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Your Gate To Innovation and Trade

UNDER THE AUSPICES OF H.E.

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PRESIDENT OF THE ARAB REPUBLIC OF EGYPT

Advanced nursing practice in cardiovascular medicine

RN/ Antar khalaf

Cath lab supervisor, suez canal authority hospital

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❑ Why especially cardiovascular medicine?

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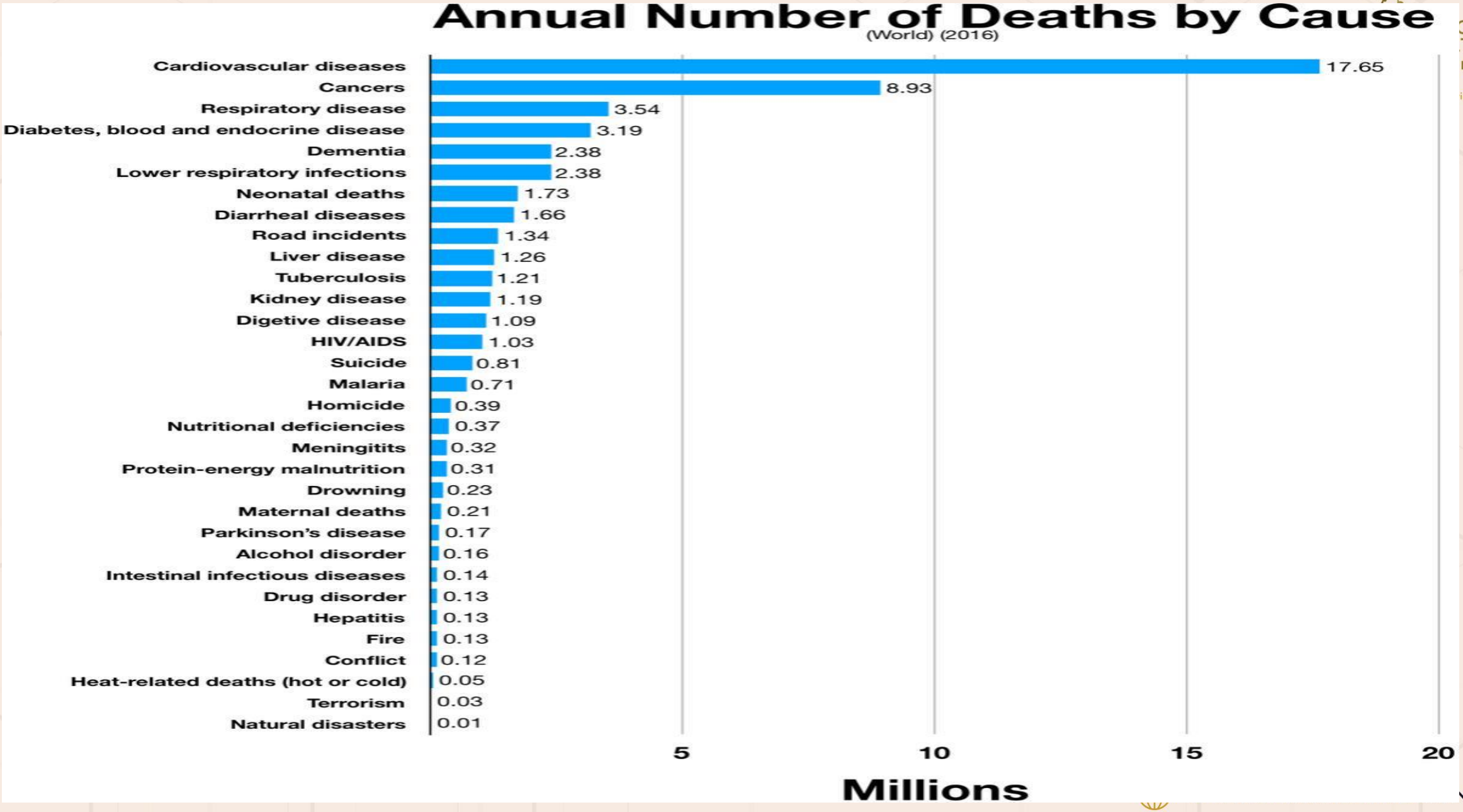
- According to the World Health Organization (WHO), cardiovascular diseases (CVDs) are the leading cause of death globally. They estimate that around 17.9 million people die from cardiovascular diseases every year.
- The World Health Organization (WHO) reports that cardiovascular diseases (CVDs) are responsible for approximately 1.3 million deaths annually in Africa.


