Blood leaves the left ventricular outflow tract (LVOT) as a cylinder (aorta shown in red). The volume of the cylinder is equal to the stroke volume (SV). In order to calculate SV, the echocardiographer must obtain the diameter of the LVOT and velocity time integral (VTI) of the blood measured at the same exact location.

SV = LVOT(area) x LVOT(VTI)

Ao = Aorta, LV = Left ventricle, RV = Right ventricle, LA = Left atrium