

Enhanced Recovery After Cardiac Surgery – WakeMed Story

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What is Enhanced Recovery After Surgery (ERAS)?

- ERAS is a multimodal, multidisciplinary, evidence-based approach to care of the surgical patient that aims to optimize perioperative management and outcomes
- Key elements of ERAS pathways strive to reduce the response to surgical stress, decrease insulin resistance, and help the patient return to baseline function more quickly without added complications.

A care pathway for specific surgical procedures that include pre-determined activities, rules, and guidelines

A care pathway to expedite and enhance recovery after surgery

Standardized order sets with ERAS components already pre-checked

Background

- ERAS pathways for many other surgical populations have existed for many years. However, there were no guidelines or consensus statements for cardiac surgery enhanced recovery.
- While advances in perioperative care have contributed to improved outcomes despite an increasingly comorbid patient population, an ERAS framework for cardiac surgery did not exist.
- At our organization we recognized the benefit of implementing an ERAS pathway in cardiac surgery.

Why was this so important??

- When comparing data with similar hospitals, we identified that many cardiac surgery patients had:
 - Increased opioid usage
 - Prolonged ICU hours
 - Prolonged hospital length of stay
 - Increase GI complications
 - Inadequate pain control
 - All of which resulted in an increased financial burden



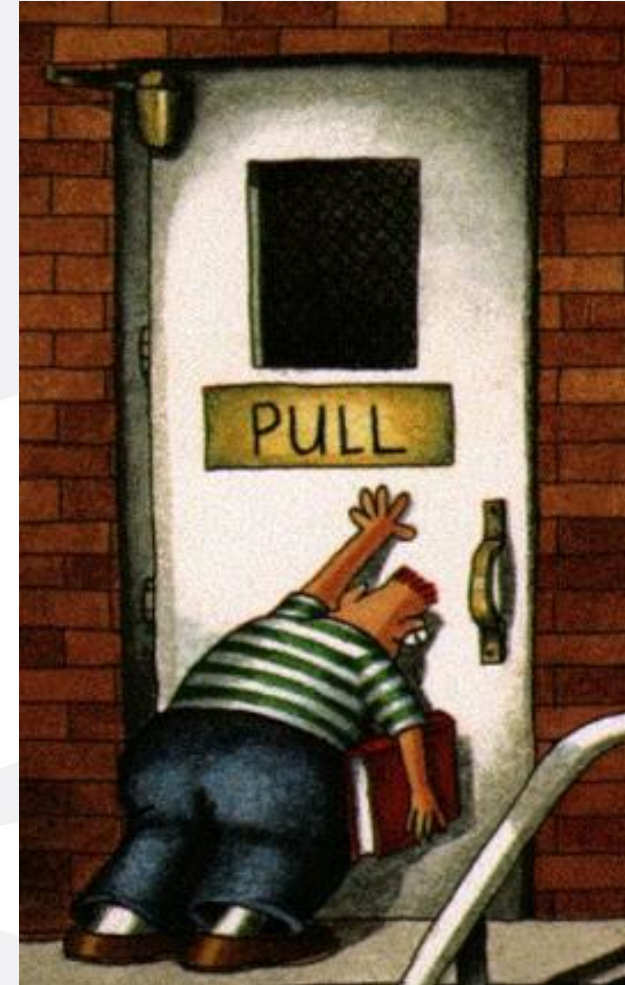
WakeMed ERAS Cardiac Surgery Team

Challenges

- The cardiac surgery population has many challenges:
 - Severe comorbidities in addition to their cardiac disease
 - Frail, malnourished and poor stamina
 - Duration of surgery
 - Contraindications to analgesia techniques and medications
 - Effects of cardiopulmonary bypass
 - Surgeon and Anesthesiologist preferences
 - NO ERAS protocols for the cardiac surgery patient

Staff Barriers

- Staff education of current providers and new providers after initial implementation
- Staff attitude and behavior toward change
- Multidisciplinary support: getting buy-in from everyone
- Sustainability of program