Annual Number of Deaths by Cause
(World) (2016)
Cardiovascular diseases 17.65
Cancers 8.93
Respiratory disease 3.54
Diabetes, blood and endocrine disease 3.19
Dementia 2.38
Lower respiratory infections 2.38
Neonatal deaths 1.73
Diarrheal diseases 1.66
Road incidents 1.34
Liver disease 1.26
Tuberculosis 1.21
Kidney disease 1.19
Digetive disease 1.09
HIV/AIDS 1.03
Suicide 0.81
Malaria 0.71
Homicide 0.39
Nutritional deficiencies 0.37
Meningitits 0.32
Protein-energy malnutrition 0.31
Drowning 0.23
Maternal deaths 0.21
Parkinson's disease 0.17
Alcohol disorder 0.16
Intestinal infectious diseases 0.14
Drug disorder 0.13
Hepatitis 0.13
Fire 0.13
Conflict 0.12
Heat-related deaths (hot or cold) 0.05
Terrorism 0.03
Natural disasters 0.01
5
10
15
20
Millions

❑ Cardiovascular diseases:

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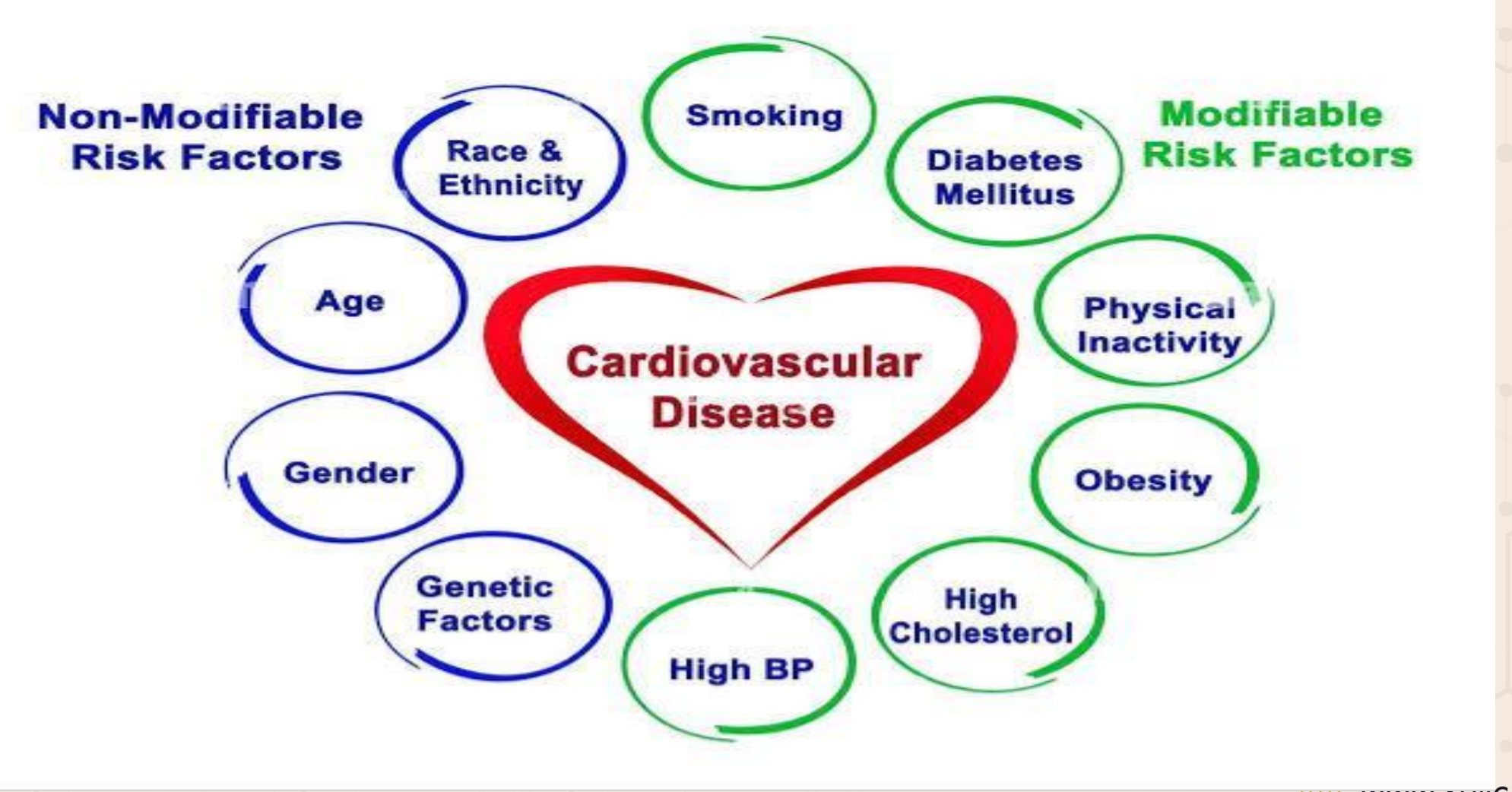
- Coronary artery disease ,atherosclerosis (STEMI, NSTEMI , Unstable angina)
- Valvular heart diseases (Stenosis , regurgitation ,atresia.)
- Congenital heart disease (ASD , VSD, Tetrolgy of fallout).
- Cardiomyopathy (HOCM , DCM , RCM , Takotsubo cardiomyopathy
- Heart Failure (HFPEF , HFREF).
- Pericarditis , Myocarditis.
- Cardiac tamponade.
- Cardiac arrhythmia (AF, SVT, V-TACH , VF ,Heart block).
- Abdominal ,thoracic aortic aneurysm
- Coarctation of the aorta.
- Pulmonary embolism due to DVT

