Post-Operative Care in the Cardiac Surgery Patient

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Typical Course of Cardiac Surgical Patient (elective)

• Arrive in pre-op for day of surgical procedure
  • Labs, lines, consent
  • Meet surgeon, APP and other members of surgical team

• Taken into operating room
  • Sedated, intubated, further lines
  • TEE
  • Prepped and draped, time out
  • Midline sternotomy
  • On-pump versus off-pump
  • Following successful operation TEE may be used
  • The chest is closed, skin sutured
  • Patient taken to SICU
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• Taken into operating room
  • Sedated, intubated, further lines
  • TEE
  • Prepped and draped, time out
  • Median sternotomy
  • Endovascular vein harvesting
  • On-pump versus off-pump
  • Following successful operation TEE may be used
  • The chest is closed, skin sutured
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  • On-pump versus off-pump
  • Following successful operation TEE may be used
  • The chest is closed, skin sutured, chest tubes inserted, pacer wires set, wound VAC and dressings placed
  • Patient taken to SICU
Post-operative follow-up

• Inpatient LOS is 5-10 days but individual variety
• Follow-up scheduled with cardiology, cardiothoracic surgery and primary care (if within the Monument network)
• Generally we like our patients to see or establish primary care within 7-10 days
  • Need to be cognizant of the socioeconomic barriers for more disadvantaged patient populations
• Focus on secondary therapies (i.e. maintaining native and graft vessel patency, artificial valve integrity) and preventing further adverse CVS outcomes
  • Basic fundamentals can be applied to many post-operative cardiac cases
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Secondary therapies and prevention of adverse cardiovascular outcomes

- **Antiplatelet agents** for graft patency, prevention of major cardiovascular adverse outcomes
  - Aspirin 162 mg for Dr. V and 81 mg for Dr. M lifelong for CABG
  - Aspirin 81 mg for valves
  - P2Y12 varies by patient, not unified consensus for use in CABG
- Statin therapy for inhibition of saphenous vein graft disease, risk reduction and survival benefit across a broad spectrum of cholesterol levels
- Beta blockers in the prevention of post-operative AF, blood pressure control, LV systolic dysfunction
  - Most common arrhythmic complication
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Secondary therapies and prevention of adverse cardiovascular outcomes cont.

• **Antihypertensives**
  - Beta blockers for reduction of post operative atrial fibrillation
  - ACE inhibitors in patients with recent MI, LV dysfunction, DM, CKD
  - Nitrate, amlodipine, diltiazem, nicardipine for radial artery harvest
  - Home blood pressure tracking and education

• **Glucose control**
  - HbA1c of 7% per AHA reasonable goal
  - Inpatient diabetic management
Secondary therapies and prevention of adverse cardiovascular outcomes cont.

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Secondary therapies and prevention of adverse cardiovascular outcomes cont.

• **Smoking Cessation**
  - Increase in morbidity and mortality post-operatively, higher chance of deep sternal wound infections and respiratory complications
  - Adjunctive agents used on individualized basis tailored to each patient

• **Cardiac Rehabilitation**
  - Medicare covers MI within past year, CABG, stable angina, valve replacement or repair, coronary angioplasty or stent, heart or heart-lung transplant, stable chronic HF
    - 31% of Medicare claimed CABG patients only attended at least 1 session
    - 26% risk reduction in CVS mortality and 20% risk reduction in overall mortality

• **Address and optimize mental health**
  - 33% of post-operative CABG patients had clinically significant depression 1 year following their operation
  - Negatively affects quality of life and objectively increases risk of significant adverse events
Secondary therapies and prevention of adverse cardiovascular outcomes cont.

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Secondary therapies and prevention of adverse cardiovascular outcomes cont.

• **Develop strategies for weight loss**
  • Central obesity, increased visceral fat high mortality risk in CAD patients
  • Major clinical hurdles, particularly for socioeconomically disadvantaged and more marginalized populations
  • Per ASMBS may consider bariatric surgery in CABG (and/or one or more obesity related co-morbidities) patients with BMI ≥ 35 kg/m2
  • Focus on lifestyle modifications and behavioral interventions
Each individual patient responds to surgery differently. You are unique! And recovery from each specific surgical procedure, whether a coronary artery bypass or a minimally invasive procedure for a narrowed or blocked valve, is somewhat different as well. Despite these differences, however, some generalizations can be made.

**IT’S NORMAL TO:**
- Feel good for a few weeks but not as good as you anticipated. Recovery may be slower than anticipated.
- Many patients notice that their sense of taste is diminished or almost absent. It will return. Some patients even complain of nausea at the smell of food for a week or two after surgery.
- Have some swelling, especially if you have an incision in your leg. That leg will tend to swell more for some time. Elevating your legs will help. Wear your elastic TED hose if they were prescribed for you.
- Have difficulty sleeping at night. You may find it difficult to fall asleep, or you may find that you wake up at 2 or 3 a.m. and cannot fall back to sleep. This will improve. Taking a pain pill before bed sometimes helps.
- Have problems with constipation. You may use a laxative of your choice. Add more fruits, fiber and juice in your diet.
- Have mood swings and feel depressed. You may have good days and bad days. Do not become discouraged. This will get better.
- Have a bump at the top of your incision. This will disappear with time.
- Notice an occasional clicking noise or sensation in your chest in the first days after surgery. This should occur only at times and go away completely within the first couple of weeks. If it gets worse, call your surgeon.
- Experience muscle pain or tightness in your shoulders and upper back between your shoulder blades. This will get better with time. Your pain medicine will also help relieve this discomfort.