Practice Barriers

- Ineffective communication
- Lack of resources for education and coordination
- Cost of carbohydrate drink
- IT implementation of order sets, pathways, and data acquisition
- Lack of standardization

Patient Barriers

- Time between surgery need identification and actual surgery date
- Complex patient comorbidities
- Patient unwillingness to change or put forth effort
- Patient expectations
- Patient understanding including education level and language barriers

ERAS CARDIAC PERIOPERATIVE COMPONENTS

1. Preop Education
 2. Prehabilitation
 3. Smoking and Alcohol Cessation
 4. Nutrition Optimization
- DAY OF SURGERY**
5. NPO After Midnight
 6. Carbohydrate Clear Drink 2-4 Hours Preop
 7. Multimodal Analgesia Initiation

1 PREOPERATIVE COMPONENTS



2 INTRAOPERATIVE COMPONENTS

8. Short-acting Anesthetics
9. Continue Multimodal Analgesia
10. Minimize Crystalloid
11. **NO BUGS** Normothermia ($T > 36^{\circ}\text{C}$) • Oxygenation ($\text{FiO}_2 > 0.8$) • anti-Biotic drug/dose(s)/timing
Underventilation ($\text{ETCO}_2 > 38$) • Glycemic control ($\text{Glc} < 180\text{mg/dL}$) • Skin prep (CHG)/no Shaving
12. PONV Prophylaxis Initiated
13. Postop Sedation Started



14. Continue Multimodal Analgesia
15. Early Extubation
16. Continue PONV Prophylaxis
17. Diet/Bowel Regimen
18. Early Ambulation
19. Line/Drain Removal
20. Priority Discharge

