS Pilot



Lessons Learned

- ▶ Buy-in is key for both the care team and the patient/family
- ▶ Education of the Power Plans™ and ERAS Pathway is a huge key to success
- ▶ Sharing analytics to high-light improvements will help keep the process successful
- ▶ Build and design of the EHR tools to support the workflow will assist with compliance
- ▶ Neonatal components including safety and comfort will help decrease stress of the mother and support reduce stress response

Special Thanks to

Our Patients for trusting in us to care for them, Nursing Clinical Informatics, our very own nursing team and a Big Thank you Dr. Charles Augustus, for his continued commitment to provide quality patient care, and improving outcomes for our patients.





Questions: