Enhanced Recovery After Surgery (ERAS) for Spine Anterior Cervical Discectomy and Fusion (ACDF) 1 or 2 Level

Site Applicability

Vancouver General Hospital

Pathway Patient Goals

Overall Patient Goals:
Patient will recover from surgery with an expected 1 day length of stay (LOS) and experience a safe discharge home.

Overall ERAS Goals:

- ↓ stress response to surgery
- Improve patient experience
- ↓ complications and LOS

Specific ERAS Goals:

1. Gum chewing x 15 – 60 minutes while awake, several times/day
2. POD 0 onwards: regular diet
3. Discontinue CVC POD 1
4. Discontinue indwelling urinary catheter at 06:00 POD 1 (or earlier if able)
5. Saline lock IV POD 1 or IV at TKVO if on Patient Controlled Analgesia when drinking greater than or equal to 600mL/12hr
6. Capillary Blood Glucose TID and HS and sliding scale insulin as ordered. If patient non-diabetic and all glucometer readings are less than 8.1mmol/Lx24 hrs, may discontinue glucometer
7. Ondansetron 4mg IV Q8H X 3 doses. First dose 8 hours after intra-op dose at 22:00 POD 0.
8. Mobility goals:
   POD 0: bathroom as tolerated; Walking 50m X 2 (with PT & RN)
   POD 1: bathroom, sitting up for minimum 2 meals; Walking 50m X 2 (with PT & RN)
   POD 2: bathroom, sitting up for 2-3 meals; Walking 100m X2 (with PT & RN); stairs with PT

Inclusion Criteria

Elective patients undergoing Spine Anterior Cervical Discectomy and Fusion for 1 or 2 levels.

Home Discharge Criteria

Patients will be deemed ready for discharge when cleared medically by the Spine Physician (i.e. incision healing, pain controlled, post-operative x-ray completed and reviewed, and medically stable).
Patient will be discharged by Physiotherapy if goals for functional mobility met.
Patient will be discharged by Occupational Therapy if goals of Activities of Daily Living met.

Instructions

1. Review pathway once per shift for patient care goals and expected outcomes (indicated in **bold**)
2. Do not document on this pathway, complete documentation in the Electronic Health Record (Cerner) or paper chart as per policy

Day of Surgery (Post-op Day 0)	
Category	**Expected Outcomes**
Safety	• Complete Beside safety checklist
Fall Risk	• Complete Morse Falls Scale as per Falls & Injury Prevention Guideline (D-00-07-30033) • **Not at risk: reviewed & no concerns**
Neuro	• Complete delirium assessment as per Delirium: Screening, Assessment and Management (CAM) DST (BCD-11-07-40081) or Intensive Care Delirium Screening Checklist • **Alert & Oriented x 3, speech clear, appropriate to situation, intact protective reflexes** • **Calm & cooperative with care** • **Anxiety level acceptable to patient** • **No evidence of delirium** • **Minimum 4-6 hours of uninterrupted sleep**
Motor/Sensory	• Complete ISNCSCI assessment as ordered • Notify spine surgeon of NEW or INCREASED DEFICIT • **Motor/sensory assessment within normal limits or patient's baseline**
Pain	• Complete Pain assessment as per Pain Assessment and Documentation Standards (VCH.VA.0203) • Review pain management, breakthrough doses, oral medications and side effects with patient • Provide teaching pamphlets to patient "Pain Control after Surgery" • **Pain level less than 4 OR acceptable to patient and does not preventparticipation in mobility or ADLs**
Respiratory	• Assess RR & SS as per Pain Assessment and Documentation Standards (VCH.VA.0203) while receiving IV opioid • Encourage deep breathing and coughing exercises Q1H while awake (ICOUGH) • **Easy, regular respirations. Breath sounds clear. No cough, or cyanosis. SpO2 equal or greater than 94%**
Cardiovascular	• VS as per Vital signs and observation: Post-op monitoring DST (D-00-07-30113) • Sequential Compression Device (SCD) to both legs x 24 hours post-op (remove Q shift x 20 minutes) • IV fluids as per orders • Complete IV/CVC site(s) assessment as per IV Therapy, Peripheral: Insertion, Care and Maintenance DST (BD-00-12-40080) or Non-Tunneled Central Venous Catheter (NT-CVC) – Basic Care and Maintenance DST (BD-00-12-40045) • **Heart rate regular, capillary refill equal or less than 3 sec, no pitting edema, no calftenderness, normal skin turgor** • **VS within normal limits** • **No evidence of DVT**