3 POSTOPERATIVE COMPONENTS



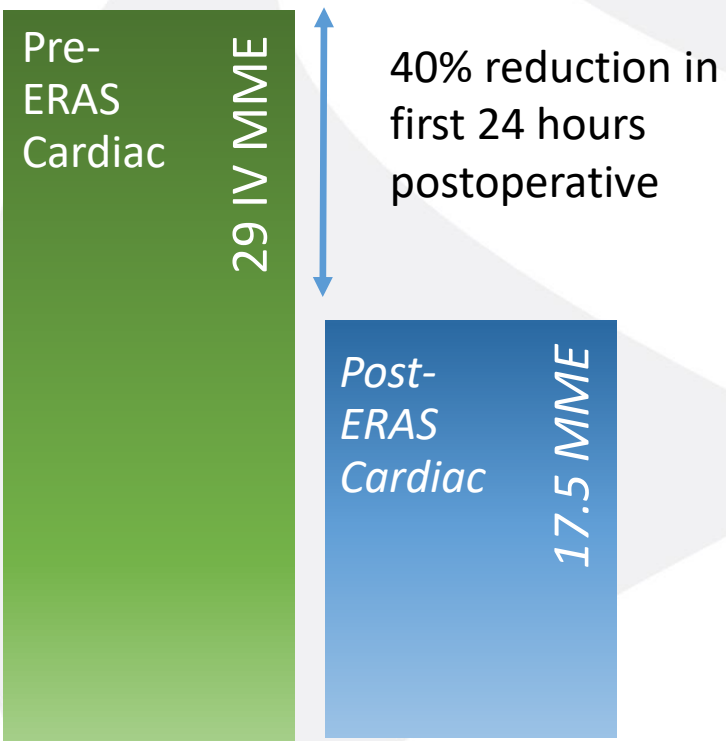
Heart Care Plus⁺

A WAKEMED + DUKE HEALTH COLLABORATION

WakeMed DukeHealth

Results

Opioid use



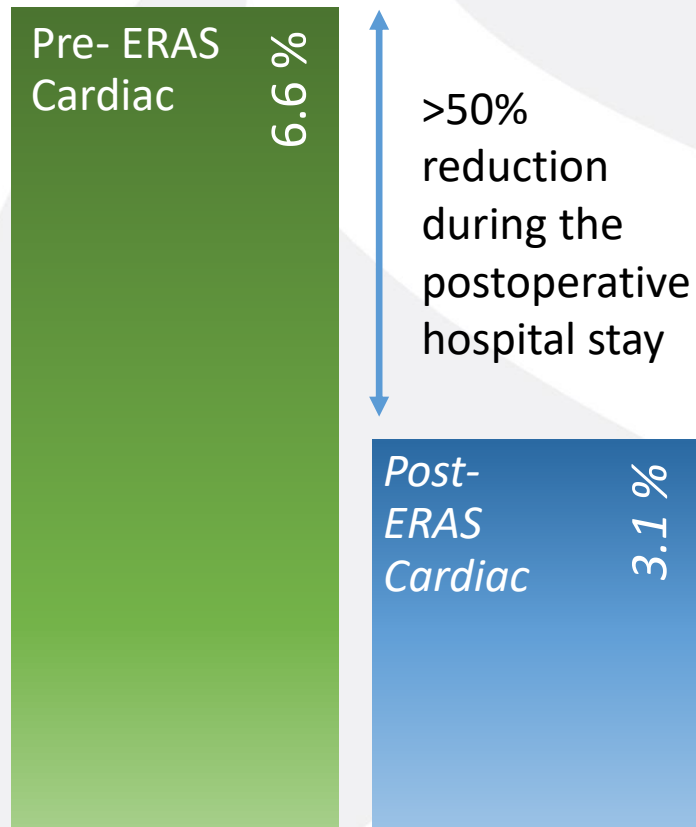
Length of stay



	Pre- ERAS Cardiac	Post- ERAS Cardiac	p-value
Postoperative ICU Length of Stay (hours)	43 (24-74)	28 (23-52)	<0.01
Hospital Postoperative Length of Stay (days)	7 (5-9)	6 (5-8)	<0.01

