



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIO PULMONARY PERFUSION CARE
TECHNOLOGY

COURSE NAME : PRINCIPLES OF PERFUSION PART 1

2ND YEAR

TOPIC : CARDIOPLEGIA CANNULA



Cardioplegia Cannula



The Cardioplegia Cannulas are used to deliver cardioplegic solution to the entire myocardium of heart which results in Asystole.



Types of Cardioplegia Cannula :



1. Retrograde Cardioplegia
2. Antegrade Cardioplegia
 - A. Aortic Root Cannula
 - B. Coronary Perfusion Cannula

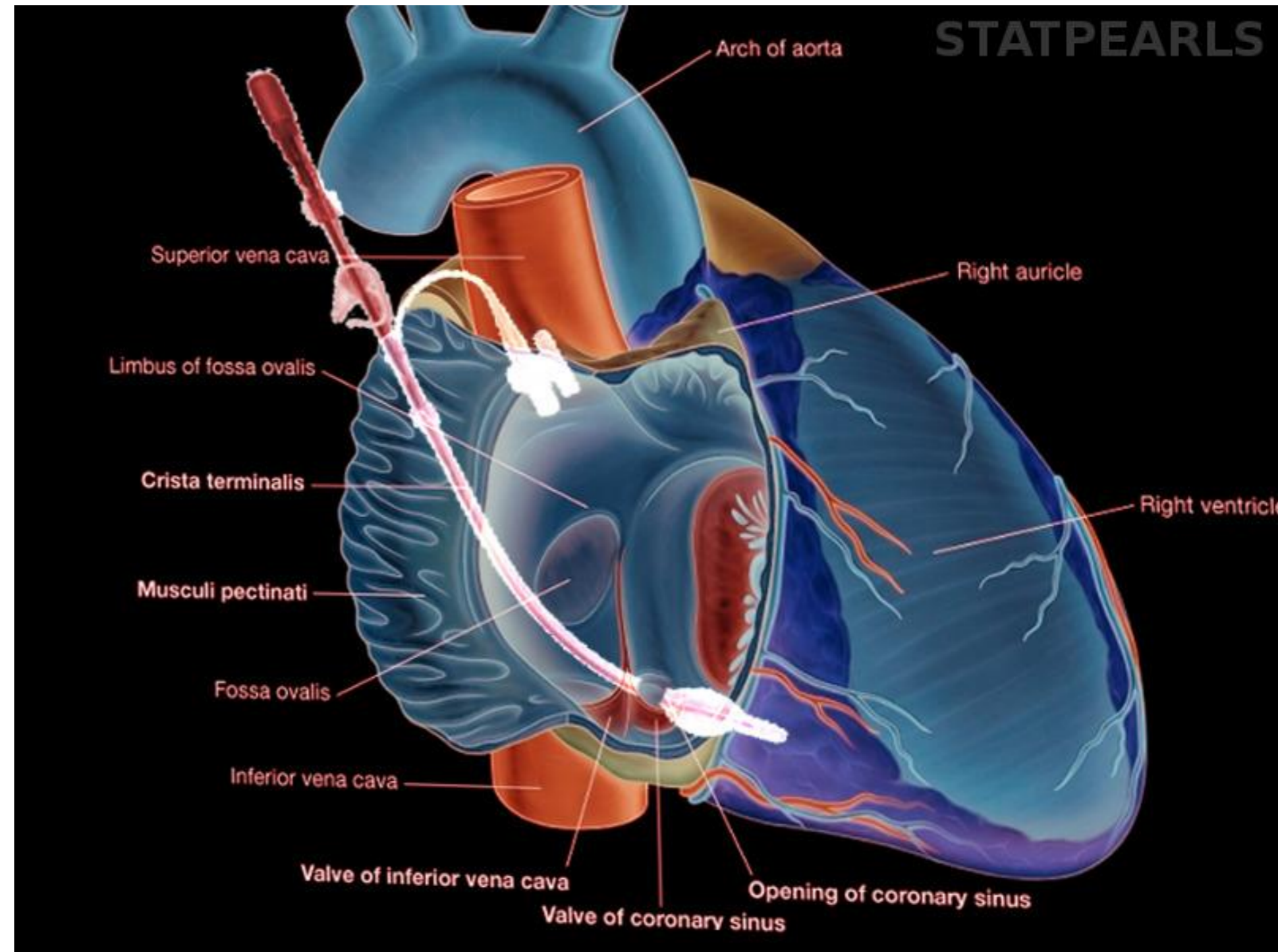


Retrograde Cardioplegia



1. Retrograde cardioplegia is the most common technique of giving cardioplegia to the heart via the **coronary sinus** in the **reverse direction of normal blood flow** (retrograde perfusion).