Anemia	• Review estimated OR blood loss and document • Notify spine resident if hgb less than 80 g/L or drops by equal or greater than 20 g/L from baseline, or if patient symptomatic • **No evidence of bleeding (blood loss should not exceed 350mL/12 hours)** • **No symptoms of anemia (dizziness, hypotension, weak/rapid pulse, delirium, nausea and vomiting)**
GI	• Assess PONV Q4H as per Pain Assessment and Documentation Standards (VCH.VA.0203) and document • Capillary Blood Glucose (CBG) assessed as ordered • Perform swallowing screen if indicated –refer to Swallow Screening for Dysphagia (D-00-13-30289) • Gum chewing for 15 minutes when awake • Patient received scheduled ondansetron as per PowerPlan (first dose administered 8 hours after intra-op dose) • No nausea and vomiting during shift • Assess and document BM • **Bowel sounds present, abdomen soft with no distension or pain and flatus passed** • **Patient states PONV is controlled** • **No swallowing issues identified** • **Tolerating equal or greater than 75% of regular diet**
GU	• Review OR/PACU fluid balance and document • Assess urine output Q1H x 24 hours and document • Clear pumps and total intake and output at 06:00 and 18:00 and document • Pericare completed Q shift • Night shift to remove Foley catheter at 0600. If Foley not removed, provide rationale • **No bladder distension, urine clear, amber and sufficient quantity (equal of greater than 0.5mL/kg/hour)**
Skin and Wound	• Complete skin assessment as per Braden Risk and Skin Assessment (Adult) D-00-12-30386.pdf (healthcarebc.ca) • **No evidence of dural leak** • **Surgical site dressing dry and intact (Change dressing 72 hours post-op or sooner if saturated)** • **Skin warm, dry and intact. Skin colour normal. Mucous membranes pink and moist**
Hygiene	• Assist with Hygiene: Oral / Bedside wash / Bed Bath as necessary • **Patient tolerates simple self-care activities (oral hygiene, pericare, etc.)**

Functional Mobility	• Teach spine mobility precautions (i.e. spine neutral) and active log roll technique
	• RN may initiate active mobilization as per post-op orders IF patient can tolerate and no neurological deficit present
	• HOB elevated as tolerated
	• Leg exercises every hour while in bed
	• If orthosis ordered, confirm Allied Health aware of need to fit and/or educate
	• Assess Mobilization and document
	  ○ Log rolling assessment (unable, with assist, or independent)
	  ○ Lying ←→ sitting assessment (unable, with assist, or independent)
	  ○ Sitting ←→ standing assessment (unable, with assist, or independent)
	• PT Assess ambulation: ability to walk 50 m; use of equipment/aid
	  ○ Stairs (unable, with assist/equipment, or independent; railing)
	  ○ Refer to PT initial assessment analysis & plan
	• **Up to chair for meals as tolerated**
	• **Walking to bathroom as tolerated**
	• **Mobility Goal: walk 50 m X 2 (once with PT & once with nursing/ family)**
	• **Safe, reliable independent functional mobility achieved**
	• **Patient turning Q2-3H with assistance, while maintaining neutral cervical spine**

ADL	• Reinforce philosophy of care regarding "early activation/rehabilitation"
Psychosocial	• **No psychosocial issues identified**
Med Management	• **No issues identified with medications patient taking pre-hospital (Medication Reconciliation & Best Possible Medication History completed)**

Teaching & Discharge Planning
ERAS Booklet
  ○ Patient has booklet at bedside
  ○ Patient is aware of daily goals
  ○ Reviewed and reinforced pain management	

