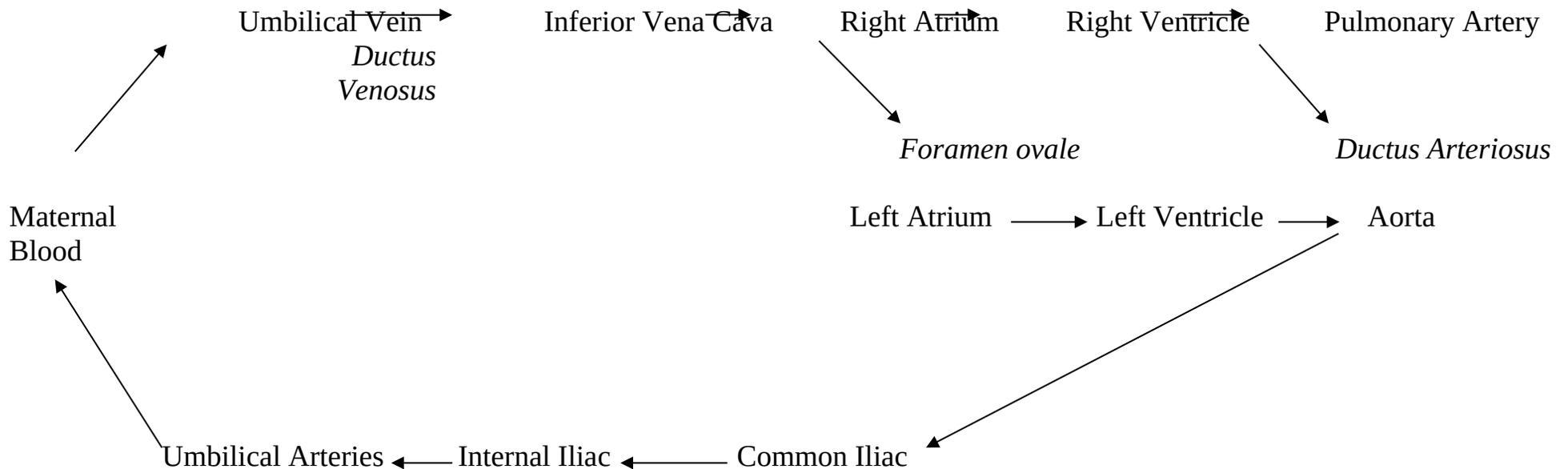


Fetal Circulation



Fetal Lungs: filled with fetal lung fluid, not used to oxygenate blood. Alveoli are filled with fluid so most of the arteries and arterioles are surrounded by liquid = increases resistance to blood flow through the vessels. Blood then bypasses the lungs.

Umbilical vein: Delivers oxygenated blood from the placenta to the fetus. Enters the portal venous system, empties most of blood through *ductus venosus* that connects with the inferior vena cava.

Foramen Ovale: connects the right and left atrium. Shunts blood right to left to bypass the lungs. Closes shortly after birth

Ductus Arteriosus: Connects the main pulmonary artery to the aorta. Blood bypasses the lungs. Functionally closes within 15 hours and structurally within a few weeks.

Changes at Birth:

Lungs fill with air instead of fluid.

Higher oxygen levels in the blood and alveoli = vascular resistance decreases = greater pulmonary blood flow.

Placenta is removed from circulation

Cord is clamped = umbilical vein closes, systemic vascular resistance is increased = ductus venosus closes

Increased blood flow and pressure in left atrium forces the foramen ovale to close

Right atrium pressure decreases because of decreased pulmonary resistance