

# SPINE DEFORMITY SURGERY PATHWAY

## HIGH RISK PRE-OPERATIVE REFERRAL RECOMMENDATIONS

Physician Owner(s): Dr. Brian Hasley

Service Line	Gastroenterology	Cardiology	Pulmonology/ Sleep Medicine	Neurology	Neurosurgery	Orthotics/Prosthetics/ Seating & Mobility/ PT/OT	Child Life/Social Work
<b>Referral indications:</b>	<p>Malnutrition or <u>Aspiration based on any of the following:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> BMI &lt;5<sup>th</sup> percentile or a BMI z-score less than -1 (patient can proceed with surgery once they gain 5-10% of their body or BMI z-score improves to less than -2)</li> <li><input type="checkbox"/> Unintentional weight loss in the last 3 months</li> <li><input type="checkbox"/> MUAC z-score is less than -3 (<i>Accurate height, weight, and MUAC to be taken during each preoperative visit</i>)</li> <li><input type="checkbox"/> Enteral tube fed</li> </ul> <p>Based on the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Observed or reported choking, gagging, or coughing during or after eating orally or via tube</li> <li><input type="checkbox"/> Observed or reported shortness of breath or wheezing (not associated with asthma) present during or after eating orally or via a tube</li> <li><input type="checkbox"/> Hospitalized with aspiration pneumonia in the last 2 years</li> <li><input type="checkbox"/> Abnormal prior deglutition study without resolution</li> </ul> <p><u>GI referral not indicated for obesity</u></p>	<p>Any of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Any patient with known history of a cardiac issue</li> <li><input type="checkbox"/> Known personal history of a condition that has cardiac involvement, including connective tissue disorders or neuromuscular disease</li> <li><input type="checkbox"/> Family history of aortic disease, cardiomyopathy, or sudden death before the age of 40 years</li> <li><input type="checkbox"/> If on anthracycline for chemotherapy (consideration: active treatment vs post therapy; total life dose &gt;75mg/m2)</li> </ul>	<p>All established pulmonology or sleep medicine patients <b>3 to 6 months prior to surgery by primary pulmonologist (obtain recommendations if from OSH).</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> New referral indicated for patients with SMA or Duchenne's. If new referrals unable to be seen within 2 months Dr. Rhoads can help coordinate earlier appt.</li> </ul>	<p>For the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Controlled seizures who have not been seen by neurology within 1 year.</li> <li><input type="checkbox"/> Any patients with questions or concerns regarding seizure medications</li> </ul> <p><b>Uncontrolled seizures:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Neurologist should be notified for all patients with uncontrolled seizures for perioperative recommendations, especially if not seen in last 6 months</li> </ul> <p><b>For patients on Depakote first obtain TEG and EPI platelet function studies:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Normal results, proceed with spinal fusion surgery</li> <li><input type="checkbox"/> Abnormal results, refer to neurology to discuss risk/benefits of stopping prior to surgery</li> </ul> <p><b>Do NOT need evaluation prior to surgery:</b> DMD and other muscular dystrophies, SMA, Rett Syndrome</p>	<p>Any of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Shunt not evaluated in &gt; 1 year or not had imaging within last 12 months</li> <li><input type="checkbox"/> Symptoms of shunt malfunction like, nausea, headache, seizures, or vomiting; obtain head MRI or CT at time of referral.</li> <li><input type="checkbox"/> Myelomeningocele with progressive curve/ large curve to assess for detethering prior to fusion surgery</li> <li><input type="checkbox"/> Fatty filum and low-lying conus</li> <li><input type="checkbox"/> Small syrinx – consider NSGY at minimum</li> <li><input type="checkbox"/> Indwelling baclofen pump – consider letting NSGY know beforehand</li> </ul>	<p>Any of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Call for Halo Consults &amp; Halo Fittings</li> <li><input type="checkbox"/> * Notify if Post-Op TLSO is known to be needed</li> </ul> <p><u>Seating and Mobility Clinic:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> If needing a new custom molded back, parents to contact vendor when surgery is scheduled.</li> <li><input type="checkbox"/> If adjustments needed immediately post-op, parents and/or PT to contact vendor to schedule on POD #3/4</li> <li><input type="checkbox"/> Parents to call vendor for appointment for wheelchair adjustment 2 - 3 weeks post-operatively.</li> </ul> <p><u>PT/OT:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Dependent patients (GMFCS level 4 or 5, sometimes 3) with underlying neuro diagnosis that is progressive (SMA, MD): Arrange custom molded back and cushion prior to surgery, with goal being immediately when surgery is scheduled</li> <li><input type="checkbox"/> Minimal to no assistance patients (GMFCS levels 1, 2, or 3) with myelomeningocele, spina bifida or other neuro disorders though not dependent on caregiver: Arrange for</li> </ul>	<p><u>Child Life:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Offer family Operation Learn through Child life- give handout if interested</li> </ul> <p>Patients are seen by Social Work and at 2-week preoperative visit- once figure out roll of social work</p>

