

# Cardiovascular case study: atrial septal defect

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Atrial Septal Defect(ASD) is a very large problem concerning the heart in its overall function. When the heart, being the core of the cardiovascular system, has issues; it effects the rest of the body as a result. The core of the problem resides in the atrial septum. Normally the heart is divided into four separate chambers. But a person with atrial septal defect has an atrial septum that allows the blood from the left side of the heart back into the right side. This results in increased pulmonary blood flow and diastolic overload of the right ventricle.

By having this constant left-to-right shunt, it can alter the pulmonary vascular resistance leading to hypertension or even the reversal of the shunt itself. There are three types of Atrial Septal Defects: ostium secundum, ostium primum, and sinus venosus. The opening of the atrial septum may be small, on the count of the foramen ovale failing to close; or large, when the septum is completely absent from the heart itself. There is a very logical explanation between Ryans inability to gain weight, as well as not taking an interest in food during meals.

His body isn't able to grow normally because the exchange of nutrients and waste products in his body is completely deficient. He isn't absorbing the adequate amount of nutrients that his body needs. Him being 11-months old, this causes a huge problem because nutrition is extremely important. His heart is working less efficiently, which makes the blood traveling throughout his body subsequently deficient as well. All of the systems in Ryans body are going to be affected by his diagnosis of Atrial Septal Defect. Ryans growth and development is not appropriate for his age.

Ryan was born weighing 7lbs, and now, 11 months later he is 15.4 lbs. He is close to being a 1 year old, and his birth weight should be a little less than triple the amount that he was at birth. Ryan should be approximately 21 lbs at his current age, leaving about a 5-6 lb deficit. Ryan's parents stated that he doesn't crawl or attempt to stand because of the fact that he gets out of breath easily. This is being caused by the Atrial Septal Defect. All he can do is sit unsupported, which he should have been able to do at 8 months.

At 11 months old, Ryan should be able to stand upright holding onto an adult's hand, as well as feed himself finger foods and drink from a sippy cup. He should be able to pull himself up to a standing position as well. Also, sleeping after eating is just an indication of how much energy it is for him to complete a meal, which is making him uninterested in food overall. Again, all of these factors seem to be affected by his current diagnosis. Ryan is currently on Digoxin 200 micrograms and Furosemide 10 mg q day.

He is prescribed Digoxin because this medication increases overall cardiac output as well as slowing the heart rate. This is good for Ryan, because at this point he is not receiving the appropriate amount of output needed for his growth and development. Furosemide is a diuretic that treats fluid retention as well as hypertension. This is important because when there is a defect with the heart, pulmonary issues may occur when fluid retention begins. Also, Ryan is currently predisposed to hypertension because of his condition. Ryan's current Potassium level was at a 2.9 mmol/L.

Adequate levels of Potassium compared to his age should be at 3.3-4.7 mmol/L. Too little Potassium affects the heart's frequency as well as contractions. His Digoxin levels were tested to see if the medication was

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becoming toxic. He was at a 2.6 ng/ml which is in the upper limits, but not enough to be considered toxic. Here are some examples of nursing diagnosis' that patients like Ryan would have: Risk for deficient fluid volume related to preoperative diarrhea. Impaired nutrition; less than body requirements. Decreased cardiac output related to pre-existing compromise in cardiac function.

Fatigue related to decreased cardiac output. Nursing Diagnosis' for Ryan Post Operative would be: Risk for infection related to surgical incision. Acute pain related to post operative surgery. Impaired verbal communication related to age. Risk for aspiration related to immobility. Teaching is such a vital component in ensuring that all patients are fully aware of their medical condition. Ryan, being an 11 month old, the teaching must go to his parents. They will need to be supplied information about Atrial Septal Defect, surgeries involved, and the prognosis when completed.

They will need specific information about the medications that Ryan is going to be on. They will need to be aware of the medications actions, side effects, and possible signs of toxicity/allergies. If Ryan were to have surgery, they would need to be taught how to care for the incision properly to avoid infection. They will need to know the signs and symptoms of infection. Last, they will need to ensure that they are constantly promoting proper growth and development with Ryan, so a daily plan must be made. That includes activities, diet, etc.