Post-op Day 1	
Category	**Expected Outcomes**
Safety	• Beside safety checklist completed
Fall Risk	• Review Morse Falls Scale as per Falls & Injury Prevention Guideline (D-00-07-30033) • **Not at risk: reviewed & no concerns**
Neuro	• Complete delirium assessment as per Delirium: Screening, Assessment and Management (CAM) DST (BCD-11-07-40081) or Intensive Care Delirium Screening Checklist • **Alert & Oriented x 3, speech clear, appropriate to situation, intact protective reflexes** • **Calm & cooperative with care** • **Anxiety level acceptable to patient** • **No evidence of delirium Minimum 4-6 hours of uninterrupted sleep**
Motor/Sensory	• Complete ISNCSCI assessment as ordered • Notify spine surgeon of NEW or INCREASED DEFICIT • **Motor/sensory assessment within normal limits or patient's baseline** • **PT motor/sensory assessment completed**
Pain	• Complete Pain assessment as per Pain Assessment and Documentation Standards (VCH.VA.0203) • Review pain management, breakthrough doses, oral medications and side effects with patient • Review pamphlets with patient "Pain Control after Surgery" • **Pain level less than 4 OR acceptable to patient and does not preventparticipation in mobility or ADLs**
Respiratory	• Assess RR & SS as per Pain Assessment and Documentation Standards (VCH.VA.0203) while receiving IV opioid • Encourage deep breathing and coughing exercises Q1H while awake (ICOUGH) • **Easy, regular respirations. Breath sounds clear. No cough, or cyanosis. SpO2 equal or greater than 94%**
Cardiovascular	• VS as per Vital signs and observation: Post-op monitoring DST (D-00-07-30113) • SCDs to both legs x 24 hours post-op (remove Q shift x 20 minutes) • Start LMWH (24 hrs post arrival in PACU) as per MD order • Complete IV/CVC site(s) assessment as per IV Therapy, Peripheral: Insertion, Care and Maintenance DST (BD-00-12-40080) or Non-Tunneled Central Venous Catheter (NT-CVC) – Basic Care and Maintenance DST (BD-00-12-40045) • Discontinue CVC • Saline lock IV or IV TKVO with PCA when drinking greater than or equal to 600mL/12 hr • **Heart rate regular, capillary refill equal or less than 3 sec, no pitting edema, no calftenderness, normal skin turgor** • **VS within normal limits** • **No evidence of DVT**

Anemia	• Notify spine resident if hgb less than 80 g/L or drops by equal or greater than 20 g/L from baseline, or if patient symptomatic • **No evidence of bleeding (blood loss should not exceed 350mL/12 hours)** • **No symptoms of anemia (dizziness, hypotension, weak/rapid pulse, delirium, nausea and vomiting)**
GI	• Assess PONV Q4H as per Pain Assessment and Documentation Standards (VCH.VA.0203) and document • Capillary Blood Glucose (CBG) assessed as ordered • Gum chewing for 15-60 minutes (minimum TID) • Patient received scheduled Ondansetron as ordered (first dose administered 8 hours after intra-op dose) • No nausea or vomiting during shift • Assess and document BM • **Bowel sounds present, abdomen soft with no distension or pain and flatus passed** • **Patient states PONV is controlled** • **No swallowing issues identified** • **Tolerating equal or greater than 75% of regular diet x 3 meals**
GU	• Voiding with PVR equal or less than 100 mL x 3 • Pericare completed Q shift • **Voiding without difficulty, no bladder distension, urine clear, amber and sufficient quantity(equal or greater than 0.5mL/kg/hour)** • **Electrolytes within normal limits**
Skin and Wound	• Complete skin assessment as per Braden Risk and Skin Assessment (Adult) DST D-00-12-30386.pdf (healthcarebc.ca) • **No evidence of dural leak** • **Surgical site dressing dry and intact (Change dressing 72 hours post-op or sooner if saturated)** • **Skin warm, dry and intact. Skin colour normal. Mucous membranes pink and moist**
Hygiene	• Assist with Hygiene: Oral / Bedside wash / Bed Bath as necessary • **Patient tolerates simple self-care activities (oral hygiene, pericare, etc.)**

Functional Mobility	• Review/Teach spine mobility precautions (i.e. neutral cervical spine) and optimum posture
	• Patient turning Q3H with assistance, while maintaining neutral cervical spine
	• HOB elevated as tolerated
	• Leg exercises every hour while in bed
	• Assess mobilization and document
	  ○ Log rolling assessment (unable, with assist, or independent)
	  ○ Lying ←→ sitting assessment (unable, with assist, or independent)