:Cardiovascular disease risk factors ❑



Cardiovascular diseases symptoms and signs include:

- Chest discomfort or pain
- Shortness of breath
- Palpitations (rapid or irregular heartbeat)
- Weakness or dizziness
- Nausea or vomiting
- Sweating
- Pain, numbness, weakness, or coldness in legs or arms
- Neck, jaw, throat, upper abdomen, or back pain
- Swelling in legs, ankles, or feet
- Syncope attack

❑ Investigation to detect cardiovascular disease:

- Resting ECG (To diagnose STEMI , Ischamia , arrhythmia)
- CXR (To diagnose cardiomegaly , dextrocardia).
- Cardiac markers include : Cpk ,CKMB ,Tropnin ,Myoglobin (to diagnose myocardial infraction.
- BNP and Nt-pro BNP to diagnose HF
- D-dimer for diagnose PE
- Na+,k+,Ca,Mg , BUN ,creatinine to screen kidney function
- SGOT,SGPT,Albumin to screen liver function
- Trans thoracic echocardiography TTE (to measure ejection fraction , muscle thickness, valvular function and area ,wall motion, cardiac tamponade, aortic root)
- Trans esophageal echocardiography TEE (to evaluate cardiac tumors ,asses LAA, infective endocarditis ,some congenital heart disease, during CABG Surgery, TAVI)

- Debutamine stress echo (DSE).
- Stress ECG test.
- Ambulatory Holter ECG 24H ,48,H , 72H Event rocrderlong to 7 dayes.
- Ambulatory BP Holter 24H,48H.
- Telemetry Monitoring.
- Ct scan includes CT coronary (MSCT) , CT aortagraphy, CT pulmonary angio.
- Cardic MRI to diagnose HOCM ,Amylodosis
- Myocardial perfusion Imagining THALIUM (MPI)
- Tilting table test to diagnose Cardioinhibitory syncope
- Cardiac catheterization includes diagnostic coronary angiography ,Electrophysiology study

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- Nurses are often the frontline healthcare professionals at the cardiology hospital who provide ongoing care and support to patients with heart conditions and help in improving patient outcomes and quality of life.
- Nurses have a unique role in cardiac care, as they are responsible for assessing patients, monitoring their conditions, and providing essential care.
- Nurses also collaborate with physicians, pharmacists, and other healthcare providers to develop comprehensive care plans that meet the unique needs of each patient

❑ Cardiac Nurses can work in many different medical environments, such as:

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- **Coronary care units (CCU).**
- **Cardiac catheterization.**
- **Intensive care units (ICU).**
- **Operating theaters.**
- **Cardiac rehabilitation centers.**
- **Clinical research.**
- **Cardiac surgery wards.**
- **Cardiovascular intensive care units (CVICU).**
- **Cardiac medical wards.**

❑ Roles And Responsibilities Of professional Cardiac Nurses:

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- **Assessment**: Conducting thorough assessments of patients' cardiac health, including monitoring vital signs, performing physical exams, and evaluating symptoms.
- **Medication Management**: Administering medications as prescribed by physicians, including intravenous medications, and monitoring their effects on patients.
- **Patient Education**: Educating patients and their families about cardiovascular conditions, medications, lifestyle changes, and self-care techniques to manage their condition effectively.
- **Treatment Planning**: Collaborating with healthcare teams to develop individualized treatment plans for patients, which may include medication regimens, lifestyle modifications, and follow-up care.