https://www.sts.org/sites/default/files/whatoexpect.pdf
Resuming normal activities

**WHEN TO RESUME USUAL ACTIVITIES**

<table>
<thead>
<tr>
<th>FIRST 6 WEEKS</th>
<th>AFTER 6 WEEKS</th>
<th>AFTER 3 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light housekeeping (dusting, setting the table, washing dishes, folding clothes)</td>
<td>Continue activities of first six weeks (but you may be able to tolerate more).</td>
<td>Continue activities of one to three months (but you may be able to tolerate more).</td>
</tr>
<tr>
<td>Light gardening (potting plants, trimming flowers)</td>
<td>Return to work part-time if your job does not require lifting, and returning is approved by your surgeon.</td>
<td>Heavy housework (scrubbing floors)</td>
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<tr>
<td>Needlework, reading</td>
<td>Heavy housework (vacuuming, sweeping, laundry)</td>
<td>Heavy gardening (shoveling snow, digging)</td>
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<tr>
<td>Cooking meals</td>
<td>Heavy gardening (mowing lawn, raking leaves)</td>
<td>Sports: football, soccer, softball, baseball, tennis, bowling, golfing, swimming, water skiing, skydiving, hunting</td>
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<tr>
<td>Climbing stairs</td>
<td>Ironing</td>
<td>Jogging, bicycling, weightlifting, push-ups</td>
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<tr>
<td>Small mechanical jobs</td>
<td>Business or recreational travel</td>
<td>Motorcycle riding</td>
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<tr>
<td>Shopping</td>
<td>Fishing, boating</td>
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<tr>
<td>Attending sports events, church, movies, and restaurants</td>
<td>Light aerobics (no weights)</td>
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<tr>
<td>Passenger in car</td>
<td>Walking dog on leash</td>
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<tr>
<td>Walking, badminton, stationary bike</td>
<td>Driving a small car or truck</td>
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<tr>
<td>Shampooing hair</td>
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<tr>
<td>Playing cards/games</td>
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</tbody>
</table>

- Objective benefits, help restore sense of normalcy
- Walk as much as tolerated
- Staged, goal-oriented approach that is performed in conjunction with patient, PCP and specialty services
- Individualized approach
- STS recommends returning to light work duty 6 to 12 weeks post-operatively

Keep in mind that all of these activities need to be in the 10 pound weight limit or less until six weeks after surgery.
Sternal precautions

- Cardiac surgery often involves median sternotomy with subsequent closure and surgical fixation of sternum utilizing range of devices
- Absence of universally adopted guidelines, facility driven
  - No lifting more than 10 pounds
  - Limit reaching behind back, pushing and pulling through arms
  - Keep upper arms close to body for 6-8 weeks
  - Hug pillow over chest incision site following sneezing or coughing for 6-8 weeks
  - Large breasted patients can benefit from a supportive brassiere
- Inpatient PT/OT services usually adequately address
Scheduling elective surgical (noncardiac) procedures

• Waiting at least six weeks prior to scheduling procedure involving intubation and mechanical ventilation
  • Risk of incomplete sternal healing

• Waiting at least two to three months for bowel or genitourinary surgery in prosthetic valve replacement patients
  • Risk of bacteremia

• Waiting at least three months for elective noncardiac surgery in valve surgery patients
  • Elevated thromboembolic risk
Post-operative complications

**CARDIAC SURGERY DISCHARGE**

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>NEEDS IMMEDIATE ATTENTION</th>
<th>URGENT PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bright red stool</td>
<td>Go to the Local Emergency Room or Call 911</td>
<td>Call Local Doctor</td>
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<tr>
<td>Chest pain (angina-like) similar to pre-op</td>
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<td>Chills or fever</td>
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<tr>
<td>Coughing up bright red blood</td>
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<tr>
<td>Fainting spells</td>
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<td>Heart rate faster than 150 beats/minute with shortness of breath or new irregular heart rate</td>
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<tr>
<td>New onset of nausea, vomiting or diarrhea</td>
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<td>Severe abdominal pain</td>
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<td>Shortness of breath not relieved by rest</td>
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<tr>
<td>Sudden numbness or weakness in arms or leg</td>
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<tr>
<td>Sudden, severe headache</td>
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<tr>
<td>Acute gout flare-up</td>
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<tr>
<td>Elevated temperature more than 100.0 F or 38.0 C two times within 24 hours</td>
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<tr>
<td>Extreme fatigue</td>
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<tr>
<td>Pain in calf that becomes worse when pointing toe up to head</td>
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<tr>
<td>Persistent bleeding or ooze from incisions</td>
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<tr>
<td>Sharp pain when taking in deep breath</td>
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<tr>
<td>Skin rash</td>
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<tr>
<td>Urinary tract infection: frequent urination, burning with urination, urgency with urination, bloody urine</td>
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<tr>
<td>Weight gain of more than one to two pounds within 24 hours</td>
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<tr>
<td>Worsening ankle swelling or leg pain</td>
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<td></td>
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<tr>
<td>Worsening shortness of breath</td>
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Given extent of cardiac surgery complications can involve a wide multisystem differential

Always willing to touch base