Dear Dr.

I had the pleasure of seeing your patient

**Past medical/surgical history**

Immunizations reviewed and current

Chronic medical problems:

Hospitalizations:

Surgeries:

ER visits: none.

Previous cardiology visits:

No history of "Kawasaki Disease", Rheumatic Fever, previous abnormal ECGs, a heart murmur, or an unexplained seizure disorder. No FTT.

Medications: Medication history: NKDA.

Current Medications: (reviewed and reconciled):

**Personal history**

Social history reviewed:

Deployment issues:

Secondhand cigarette smoke exposure:

**Family history**

Congenital heart disease: none.

Sudden death: none.

Early cardiac death: none.

Fainters: none.

Parental Hyperlipidemia: none.

Parental Hypertension: none.

Arrhythmias: none.

Cardiac genetic syndromes: none.

**Review of systems**

11 systems reviewed and negative except as noted.

**Physical findings**

Vital signs reviewed.

GEN: awake, alert, no acute distress.

EYES: Sclera clear. PERRL.

HEAD and ENT: Atraumatic, normocephalic. Mucus membranes moist.

NECK: no JVD. Supple without adenopathy.

CHEST: Normal chest without pectus excavatum or carinatum. Equal breath sounds bilaterally without wheeze, rhonchi or rale. No increased work of breathing.

CV: Normally active precordium without heave or thrill. Normal S1. Normally split S2. Normal P2 intensity. No S3 or S4. No clicks, rubs or gallops. Normal carotid pulses. No abdominal aortic bruits. The right radial pulse and the femoral pulses are 2+/4 without delay. Murmurs: none.

ABD: soft, nontender, nondistended. Normal bowel sounds. No hepatosplenomegaly.

EXT: warm, well perfused. No clubbing, cyanosis or edema.

NEURO: grossly normal.

**ECG:**

Normal sinus rhythm

Normal ECG.

Ventricular rate =

PR interval =

QTc =

QRS axis =

**ECHOCARDIOGRAM:** Complete report is archived in AHLTA Clinical Notes.

Structurally normal heart with normal biventricular function.

**Assessment:**

**Discussion and Plan:**

1. SBE prophylaxis is not required per AHA guidelines.
2. No activity restrictions.
3. No cardiac medications.
4. No follow up needed.
5. Business card provided. Call Peds Specialties for any concerns or questions regarding today’s visit.
6. Routine well child care by PCM.

Instructions for patient understood by caregiver/patient. No barriers to learning identified.

Thank you for this interesting consult. Please do not hesitate to contact me if I can be of further service.

Respectfully,

Tracy M. Alderson, MD

LtCol, USAF, MC

Chief, Pediatric Cardiology

Naval Medical Center Portsmouth

**Innocent Murmurs**

* Innocent heart murmurs are sounds made by the blood circulating through the heart’s chambers and valves or through blood vessels near the heart. They’re sometimes called other names such as “functional” or “physiologic” murmurs.
* Innocent murmurs are common in children and are quite harmless. In any group of children, a large percentage is likely to have had one at some time.
* Innocent murmurs also may disappear and then reappear. Most innocent murmurs disappear when a child reaches adulthood, but some adults still have them. When a child’s heart rate changes, such as during excitement or fear, the innocent murmurs may become louder or softer. This still doesn’t mean that the murmur is abnormal.
* There is no need for a cardiac reevaluation unless the patient or doctor has more questions. The child doesn’t need medication, won’t have cardiac symptoms, and doesn’t have a heart problem or heart disease. A parent doesn’t need to pamper the child or restrict his or her diet or activities. The child can be as active as any other normal, healthy child.

**Infant Muscular VSD**

Small defect such as this is relatively benign with the potential for spontaneous closure. Normal growth and development can be expected.

Over 55% of all small muscular defects close spontaneously, most by age 12 months. Spontaneous closure has been noted in up to 10% of lesions between the ages of 17 and 45 years of age. Infants with small VSDs, such as this, warrant infrequent follow-up to document spontaneous closure (the patient can then be discharged from cardiology) or for the low risk of late complications, such as bacterial endocarditis or subpulmonic stenosis (from the development of Double Chambered Right Ventricle).