- **Monitoring**: Monitoring patients' cardiac status closely, including telemetry monitoring, interpreting ECG results, and recognizing signs of complications or deterioration.
- **Intervention**: Responding promptly to changes in patients' conditions, initiating appropriate interventions, and communicating with physician's about changes in status.
- **Support**: Providing emotional support and counseling to patients and their families, especially during stressful situations such as cardiac events or surgeries.
- **Rehabilitation**: Assisting patients in cardiac rehabilitation programs, which may involve exercise training, dietary counseling, and lifestyle coaching to improve cardiovascular health.
- **Collaboration**: Collaborating with interdisciplinary healthcare teams, including physicians, surgeons, therapists, and other nurses, to provide comprehensive care to patients.

❑ Cardiology nurse skills:

❑ Technical skills for cardiac nurses :

- Basic life support (BLS)
- Advanced cardiac life support (ACLS)
- Patient care
- Catheterization Laboratory (Cath Lab)
- Acute care
- Telemetry
- Critical care nursing
- Cardiology
- Pediatrics
- Life support
- Treatment planning

❑ Transferable skills for cardiac nurses :

- Teamwork
- Communication
- Planning
- Critical thinking
- Research
- Physical ability
- Computer literacy
- Problem solving
- Organization
- Time management

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❑ Cath lab nurse:
Advanced practice and role expansion:

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❑ Cath lab advantages for nurses:

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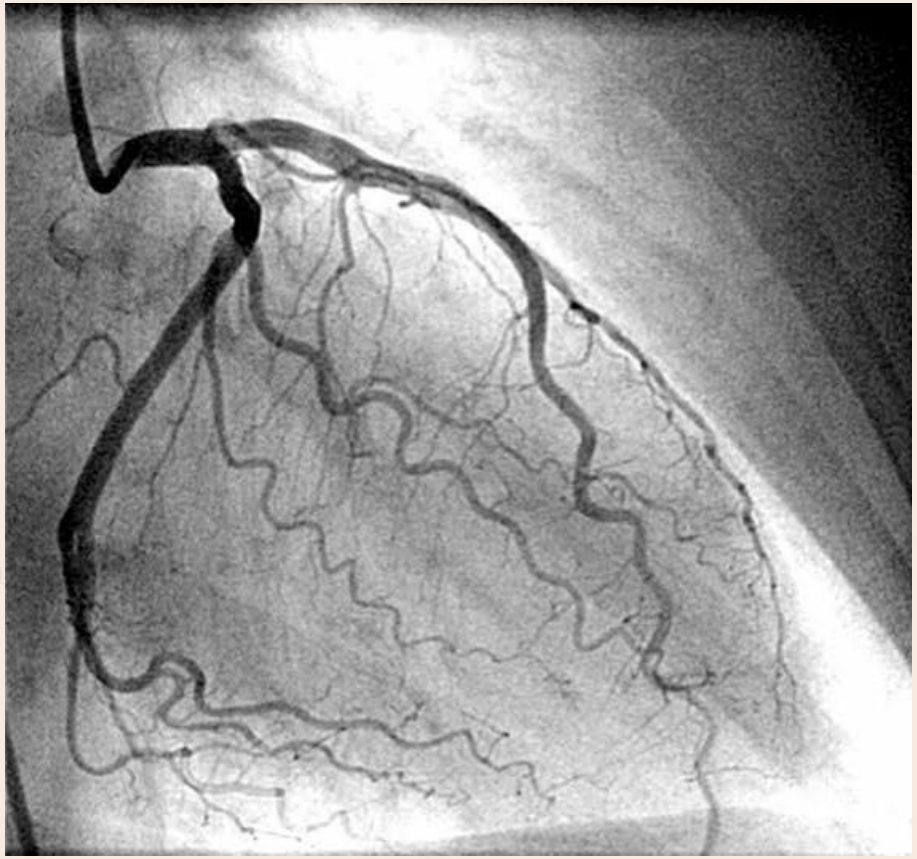
- **Specialized Skills:** Nurses in cath labs develop specialized skills in cardiac care, including assisting with diagnostic procedures, monitoring patients during interventions, and providing post-procedure care.
- **Professional Growth:** Working in a cath lab provides opportunities for professional growth and skill development, as nurses gain expertise in cardiac procedures and technologies.
- **Team Collaboration:** Nurses in cath labs work closely with cardiologists, technologists, and other healthcare professionals, fostering a collaborative and supportive work environment.
- **Variety of Cases:** Cath lab nurses are exposed to a wide variety of cardiac cases, from routine diagnostic procedures to complex interventional treatments, enhancing their knowledge and expertise in cardiovascular care.

