

# Malignant Hyperthermia

## Person 1- Lead (stay with patient)

1. Discontinue volatile agents and succinylcholine
2. Hyperventilate with 100% oxygen, 10L/min. Ensure airway is maintained
3. Halt Procedure as soon as possible or convert to non-triggering anesthetic
4. Convert all IV fluids to cold NS
5. Administer Dantrolene 2.5mg/kg (1mg/pound) rapidly. More than 10mg/kg (up to 30mg/kg) may be needed
6. Administer Bicarbonate 1-2mEq/kg in absence of blood gases
7. Treat Hyperkalemia

### A) Adults

1. Regular Insulin 10 units IV (in medication fridge)
2. 50%Dextrose give 50 ml IV

### B) Pediatrics

1. Regular Insulin 0.1 units/kg (in medication fridge)
2. 25% Dextrose give 2ml/kg

Check glucose levels hourly

9. Life Threatening Hyperkalemia  
Consider Calcium Chloride 4-10mg/kg

# Malignant Hyperthermia

## Person 2- Assistant to Lead (stay with patient)

1. Assist with preparation of medications
2. Assemble the following
  - Dantrolene
  - Bag of preservative free sterile water
  - 60cc syringe with large bore needle
2. Draw up 60ml of sterile water
3. Inject 60ml sterile water into bottle of Dantrolene
4. Shake bottle until solution is clear
5. Initial dose 2.5mg/kg. Each bottle contains 20mg of Dantrolene
6. For a 70 kg (150lb) patient mix 9 bottles of Dantrolene
7. Act as Recorder- Fill out MH Crisis Management Sheet
  - Include the following:
    - a. Record patient responses/outcomes
    - b. Personnel involved
    - c. Medication given
    - d. Interventions

# Malignant Hyperthermia

## Person 3- Cooling Patient

1. Get Crash Cart
  2. Get ice. Fill 6 bags of ice. Place in armpits, between thighs, around head and over abdomen
  3. Cooling Procedures – if core temp is  $>102.2^{\circ}\text{F}$ 
    - a. Ice packs to groin, axillae and head
    - b. Initiate cooling by lavage of body cavities
  4. Insert NG tube
  5. Insert Foley catheter and monitor output
  6. Get regular insulin from medication refrigerator and glucometer
  7. Monitor Temperature
-

# Malignant Hyperthermia

## Person 4

1. Call 911

Sullivan Address: 507 N. Sullivan Ste 120  
Spokane Valley, WA 99037  
509-922-2273

2. Assist staff- be an extra set of hands

# Sullivan Office – Patient Transport Protocol

## Emergent Transfer

- Call 911
- **Provide Dispatcher:**
  - Liberty Oral Surgery Office Address:
    - 507 N. Sullivan Ste 120  
Spokane, Valley, WA 99037
    - Phone: 509-922-2273
    - Room # patient is in
    - Instruct Emergency Personnel to come to back vestibule door.  
(Assign someone to meet EMS at the door upon arrival)
    - Age of Patient
    - Gender of Patient
    - Status of patient: Procedure type/ symptoms/reason for call
- **Send with Patient:**
  - Copy of Health History/Medication List/Anesthesia Record
  - Copy of Demographics
- EMS personnel will evaluate patient at our office prior to transport
- **Call Valley Hospital ER (509) 473-5177**
  - **Doctor needs to give report to ER physician**

Doctor will need to have in front of him:

- patient chart
- Demographics including name, age, gender
- Current problems & interventions performed by our team
- Send: health history/med list, demographics, anesthesia record with EMS to give to hospital physician

### Non Emergent Transfer:

- Call AMR directly for transport 509-323-8825
- Call Valley Hospital ER 509-473-5177 to notify ER of patient being transferred. Doctor will provide report to ER physician. All non emergent and emergent patients come through the ER. In the ER patient will be assessed & provided a room # to be transferred to for further care. House Supervisor can be contacted with any further questions regarding observation/transfer. House Supervisor (509) 496-4514
- Send patient with: health history/med list, demographics & anesthesia record

# MALIGNANT HYPERTHERMIA CRISIS DATA MANAGEMENT SHEET


(revised 11/05)

Date	OR No.	BP	P	R	T	HT	WT	Allergies
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TIME:	Anes. _____	Induct. _____	Op. Start: _____
	Op Finish: _____	Anes. Finish: _____	

POSITION:	Supine	Sitting	LUD	Litho Rev. Trend	Lateral R.L.	<b>PHYSICAL STATUS</b>
			Kidney R. L.	Prone		

## QUICK GUIDE TO MALIGNANT HYPERTHERMIA CRISIS

<p><b>Signs of MH:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">a. Increased ET<sub>CO</sub><sub>2</sub></td> <td style="width: 33%;">c. Masseter spasm or trismus</td> <td style="width: 33%;">e. Acidosis</td> </tr> <tr> <td>b. Trunk / limb rigidity</td> <td>d. Tachycardia / tachypnea</td> <td>f. Increased temp (late sign)</td> </tr> </table> <ol style="list-style-type: none"> <li>1. Discontinue volatile inhalation anesthetics and succinylcholine</li> <li>2. Hyperventilate with 100% O<sub>2</sub> and maintain airway</li> <li>3. Dantrolene per order—2.5 mg/kg initial bolus rapidly</li> <li>4. Treat respiratory and metabolic acidosis</li> <li>5. Body cooling measures: Cold saline IV, iced body lavage, ice packs</li> <li>6. Treat dysrhythmia – DO NOT USE Ca<sup>+</sup> channel blockers</li> <li>7. Treat hyperkalemia—Hyperventilate, bicarbonate, glucose/insulin, calcium</li> <li>8. Follow ET<sub>CO</sub><sub>2</sub>, electrolytes, blood gases, creatine kinase, core temp, urine output and color, coagulation studies</li> </ol>	a. Increased ET <sub>CO</sub> <sub>2</sub>	c. Masseter spasm or trismus	e. Acidosis	b. Trunk / limb rigidity	d. Tachycardia / tachypnea	f. Increased temp (late sign)	
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## ANESTHETIC TECHNIQUE

