Pre-natal Circulation

Oxygenated/deoxygenated blood comes from the placenta and travels to the heart through the ________________ and mixes with oxygenated/deoxygenated blood returning from the _________________. Blood then enters the ________________ of the heart.

Because the fetal lungs are not functional, most blood will bypass the ________________, and be shunted to the ________________ via the _________________. This is due to pressure in the right atrium being higher/lower than pressure in the left atrium. Blood will then travel into the ________________ and be pumped out through the ________________ for systemic/pulmonary circulation.

Some blood will enter the ________________ from the right atrium and proceed into the _________________. However, most of this blood will be shunted away from the ________________ and into the ________________ via the _________________.

Post-Natal Circulation

Changes due to increased/decreased alveolar pressure in the lungs lead to anatomical and physiological alterations in the circulatory system.

With the first breath, increased alveolar O2 pressure causes ________________ in the pulmonary vessels. Within 10-15 hours after birth (but can be up to 72 hours), the ________________ constricts, becoming the ________________.

Decreased/Increased left atrial pressure and decreased/increased right atrial pressure cause the ________________ to close. Because of this closure, blood will now flow from the ________________ to the ________________.
**Pre-natal Circulation**

*Oxygenated/deoxygenated* blood comes from the placenta and travels to the heart through the inferior vena cava and mixes with *oxygenated/deoxygenated* blood returning from the **superior vena cava**. Blood then enters the **right atrium** of the heart.

Because the fetal lungs are not functional, most blood will bypass the **pulmonary trunk**, and be shunted to the **left atrium** via the **foramen ovale**. This is due to pressure in the right atrium being *higher/lower* than pressure in the left atrium. Blood will then travel into the **left ventricle** and be pumped out through the **aorta** for **systemic/pulmonary** circulation.

Some blood will enter the **right ventricle** from the right atrium and proceed into the **pulmonary trunk**. However, most of this blood will be shunted away from the **pulmonary circulation** and into the **aorta** via the **ductus arteriosus**.

**Post-Natal Circulation**

Changes due to *increased/decreased* alveolar pressure in the lungs lead to anatomical and physiological alterations in the circulatory system. With the first breath, increased alveolar O2 pressure causes **vasodilation** in the pulmonary vessels. Within 10-15 hours after birth (but can be up to 72 hours), the **ductus arteriosus** constricts and becomes the **ligamentum arteriosum**.

*Decreased/Increased* left atrial pressure and *decreased/increased* right atrial pressure cause the **foramen ovale** to close. Because of this closure, blood will now flow from the **right atrium** to the **right ventricle**.


Sampson, J (2010, March 5). *Pediatric Cardiac Nursing*. *Pediatric Nursing*. Lecture conducted from CSU Sacramento, Sacramento.