- **Critical Thinking**: Cath lab nurses must think critically and make quick decisions in high-pressure situations, honing their clinical judgment and problem-solving skills.
- **Advanced Technology**: Cath labs are equipped with advanced imaging and monitoring technology, allowing nurses to work with cutting-edge tools and equipment to provide optimal patient care.
- **Patient Interaction**: Nurses in cath labs have meaningful interactions with patients and their families, providing education, support, and reassurance throughout the procedure and recovery process.
- **Job Satisfaction**: Working in a cath lab can be highly rewarding, as nurses play a crucial role in helping patients with cardiovascular conditions receive timely and effective treatment, ultimately improving their quality of life.

❑ Cath lab procedures includes:

- **Angiography**: Using contrast dye and X-rays to visualize blood vessels and diagnose blockages or abnormalities.



❑ Balloon angioplasty:

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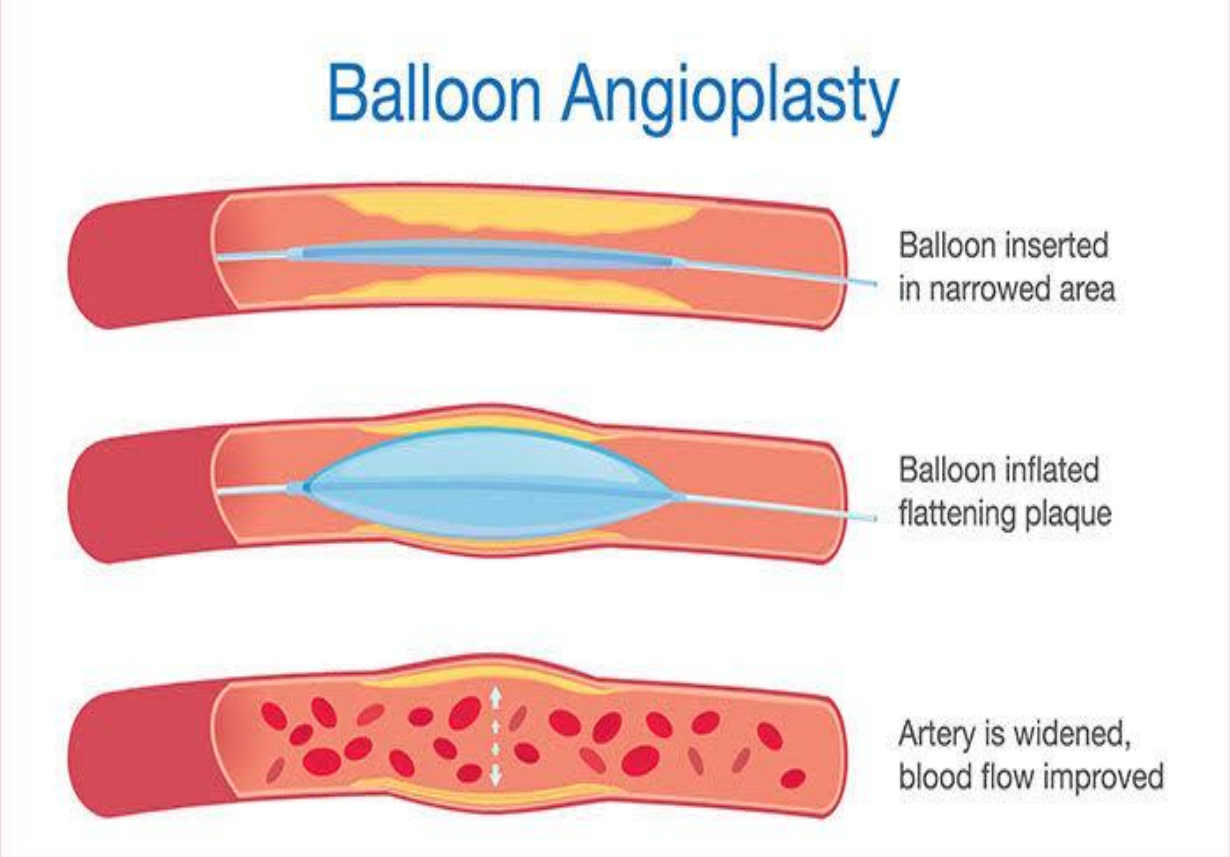
- **Angioplasty**: Inserting a balloon-tipped catheter into narrowed arteries to widen them and improve blood flow.