Lifetime risk of bacterial endocarditis, if this VSD fails to spontaneously close, is estimated at 10-15%. However, SBE prophylaxis has not been found to be an effective prevention for infective endocarditis in this lesion. AHA guidelines do not recommend SBE prophylaxis, but high risk behavior should be avoided including IV drug use, tattoos and exotic piercings. Regular dental care and good dental hygiene are highly recommended. An index of suspicion for SBE should be present in any instance of fever without a source.

**Bicuspid Aortic Valves**

Bicuspid aortic valves are prone to endocarditis, but SBE prophylaxis has not been found to be an effective prevention. AHA guidelines do not recommend SBE prophylaxis, but high risk behavior should be avoided including: IV drug use, tattoos and exotic piercings. Semi-annual dental cleanings are highly recommended and pristine dental hygiene is imperative. An index of suspicion for SBE should be present in any instance of fever without a source.

Although many bicuspid aortic valves eventually become stenotic or regurgitant, this is not universal.

There is an association between bicuspid aortic valves and dilated aortic roots with progression occurring in some patients. Rare instances of rupture have occurred in adult patients, rupture has not been observed in children. Power-lifting and high stress isometric exercises have been thought to hasten the progression of aortic root dilatation, but there is no literature supporting this association.

There is an association of early coronary artery disease with bicuspid aortic valves. A healthy lifestyle including a lowfat diet and aerobic exercise should be encouraged. Routine lipid screening is recommended.

There is an increased incidence of congenital heart disease in siblings and children of patients with bicuspid aortic valve of approximately 3-5% above the baseline population risk of 1%.

Females with bicuspid aortic valve should be tested for Turner’s Syndrome due to the high association between TS and bicuspid aortic valves.

Follow up is recommended lifelong.

**Precordial Catch Syndrome**

* Precordial Catch Syndrome (PCS), also known as Texidor’s twinge, is a common cause of chest pain complaints in children and adolescents. PCS manifests itself as a very intense, sharp pain, typically at the left side of the chest which is worse when taking breaths. This typically lasts 30 seconds to 3 minutes and then is resolved as quickly as it began.
* The frequency of episodes varies by patient, sometimes occurring daily (or even multiple episodes each day). This is believed to be localiezed cramping of certain muscle groups in the locality.
* Although deep inhalation during a PCS attack with likely cause a brief increase in pain, many have found that forcing themselves to breathe as deeply as possible will result in a “popping” or “ripping” sensation which quickly and completely resolves the PCS episode.
* It is speculated that it could be caused by the pinching of a nerve and may be due to spasm of intercostals muscle fibers.
* PCS is a benign form of musculoskeletal chest pain and does not require further cardiology follow up. If the patient develops a change in symptoms such that new chest pain occurs during exertion, especially if crushing in quality—this requires further cardiology follow up. Re-referral to cardiology is recommended in this instance.

**Syncope**

This type of syncope affects young, healthy people who have no history of heart disease or neurological problems. It is generally thought to result from a "miscommunication" between the brain and the heart or an exaggeration of a normal reflex.

Triggers include prolonged standing or upright sitting, any painful or unpleasant stimuli, prolonged exposure to heat, sudden onset of extreme emotions, hunger, nausea or vomiting, dehydration, urination, or defecation.

The individual frequently experiences a prodrome of symptoms such as lightheadedness, nausea, sweating, tinnitus, uncomfortable feeling in the heart, weakness and visual disturbances such as lights seeming too bright, fuzzy or tunnel vision.

Treatment focuses on avoidance of triggers, recognizing the prodrome, restoring blood flow to the brain during an impending episode, and measures that interrupt or prevent the pathophysiologic mechanism

If a prodrome is felt, the patient should lie down and raise their legs; or at least lower their head to increase blood flow to the brain.

Increase consumption of salt and fluids to increase blood volume. Sports and energy drinks may be particularly helpful. A good measure of adequate hydration is achieving 5 dilute urinations daily.