- The cannula is placed into the **coronary sinus** **through the right atrium**.





Retrograde Cardioplegia (cont)

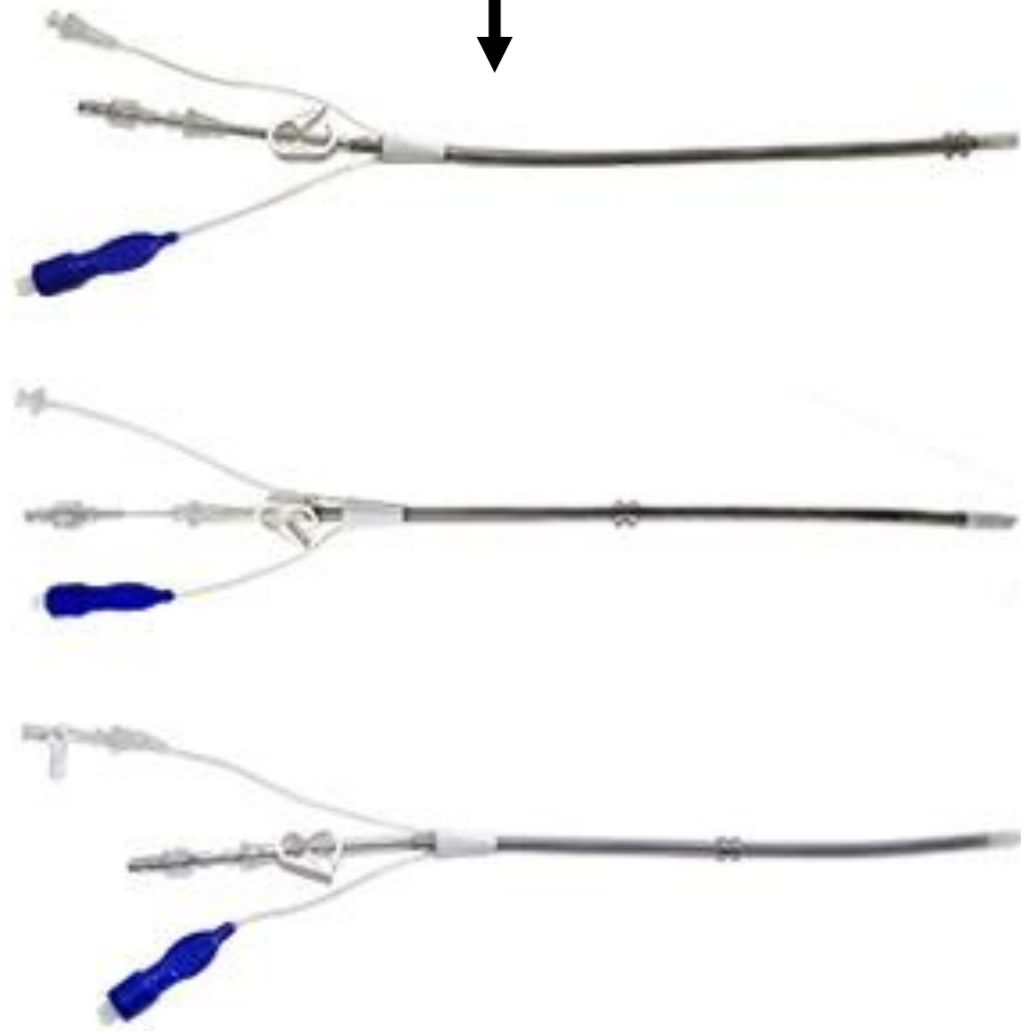


- The cannula has a **balloon near its tip** that when inflated **prevents the flow of the cardioplegia back into the right atrium**
- The cannulae are of two basic types: either **automatic**, or **manual** balloon inflation it require inflate the cuff using an included syringe before delivering cardioplegia.