Results

GI Complications

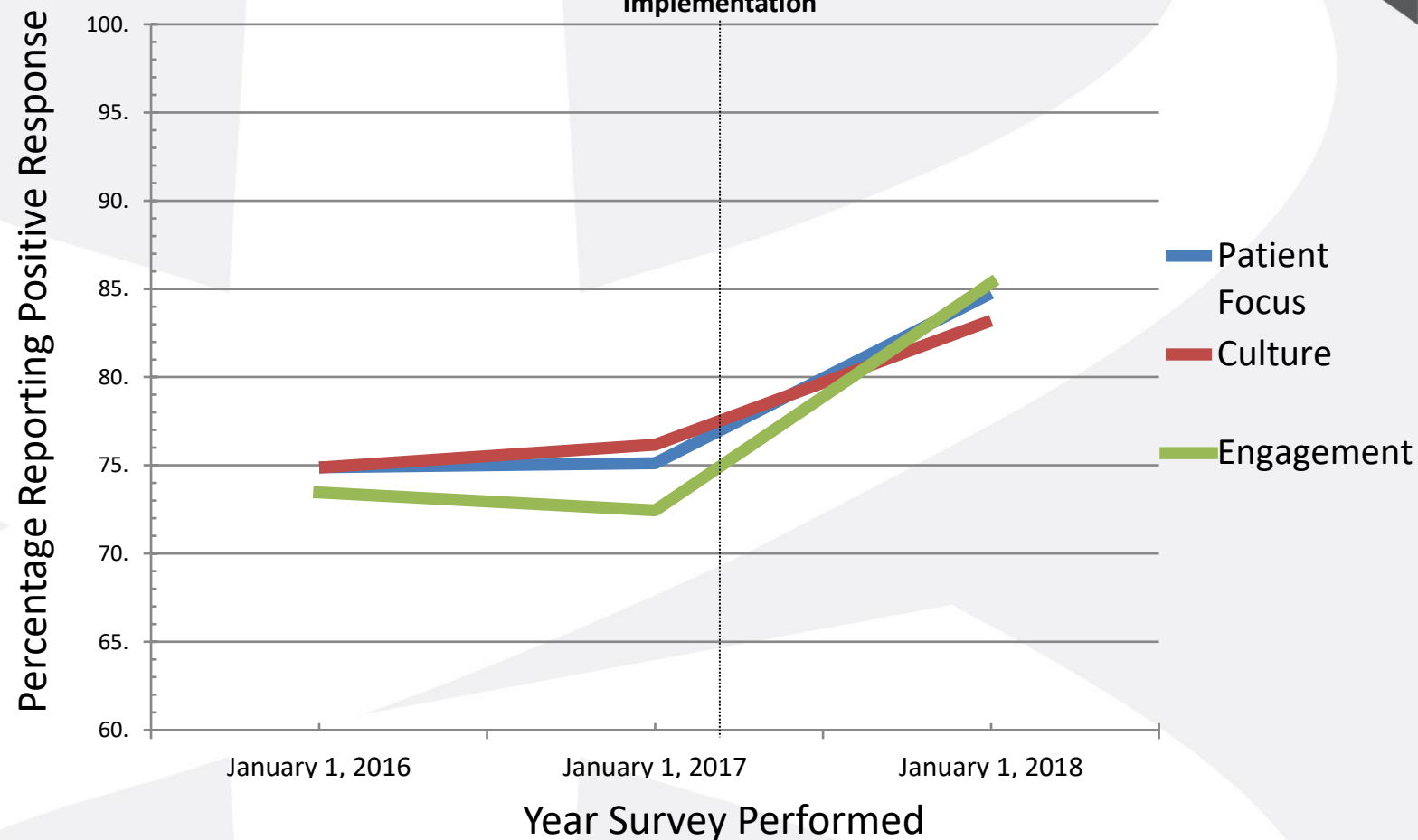


EPIC Data obtained Jan 2016-Jan 2018

Satisfaction



ERAS-Cardiac Implementation





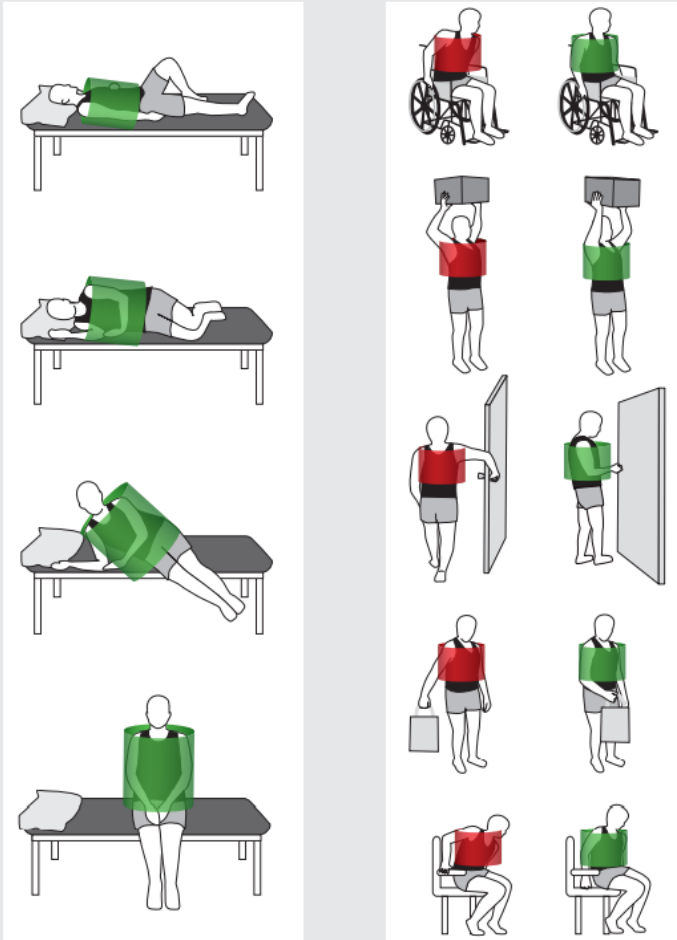
Phase II

- More work to be done...
- Sternal Precautions: Keep Your Move In The Tube (March 2022)
- Tele Heart Care (June 2022)
- Infection Control: Noes to Toes
- Anemia Optimization

Keep Your Move in the Tube™

Load-bearing upper extremity movements for patients recovering from median sternotomy.