	○ Sitting ←→ standing assessment (unable, with assist, or independent) • PT Assess ambulation: ability to walk 50 m; use of equipment/aid ○ Refer to PT initial assessment analysis & plan Stairs (unable, with assist/equipment, or independent) • **Up in chair for MINIMUM 2 meals** • **Walking to bathroom as tolerated** • **Mobility Goal: walk 50 m X 2 (once with PT & once with nursing/ family)** • **Safe, reliable independent functional mobility achieved**
ADL	See OT initial assessment for analysis & plan • Reinforce philosophy of care regarding "early activation/rehabilitation" • Teaching pamphlet - "Post-Op Activity Guidelines" provided/ reviewed • Teaching pamphlet - "Orthosis Management" provided/ reviewed • Assess the following as independent, requires equipment, requires assistance, ○ Don & Doff orthosis as applicable ○ Dressing, Toileting, Grooming, Showering • Assess if self-care equipment required • Homemaking/family care (e.g. meal preparation, cleaning,child care, etc.) & community- based ADLs (e.g. shopping, transportation, etc.) screened and no issues identified • **Understands, and able to follow post-op activity guidelines** • **Safe, reliable independent (or plan in place) for orthosis management** • **Safe, reliable independent (or plan in place) for self-care activities** • **Self care equipment needs addressed** • **Home & community responsibilities addressed**
Psychosocial	• **No psychosocial issues identified**
Med Management	• **No issues identified with medications patient taking pre-hospital**
Teaching & Discharge Planning • ERAS Booklet ○ Patient has booklet at bedside ○ Patient is aware of daily goals ○ Reviewed and reinforced pain management	

Post-op Day 2 or Supplemental Day	
Category	**Expected Outcomes**
Safety	• Beside safety checklist completed
Fall Risk	• Review Morse Falls Scale as per Falls & Injury Prevention Guideline (D-00-07-30033) • **Not at risk: reviewed & no concerns**
Neuro	• Complete delirium assessment as per Delirium: Screening, Assessment and Management (CAM) DST (BCD-11-07-40081) or Intensive Care Delirium Screening Checklist • **Alert & Oriented x 3, speech clear, appropriate to situation, intact protective reflexes** • **Calm & cooperative with care** • **Anxiety level acceptable to patient** • **No evidence of delirium** • **Minimum 4-6 hours of uninterrupted sleep**
Motor/Sensory	• Complete ISNCSCI assessment as ordered • Notify spine surgeon of NEW or INCREASED DEFICIT • **Motor/sensory assessment within normal limits or patient's baseline**
Pain	• Complete Pain assessment as per Pain Assessment and Documentation Standards (VCH.VA.0203) • **Pain level less than 4 OR acceptable to patient and does not preventparticipation in mobility or ADLs**
Respiratory	• Encourage deep breathing and coughing exercises Q1H while awake (ICOUGH) **Easy, regular respirations. Breath sounds clear. No cough, or cyanosis. SpO2 equal or greater than 94%**
Cardiovascular	• VS as per Vital signs and observation: Post-op monitoring DST (D-00-07-30113) • LMWH as per MD order • **Heart rate regular, capillary refill equal or less than 3 sec, no pitting edema, no calftenderness, normal skin turgor** • **VS within normal limits** • **No evidence of DVT**
Anemia	• Notify spine resident if hgb less than 80 g/L or drops by equal or greater than 20 g/L from baseline, or if patient symptomatic • **No evidence of bleeding (blood loss should not exceed 350mL/12 hours)** • **No symptoms of anemia (dizziness, hypotension, weak/rapid pulse, delirium, nausea and vomiting)**
GI	• Assess and document PONV Q4H as per Pain Assessment and Documentation Standards (VCH.VA.0203) • If no BM, administer bowel protocol • Gum chewing for 15 - 60 minutes (minimum TID) • No nausea or vomiting during shift • Assess and document BM