Types

1. Self Inflating Balloon Cannula →
2. Manual inflating Balloon Cannula ↓





- Retrograde cannula have multi – lumen with soft – tip and soft pressure balloon (smooth or textured)

Available by manufacturers

- Size of cannula : e.g. : 9 Fr, 12 Fr, 14 Fr, 15 Fr.
- Balloons size : e.g. : 14mm, 18mm & 20mm.
- Automatically inflates manually inflating





Antegrade Cardioplegia



2. **Antegrade cardioplegia** cannulae are designed to deliver cardioplegia solution in the **aortic root or directly** into the **coronary ostia** in the **normal direction of blood flow** (antegrade perfusion).

TYPES

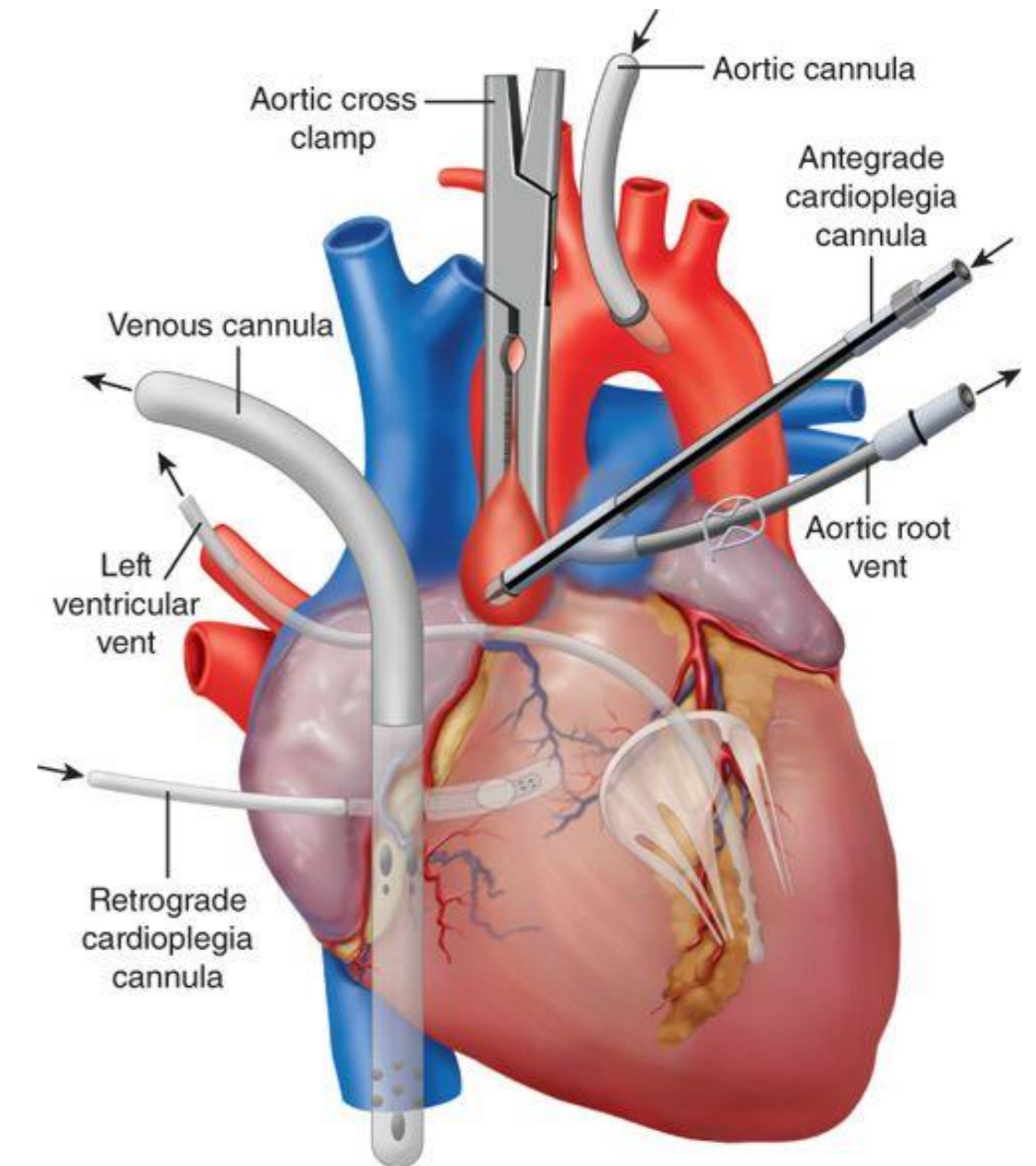
- A. Aortic Root Cannula
- B. Coronary Perfusion Cannula