General     
  Mac     
  Regional     
  Spinal     
  Epidural

## AIRWAY MANAGEMENT

Pre Oxygenation Circuit   
  Circle   
  NRB   
  Airway   
  Oral   
  Nasal

**Intubation:**   
  Oral   
  Nasal   
  Tube Size \_\_\_\_\_

Stylet   
  Regular   
  Direct   
  Blind   
  Blade \_\_\_\_\_   
  LTA   
  RSI

Cricoid Press   
  Secured @ \_\_\_\_\_ cm

ET<sub>CO</sub><sub>2</sub> Present   
  Breath Sounds   
  Difficult \_\_\_\_\_

Attempts x \_\_\_\_\_ Time \_\_\_\_\_   
  Cuff   
  w/o Cuff

Cuff Leaks @ \_\_\_\_\_ cm H<sub>2</sub>O   
  Lips, Teeth Intact \_\_\_\_\_

Suction Extubated Time

PATIENT SAFETY
Anes. Machine # _____ Checked <input type="checkbox"/> Safety Belt On <input type="checkbox"/> Axillary Roll <input type="checkbox"/> Armboard Restraints <input type="checkbox"/> Arms Tucked <input type="checkbox"/> Pressure Points Checked and Padded <input type="checkbox"/> Eye Care <input type="checkbox"/> Ointment <input type="checkbox"/> Taped <input type="checkbox"/> Pads

MONITORS/EQUIPMENT/PROCEDURES
<input type="checkbox"/> Steth: <input type="checkbox"/> Precord <input type="checkbox"/> Esoph <input type="checkbox"/> Temp Probe _____ Site _____ <input type="checkbox"/> NBP <input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> EEG <input type="checkbox"/> Art. Line _____ <input type="checkbox"/> CVP _____ <input type="checkbox"/> PA Line _____ <input type="checkbox"/> IV (s) _____ <input type="checkbox"/> Cooling Measures Begun _____ <input type="checkbox"/> Cold saline IV <input type="checkbox"/> Hypothermia Blanket _____ °c <input type="checkbox"/> External Ice Packs <input type="checkbox"/> NG/OG Tube# _____ <input type="checkbox"/> Iced Lavage _____ <input type="checkbox"/> Foley # _____ 3 Way <input type="checkbox"/> With Iced Lavage _____

MH Hotline (1-800-644-9737) notified at \_\_\_\_\_  
 Family Notified  Yes  No Name of Family Member \_\_\_\_\_ By Whom \_\_\_\_\_ Time \_\_\_\_\_  
 Crisis Ended \_\_\_\_\_  Successful   
  Unsuccessful  
 Patient Disposition \_\_\_\_\_  Family Hx MH

TIME														TOTALS	
ANESTHETICS	Oxygen _____ (L/min)														
	<input type="checkbox"/> N <sub>2</sub> O <input type="checkbox"/> Air (L/min)														
	_____ %														
DRUGS	DANTROLENE mg														
	Na BICARB meq														
	LASIX mg														
	50% DEXTROSE mL														
	REG INSULIN units														
	HEPARIN units														
	EPINEPHRINE mg														
LIDOCAINE mg															

FLUIDS	_____	220													
	_____	200													
SYMBOLS	∇	180													
	∧	160													
	B/P CUFF PRESSURE	140													
	∇	120													
	△	100													
	ARTERIAL LINE PRESSURE	80													
	X	60													
	ARTERIAL MEAN PRESSURE	40													
	●														
	PULSE														

**REMARKS**

VENT	Tidal Volume	SR														
	Resp Rate	AR														
	Peak Pressure	CR														
	PEEP															
MONITORS	End-Tidal CO <sub>2</sub>															
	O <sub>2</sub> Saturation															
	% O <sub>2</sub> Inspired															
	EKG															
	SVO <sub>2</sub>															
	PAS/PAD															
	CVP															
	CO / CI															
	Urine															
	Temp	<input type="checkbox"/> °C <input type="checkbox"/> °F														
EBL																

LABORATORY	ABG	pH	PCO <sub>2</sub>												
	PO <sub>2</sub>		HCO <sub>2</sub>												
	BE / O <sub>2</sub> Sat														
	H / H / Plat														
	Na / K / Glu / Ca / Mg														
	ACT / PT / PTT														
	CK / Serum / Myoglobin														
	Urine Myoglobin														

Pre-Op Diag \_\_\_\_\_  
 Post-Op Diag \_\_\_\_\_  
 Procedure \_\_\_\_\_  
 Surgeon \_\_\_\_\_  
 RN \_\_\_\_\_  
 CRNA \_\_\_\_\_  
 MDA \_\_\_\_\_  
 Signature of Recorder \_\_\_\_\_

FLUIDS	Total	_____	<b>RECOVERY</b>		To PACU with :	
	_____	_____	Location	Time	<input type="checkbox"/> Invasive monitoring	<input type="checkbox"/> Nasal Oxygen
	_____	_____	B / P	O <sub>2</sub> Sat	<input type="checkbox"/> Awake <input type="checkbox"/> Intubated	<input type="checkbox"/> Mask Oxygen
	_____	_____	P	R	<input type="checkbox"/> Drowsy <input type="checkbox"/> Ventilator	<input type="checkbox"/> T-Piece Oxygen
					<input type="checkbox"/> Stable <input type="checkbox"/> Settings:	<input type="checkbox"/> Oral/Nasal Airway