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Keep Your Move in the Tube™

For the next 6 weeks following your surgery, it is important to adhere to the following guidelines and immediately stop an activity if you experience discomfort or hear a clicking/popping sound.



GENERAL

- Use both arms, and keep them close to the body with elbows in, when:
 - Lifting any object
 - Getting out of bed
 - Standing up from a chair
 - Pushing or pulling
- You may move your arms freely if you are not holding something.
- Always support your chest by hugging yourself or a pillow when coughing, sneezing, or laughing.



- Avoid pushing or pulling with one arm.
- Avoid any activity that puts uneven strain on the breast bone (ex: sweeping, hunting, yardwork).
- Avoid reaching behind with both arms together.

SELF-CARE

- It is okay to reach behind with ONE ARM for self-care activities (ex: toileting, grooming). Be sure to:
 - Rotate from the waist
 - Keep elbows close to your body
- Take a shower daily with antibacterial soap (ex: Dial®).
 - Pat your incision dry before dressing.

- No tub baths or soaking (ex: swimming) until the incisional scabs are gone and your incision is fully healed.
- Do not apply creams/ointments to incisions until after they are healed.
- Avoid scrubbing your incision.

EXERCISE

Examples of exercises that are OK to perform:

- Bicep/arm curls with elbows at your sides
- Tricep pushdowns/elbow extensions with elbows at your sides
- Lower body exercises (walking, stationary bike, treadmill, squatting)

Note: It is important to be mindful of your breathing and avoid holding your breath, especially when lifting.

- Avoid exercises, sports or activities that involve uneven pushing/pulling with arms (golf, tennis, pickleball, bowling, skiing, running, swimming).
- Avoid exercises that cause elbows to go behind body (chest stretch).
- Avoid resistance exercises with elbows out to the sides (overhead lifting, lat pulldown, pec fly, chest press).
- Avoid exercises in a pushup (plank) or hands and knees position.
- Avoid arm cycling, elliptical machine, and standing quad stretches.

DRIVING

Wear your seatbelt:

- Rotate from the waist and reach for your seatbelt with both arms.

Do not drive a vehicle (car, truck, tractor, riding mower) until cleared by your surgeon.

Illustrations on the back of this sheet show different activities you may be doing and the proper position of your arms.

WAKEMED HEART & VASCULAR

TeleHeartCare

HELPING ❤️ HEARTS ❤️ HEAL

What is Tele Heart Care ?

Most cardiac surgery programs, including ours, discharge patients on or about post-op day 6 and then historically ask them to follow up with the team in about 3-4 weeks. The Tele Heart Care program will allow for 2 to 3 additional after discharge touchpoints prior to normal post-operative surgical follow-up. These touchpoints will be either telephone visits or virtual video visits via Epic My Chart with an APP. The goal will be to increase patient satisfaction, improve clarity of care, and optimize patient outcomes.

Visits

- The patient will be provided the date and time of the first appointment either prior to discharge or on arrival home.
- The CV surgery RN educators will assist with patient education and My Chart enrollment prior to discharge.
- Patients will be scheduled for virtual follow-up appointments at 2 to 3 days post discharge and again at 7 to 10 days post discharge with APP.
- These visits will proactively address post operative questions and issues such as volume overload/HF, blood pressure control and any wound concerns.
- The patient will still see their Surgeon for routine follow up approximately 3-4 weeks post op.

What can you do?

- Encourage enrollment in My Chart.
- Verify that patients have access to the following devices prior to discharge day: Weight Scale, BP cuff, Pulse Oximeter

Conclusions

- ERAS Cardiac is an example of value-based care applied to cardiac surgery
 - Goals of earlier recovery, cost reductions, and increased patient/staff satisfaction
- Our ERAS Cardiac program is reproducible in other health systems.
- WakeMed ERAS populations: Cesarean, Colorectal, Hernia, Breast, Bariatric, GYN, Joints, Hip Fx, Neonatal Intestinal, Urology
- Coming soon: NUSS, Spine, Vascular

Thank you!!!

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