Aortic root cannula

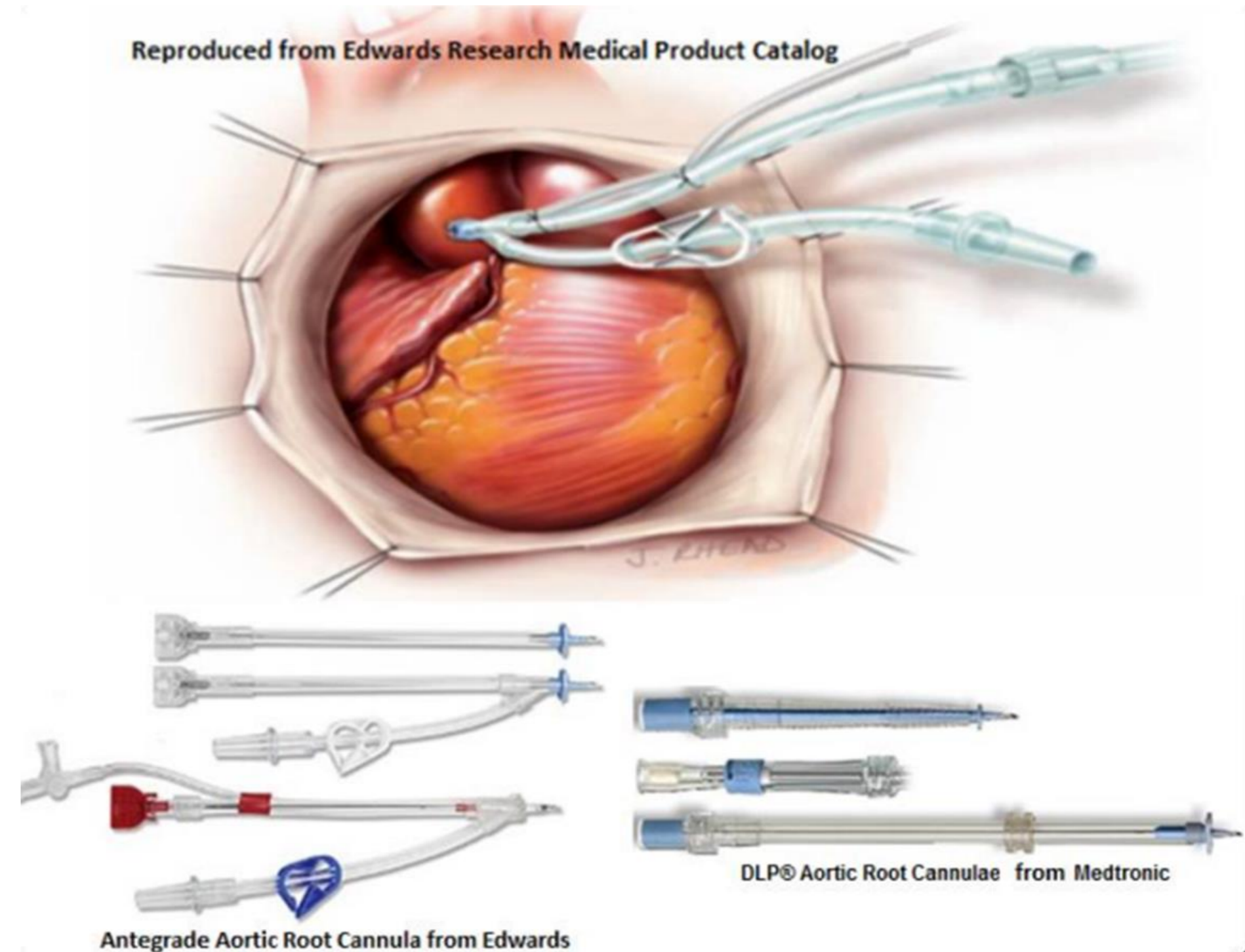
A. Aortic root cannula used to infuse cardioplegia directly into the **aortic root** near the **aortic valve**.

- It has a **short needle tip** that is placed into the aorta.



Aortic root cannula (cont)

- The aortic valve and the aortic cross clamp **prevent flow in either direction** and thus force the cardioplegia into the coronary arteries.
- These cannula come in various sizes and with various lengths, **with or without a vent line** to accommodate various techniques.