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				without seizure history, Cerebral Palsy without seizure history		pre-operative PT at least 1 month prior to surgery with primary PT or CHMC PT to prepare for changes post-operatively and make modifications to home if needed	
<b>Labs/Tests</b>  *Standard pre-operative labs: CBC, CMP, PTT/PT, UA	Prior to clinic appointment ONLY if labs are being obtained, results should be sent to Children's GI (402-955-5720): <ul style="list-style-type: none"> <li>· Ferritin</li> <li>· Vitamin D (25-hydroxyvitamin D)</li> <li>· Prealbumin</li> <li>· Vitamin C</li> <li>· Zinc</li> </ul>	Coordinate ordering with cardiology: <input type="checkbox"/> Echocardiogram – can use one completed in last 2 years, unless ECG changes or at provider's discretion <input type="checkbox"/> ECG – can use one completed in the last year unless changes or at provider's discretion <input type="checkbox"/> CBC <input type="checkbox"/> PTT/PT	<input type="checkbox"/> PFT's If > 5 years + can complete in last 6-12 months. When done recommend spirometry with MIP/MEP/PCF. <input type="checkbox"/> Sleep study if indicated based on pulmonary or sleep provider evaluation or positive sleep questionnaire prior to evaluation. Especially consider with FVC <50 (even if asymptomatic)	<b>For patients on Depakote:</b> <input type="checkbox"/> Obtain TEG and EPI platelet function studies			<u>Orthopedics:</u> Patient is to have Type & Screen pre-operatively –If don't have antibodies then type and cross on day of surgery, if have antibodies crossed prior to day of surgery to ensure blood availability - Arrange for blood products to be ready before surgery
<b>Imaging</b>		<u>DMD (Duchenne Muscular Dystrophy)</u> * EF > 50% (echo within last 6 months) * EF < 50% (echo within last 3 months)			Indication for rapid brain MRI/CT: <input type="checkbox"/> CP – not indicated <input type="checkbox"/> Myelomeningocele – indicated pre-op. <input type="checkbox"/> Shunted for baseline ventricle size <input type="checkbox"/> Syndromic – case by case <input type="checkbox"/> VNS – do not image <input type="checkbox"/> For the Order – designate "Pre-Op" and the date of surgery		

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					<input type="checkbox"/> Expedited need – include reason on order <input type="checkbox"/> Consider Anesthesia need for MRI's	
<b>Admission unit &amp; pre-op needs</b>	<input type="checkbox"/> Consider MiraLAX or other laxative pre-operatively before day of surgery (parent education)	<u>Cardiac Floor Indications:</u> <input type="checkbox"/> Residual disease – cardiac stepdown <input type="checkbox"/> If Fontan, heart transplant, significant pulmonary HTN, severe ventricular dysfunction – use cardiac floor with cardiology as primary and involve Pulmonary service as needed <input type="checkbox"/> Mechanical cardiac valve – admit for heparin transition per cardiology discretion  <b>*Consideration:</b> ACE inhibitor usage – hold for at least 24 hours preoperatively	<input type="checkbox"/> Address CPAP compliance prior to surgery <input type="checkbox"/> All patients need an airway clearance plan from pulmonology prior to and after surgery <input type="checkbox"/> Pre - Operative admission if deemed necessary by pulmonology			<input type="checkbox"/> Arrange admission with 6MS, PICU. <input type="checkbox"/> Consider long term rehabilitation (Ambassador/Madonna) if anticipated decrease in function from baseline due to anticipated lengthy hospital stay/difficulty with pain tolerance in relation to mobility <input type="checkbox"/> To qualify for Inpatient rehab, requires patient to have significant decline in baseline function and PT/OT recommendation for IPR
<b>Other consideration to surgery</b>		<u>Consider Cardiac Anesthesia if:</u> <input type="checkbox"/> Significant ventricular dysfunction <30% EF based on most recent echocardiogram <input type="checkbox"/> Severe aortic stenosis or pre-reviewed severe valvular pathology <input type="checkbox"/> Any single ventricle physiology (includes Fontan) <input type="checkbox"/> Pulmonary hypertension >2/3 of systemic pressure			Combined Neurosurgery Cases <input type="checkbox"/> Spinal Stenosis - Intra Dural <input type="checkbox"/> Possibly Vertebroctomy with high risk of dural tear <input type="checkbox"/> Myelo with tether/need cord divided <input type="checkbox"/> With Myelomeningocele: consider resection of cord if placing MAGEC rods. <input type="checkbox"/> Consider notifying Plastic Surgery for	Parental Information <input type="checkbox"/> Bring wheelchair + orthotics to hospital <input type="checkbox"/> Make post-op appointment with wheelchair vendor prior to the surgery <input type="checkbox"/> No bending/twisting after surgery – so plan for daily routine & challenges <input type="checkbox"/> Caregiver present for transfer training

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		<input type="checkbox"/> Heart transplant <1 year out  <input type="checkbox"/> All patients with LVEF < 35% -consult cardiology for risk vs benefit discussion and preoperative plan)			closure and close monitoring. <input type="checkbox"/> Consider notifying neurosurgery if any surgery is around the Dura (such as Myelomeningocele)		
<b>Pre-plan for Hospitalist</b>		Patient will be admitted to orthopedics, and hospitalists will be consulted for co-management on all patients.					

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