Avoid caffeine

1. SBE prophylaxis is not required
2. No activity restrictions
3. No cardiac medications
4. Drink >/= 64 oz noncaffeinated beverages daily and increase salt intake
5. Sit or lie down upon recognizing prodrome.
6. No follow up is necessary unless syncope persists, or occurs during exertion in the absence of a prodrome.
7. Business card provided. Call Peds Specialties for any concerns or questions regarding today’s visit.
8. Contact the primary care office for any new concerning symptoms such as exertional chest pain, syncope, or palpitations. A new consult to cardiology may be necessary.

**Pallid breath holding spells**

In pallid breath holding spells, the most common stimulus is a painful event. The child turns pale and loses consciousness with little if any crying. There is no post ictal phase, nor incontinence. The child is usually alert within a minute or so. There may be some relationship with adulthood syncope in children with this type of spell.

The most important approach is to reassure the family, because witnessing a breath-holding spell is a frightening experience for observers. There is no definitive treatment available or needed for breath holding spells, as the child will eventually outgrow them.

Some trials have demonstrated the efficacy of iron therapy, especially because although BHS can readily occur without anemia, BHS has been found to be exaggerated by the presence of anemia. However, a pharmacological agent is not necessary, although it may be desirable for the comfort of the parent and child.

**Cardiac Tumors**

The most common primary cardiac tumor is the rhabdomyoma, constituting 50-78% of such tumors. These tumors are well circumscribed, lobulated, and appear rather homogenous in texture. They are multiple in 75-90% of cases and have a marked predilection for the ventricles, the left ventricle greater than the right, but are also found in the atria. Most often these tumors are intramural, usually involving the interventricular septum. Importantly, rhabdomyomas regress in size, or completely disappear, in more than half of cases. About 78-90% of patients with rabdomyomas have tuberous sclerosis. If a tumor noted at birth is single, it is likely to be a rhadbdomyoma is 20-25% of cases.

Cardiac fibromas are predominantly single tumors involving the left or right ventricular free walls. They rarely involve the septum, bulging into the right and left ventricular cavities. In contrast to rhabdomyomas, these tumors are not known to regress in size or resolve completely. For either rhabdomyomas or fibromas, decisions regarding surgical intervention is indicated with life-threatening hemodynamic compromise such as those causing inflow or outflow obstruction, or impedance of coronary flow. Surgery is not generally indicated when the fibroma is small and not associated with ventricular dysrhythmias. However, fibromas have been reported to enlarge over time, and close follow-up is essential.

**Repaired Coarctation**

-SBE prophylaxis has not been found to be an effective prevention for endocarditis in this setting. AHA guidelines do not recommend SBE prophylaxis, but high risk behavior should be avoided including: IV drug use, tattoos and exotic piercings. Semi-annual dental cleanings are highly recommended and pristine dental hygiene is imperative. An index of suspicion for SBE should be present in any instance of fever without a source.

-Lifelong cardiology follow-up is recommended for all patients with repaired aortic coarctation with at least yearly follow up.

-Even if the coarctation repair appears to be satisfactory, thoracic aortic imaging with cardiac MRI or CT angiography should be performed to assess for recoarctation, aortic dilatation or aneurysm formation in adolescence or early adulthood.

-Patients should be observed closely for the appearance of resting or exercise induced systemic arterial hypertension, which should be treated aggressively after recoarctation is excluded.

-Graded exercise testing should be considered at the onset of adolescence, prior to providing clearance for competitive athletics.

-There is an increased incidence of congenital heart disease in siblings and children of patients with congenital heart disease of approximately 3-5% above the baseline population risk of 1%.

**Kawasaki Disease**

Diagnostic Criteria for KD:

Fever for >/= 5 days (usually > 102)

At least 4 of 5 features

Bilateral conjunctival injection (bulbar, non-purulent)

Cervical adenitis (unilateral, >/= 1.5cm diameter, non-fluctuant)

Rash (truncal, perineal accentuation, polymorphous but non-vesicular)

Inflamed oral mucosae (fissured lips, strawberry tongue)

Hands and feet inflammation (periungual peeling around 14-21 days)

No alternate diagnosis

Fever plus 3/5 criteria are diagnostic when coronary abnormalities are present

**-Of these criteria, this patient has:**

Supplemental Criteria for KD include:

Albumin </= 3.0 gm/dL

Anemia for age

Elevated ALT

Platelets >/= 450,000/mm3 after day 7

WBC >/= 15,000/mm3

Pyuria (>/= 10 WBC/HPF)

**-Of these supplemental criteria, this patient has:**

Plan

Acute phase: IVGG 2 gm/kg plus ASA 80-100mg/kg/day until afebrile for 72 hours.