Aortic root cannula (cont)



- The antegrade cardioplegia cannulae are used to either infuse cardioplegia solutions into the aortic root or to aspirate air from the aorta.
- That have flanged collar provides a predetermined insertion depth as well as a means of securing the cannula

Available by manufacturers

- Size of cannula: e.g. 4 Fr, 4.5Fr, 6 Fr ,7 Fr, 8 Fr, 9 Fr .
- lengths of cannula: e.g. 2.5 inch ,5.5 inch , and 12.5 inch
- with or without a vent line.





Coronary perfusion cannula



B. Coronary perfusion cannula is placed in the **coronary ostia**, when need to give cardioplegia directly into the coronary ostia, these cannula come in various sizes and in different configurations.

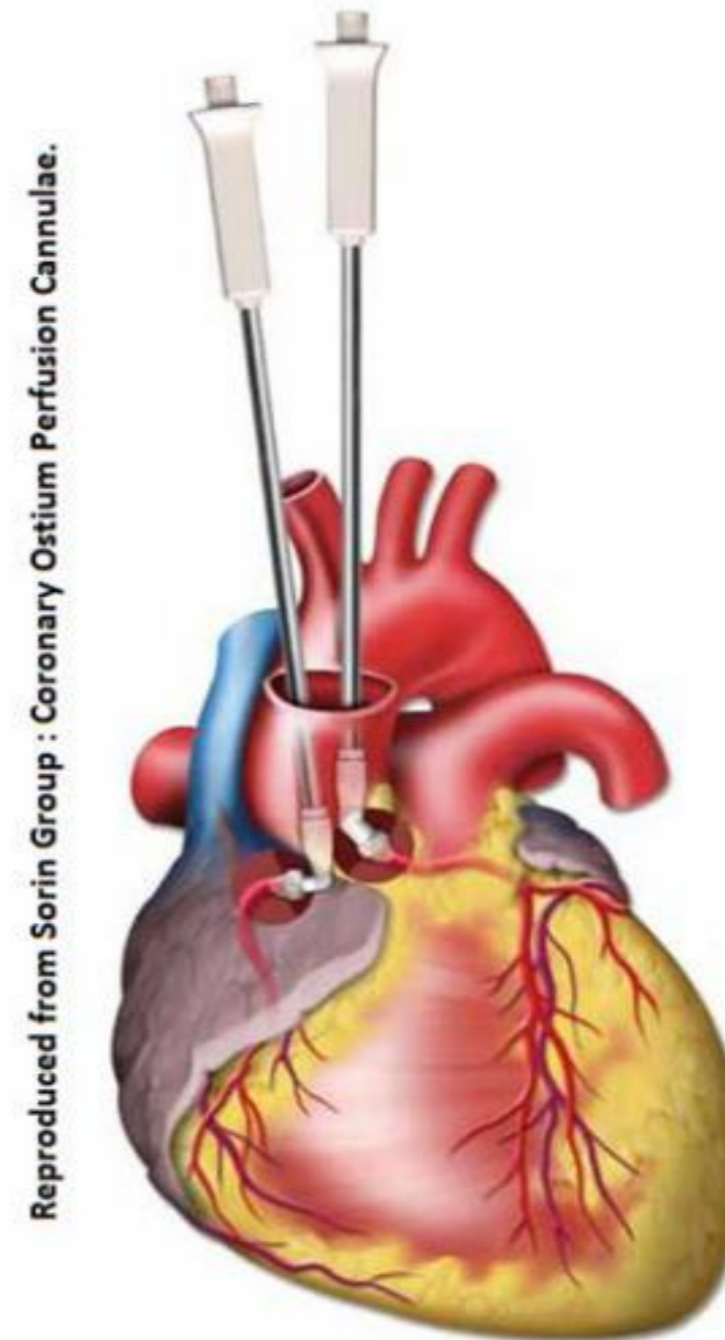
- There are two common design of coronary perfusion cannula:



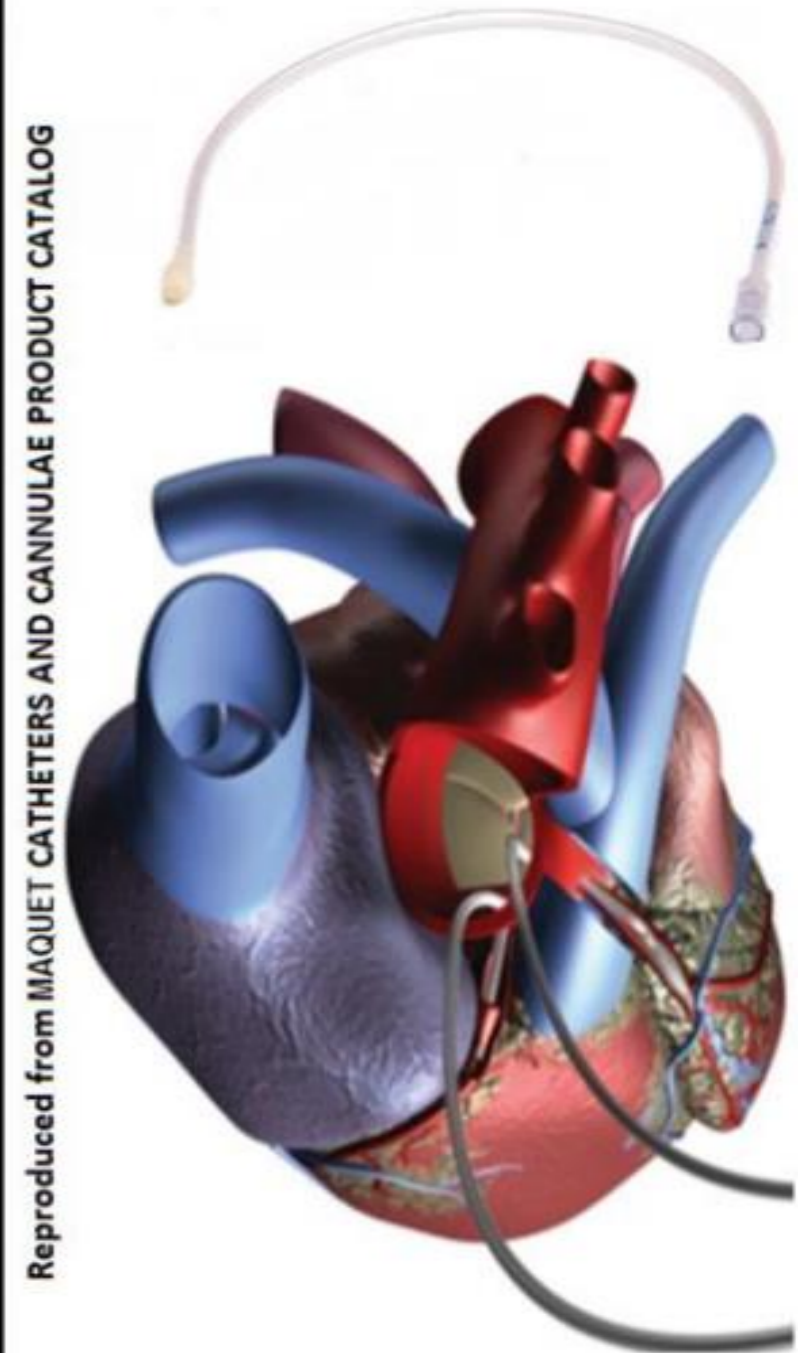
Coronary perfusion cannula (cont)

- The **small hand** held cannula with a **soft tip** that is placed over the **coronary ostia**, and the **cone tip** cannula with **self-inflating balloon** that insertion direct into **coronary ostia**.
- These cannulae are used when the **aortic root is opened** e.g. aortic valve replacement .