	• **Bowel sounds present, abdomen soft with no distension or pain and flatus passed** • **Patient states PONV is controlled** • **No swallowing issues identified** • **Tolerating equal or greater than 75% of regular diet x 3 meals**
GU	• **Voiding without difficulty, no bladder distension, urine clear, amber and sufficient quantity (equal or greater than 0.5mL/kg/hour)**
Skin and Wound	• Complete skin assessment as per Braden Risk and Skin Assessment (Adult) DST D-00-12-30386.pdf (healthcarebc.ca) • Change surgical dressing daily or Q2days • **Incision well approximated – no redness, swelling, minimal or no drainage** • **Surgical site dressing dry and intact** • **Skin warm, dry and intact. Skin colour normal. Mucous membranes pink and moist**
Hygiene	• Set up for Hygiene if necessary: Oral / Bedside wash / Bed Bath / Shower

Functional Mobility	• Review/teach spine mobility precautions (i.e. spine neutral) and optimal posture
	• HOB elevated as tolerated
	• Leg exercises every hour while in bed
	• Assess mobilization and document:
	  ○ Log rolling assessment (unable, with assist, or independent)
	  ○ Lying ←→ sitting assessment (unable, with assist, or independent)
	  ○ Sitting ←→ standing assessment (unable, with assist, or independent)
	  ○ Transfer bed ←→ chair (unable, with assist, or independent)
	• PT assess ambulation: ability to walk 100 m; use of equipment/aid
	  ○ Stairs (unable, with assist/equipment, or independent; railing)
	  ○ Refer to PT analysis/plan
	• **Up in chair 2 - 3 meals**
	• **Walking to bathroom**
	• **Mobility Goal: walk 100m (once with PT, once with nursing/family), stairs with PT**
	• **Safe, reliable independent functional mobility achieved**

ADL	See OT initial assessment for analysis & plan
	• Reinforce philosophy of care regarding "early activation/rehabilitation"
	• Teaching pamphlet - "Post-Op Activity Guidelines" provided/ reviewed
	• Teaching pamphlet - "Orthosis Management" provided/ reviewed
	• Assess the following as independent / requires equipment / requires assistance:
	  ○ Don & Doff orthosis as applicable
	  ○ Dressing, Toileting, Grooming, Showering
	• Assess if self-care equipment required
	• Homemaking/family care (e.g. meal preparation, cleaning, child care, etc.) & community- based ADLs (e.g. shopping, transportation, etc.) screened and no issues identified
	• Understands, and able to follow post-op activity guidelines
	• Safe, reliable independent (or plan in place) for orthosis management
	• Safe, reliable independent (or plan in place) for self-care activities
	• Self care equipment needs addressed
	Home & community responsibilities addressed

Psychosocial	• No psychosocial issues identified
Med Management	• No issues identified with medications patient taking pre-hospital

Teaching & Discharge Planning

- ERAS Booklet
  - Patient has booklet at bedside
  - Patient is aware of daily goals and discharge criteria
- Provide teaching re:
  - Incision care - Demonstrate/return demo of dressing change with family/caregiver
  - Dressing/med supplies - Give and review with patient and family/caregiver Post-Operative Spine Incision Care Pamphlet (PHEM catalogue no. FB.723.P67)
  - Pain management– Give and review Pain Control After Surgery (PHEM catalogue no. FM.820.P161) and Opioid Tapering (PHEM catalogue no. EA.836.086) pamphlets
  - Post-op complications
- **X-ray complete and reviewed by Spine Surgeon/Resident**
- **Transportation home arranged for 10:00hrs discharge**

Day of Discharge	
Category	**Expected Outcomes**
Discharge	• **Discharged, accompanied by escort (e.g. spouse, family member)** • **Given discharge prescriptions** • **Given discharge summary** • **Given "Post-operative Spine Incision Care" pamphlet** • **Given follow up information** • **Has all belongings** • **Confirms understanding of when to seek medical attention for complications** • **Arrangements made for staple removal** • **Discharge destination confirmed**

Developed By:

Effective Date:	
Posted Date:	
Last Revised:	
Last Reviewed:	
Approved By:	
	Endorsed By: • Clinical Nurse Educator, Acute Spine Program, VGH **Final Sign Off:**
Owners:	VCH
	Developer Lead(s): • Clinical Nurse Educator, Acute Spine Program, VGH