-Practices regarding the duration of high-dose aspirin administration vary across institutions, and many centers reduce the aspirin dose after the child has been afebrile for 48 to 72 hours. Other clinicians continue high dose aspirin until day 14 of illness and >/= 48 to 72 hours after fever cessation. My preference is to stop the high dose aspirin when the child has been afebrile for 72 hours.

-When high-dose aspirin is discontinued, begin low-dose aspirin (3 to 5 mg/kg per day) and maintain it until the patient shows no evidence of coronary changes by 6 to 8 weeks after the onset of illness- cardiology will make this determination as an outpatient.

Of note, the concomitant use of ibuprofen antagonizes the irreversible platelet inhibition that is induced by aspirin. It is recommended that ibuprofen should be avoided in children with coronary aneurysms taking aspirin for its antiplatelet effects. Also note that Pepto-Bismal contains salicylate and should be avoided while he is on aspirin therapy.

Even when treated with high-dose IVIG regimens within the first 10 days of illness, about 5% of children with Kawasaki disease develop at the least transient coronary artery dilation and 1% develops giant aneurysms.

Refractory KD is defined as persistent or recrudescent fever >/= 36 hours after completion of the initial IVIG infusion. If this happens, repeat a CBC, CMP, BNP, CRP and ESR, repeat 2gm/kg IVIG and contact cardiology in the morning for a repeat echocardiogram and further recommendations. When discharged, he should be instructed to contact cardiology if he has a fever within a week of discharge: 953-4077 (duty hours), page 988-9536 after hours.

Reye syndrome is a risk in children who take salicylates while they are experiencing active infection with varicella or influenza, and has been reported in patients taking high-dose aspirin for a prolonged period after Kawasaki disease. It is unclear whether the low-dose therapy used for antiplatelet effect increases the risk of Reye syndrome. Influenza vaccination and Varicella vaccination should be verified. The parents should be instructed to contact their child’s physician promptly if he develops symptoms of or is exposed to either influenza or varicella.

Measles and varicella immunizations should be deferred for 11 months after a child receives high-dose IVIG. A child in whom the risk of exposure to measles is high, however, may be vaccinated earlier and then be reimmunized approximately 11 months after IVIG administration if the child has an inadequate serological response.

KD is a panvasculitis that will increase the patient’s lifetime risk of developing hypertension and early coronary artery disease above the baseline population. This patient will need to be screened for hyperlipidemia after this illness subsides and regularly per AHA guidelines. A heart healthy diet should be encouraged.

SBE prophylaxis is not indicated.

Restricted from exercise/ sports until cleared by cardiology

Cardiology will follow along as an inpatient.

Although vaccine manufacturers recommend that salicylates be avoided for 6 weeks after the administration of varicella vaccine, physicians need to weigh the theoretical risks associated with varicella vaccine against the known risks of wild-type varicella in children receiving long-term salicylate therapy.

**Infant SVT Plan**

Parents will check heart rate by palpation before each feeding and if patient looks ill, isn't eating well, is irritable or inconsolable. If the heart rate is too fast to count, or over 220bpm, but the baby looks well, they will calmly place the infant in the carseat, and calmly proceed to the ER. Once at the ER, if the child remains in tachycardia, they should have the child evaluated and ensure that the ER contacts the cardiologist on call. If the child is no longer in tachycardia and is still acting normally, they may return home and contact me so that we may adjust his medications. If the child appears ill (lethargic, irritable, inconsolable) and is in tachycardia, they should call 911.

We discussed side effects of propranolol including slow heart rate and hypoglycemia- unlikely to occur now at a stable dose. Illnesses associated with decreased PO intake, may precipitate hypoglycemia, and the infant should be seen and possibly admitted if having persistant vomiting or poor PO intake. We discussed the importance of verifying the concentration of propranolol when they pick it up from the pharmacy (20mg/5mL) to ensure there is no accidental overdose.