Small hand held cannula with a soft tip



Self-inflating balloon cannula





Antegrade Coronary Perfusion Cannula



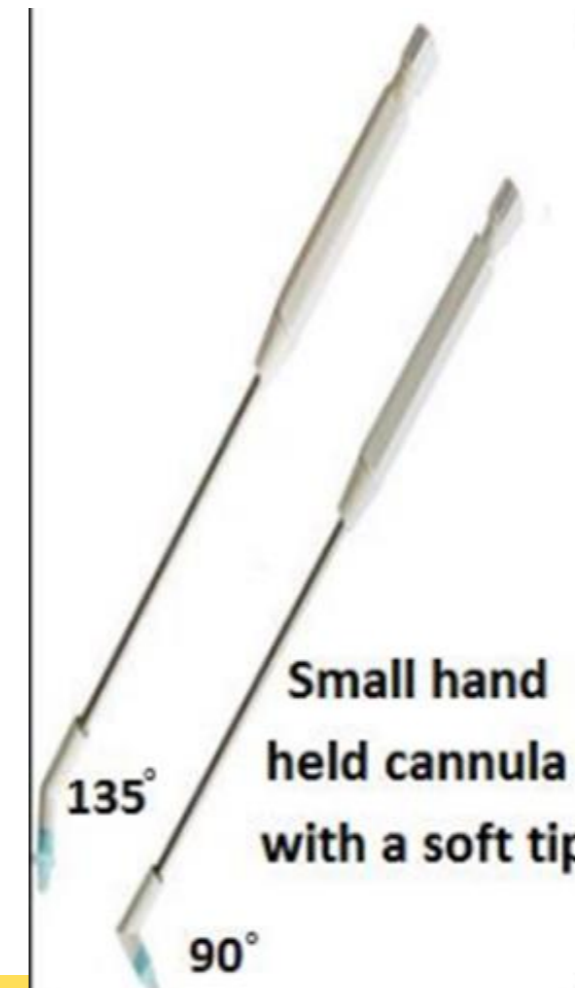
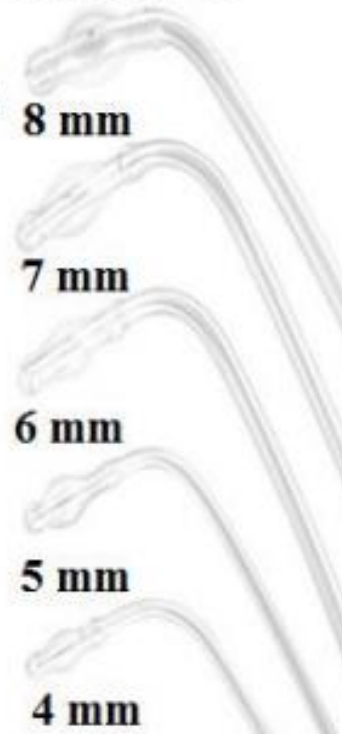
- Coronary Perfusion Cannulae are used for direct cannulation to supply cardioplegic solutions to the coronary arteries during heart operations with an external bypass.
- Include, AVR, ascending aortic arch resection or other surgical procedures where the ascending aortic arch is incised

Available by manufacturers

- **Small hand held cannula with a soft tip**
- Size of cannula: e.g. 9 Fr, 10Fr , 11Fr ,12Fr , 14Fr, 15Fr
- Curve of tip: 135°, 90°.
- **Self-inflating balloon cannula:**
- Size of cannula: e.g. 9 Fr , 10.5 Fr , 12 Fr,13.5 Fr , 15 Fr.
- Balloons size: 4mm , 5mm , 6mm ,7mm , 8mm .
- Curve of tip.



Self-inflating balloon cannula

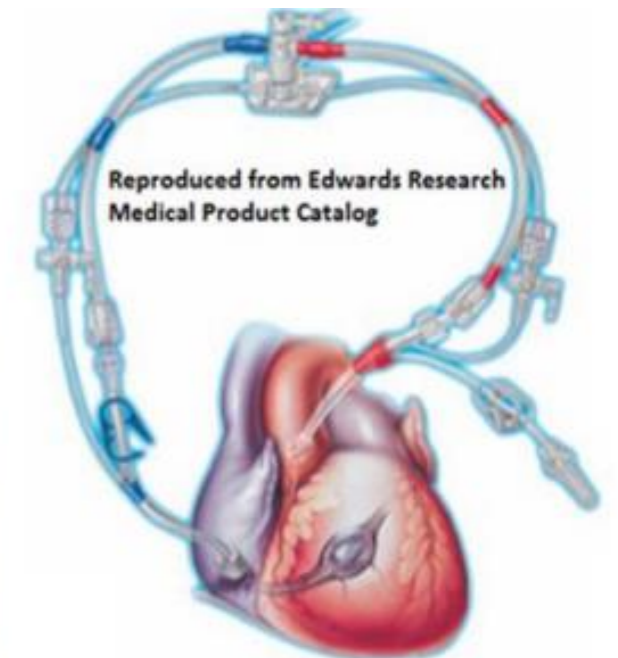




Cardioplegia Adapters



Cardioplegia adapters are designed to connect **multiple cardioplegia cannula and vein graft cannula to a single inlet source**, with possibility to **switch between antegrade and retrograde delivery of cardioplegia** and ability to attach a vent line to the cardioplegia cannula.





THANK YOU