MEASURING CARDIAC OUTPUT

**CALCULATE LVOT AREA**
1. Parasternal Long Axis View
2. Zoom into LVOT
3. Measure LVOT Diameter in cm
4. Calculate LVOT Area using Area of a Circle Formula

\[
\text{LVOT Area} = \pi \left( \frac{\text{cm}}{2} \right)^2
\]

**CALCULATE LVOT VTI**
1. Apical 5 Chamber View
2. Place Pulse Wave Doppler Gate at LVOT
3. Activate PW Doppler
4. Trace around Ejection Wave
5. Record VTI in cm

**CALCULATE CARDIAC OUTPUT**

\[
\text{SV} = \text{LVOT Area} \times \text{LVOT VTI}
\]

\[
\text{CO} = (\text{LVOT Area} \times \text{LVOT VTI}) \times \text{HR}
\]

\[
\text{CO (mL/min)} = \text{SV (mL/cycle)} \times \text{HR (bpm)}
\]