❑ Stent Placement:

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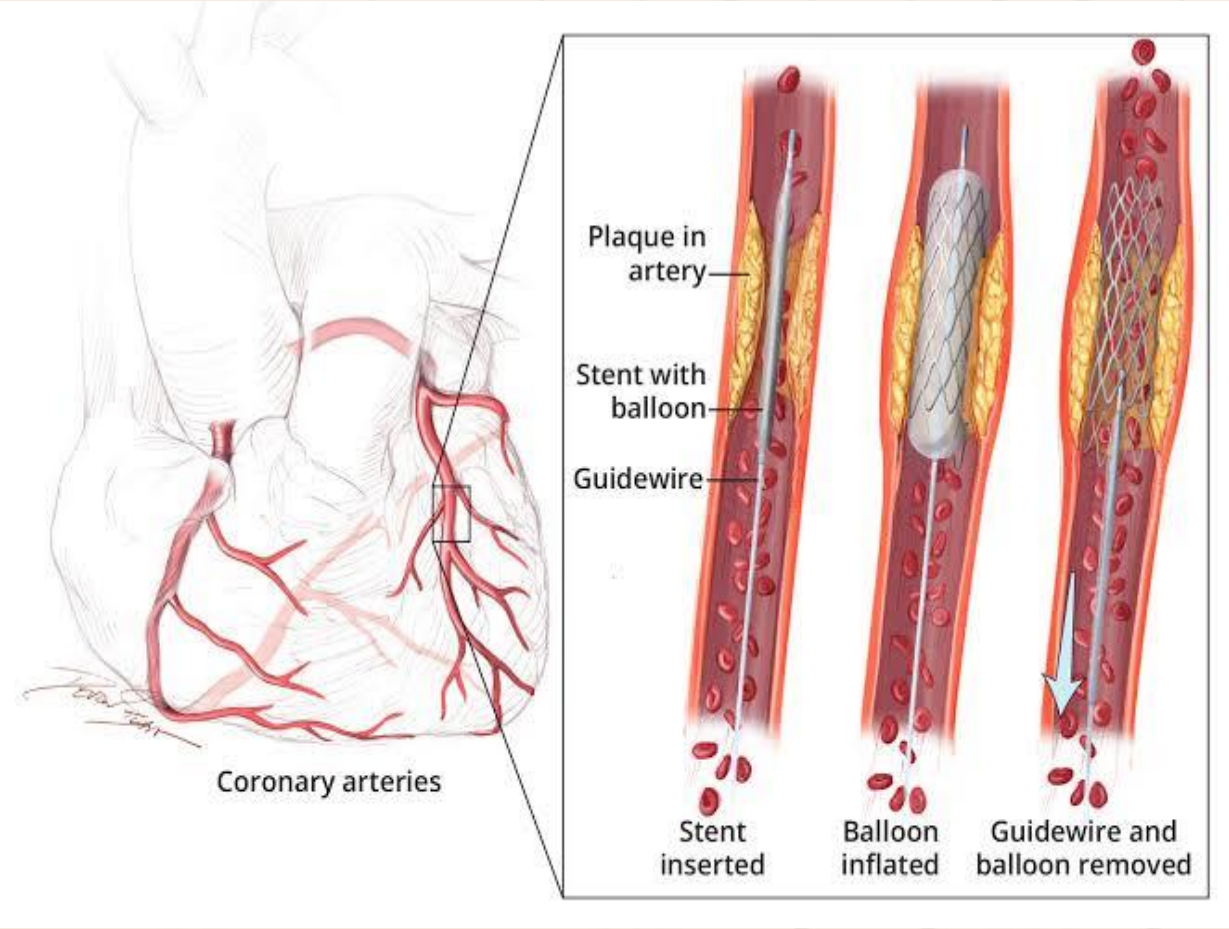
- **Stent Placement**: Placing a small mesh tube (stent) into a narrowed artery to help keep it open and prevent re-narrowing.



❑ Intravascular imaging:

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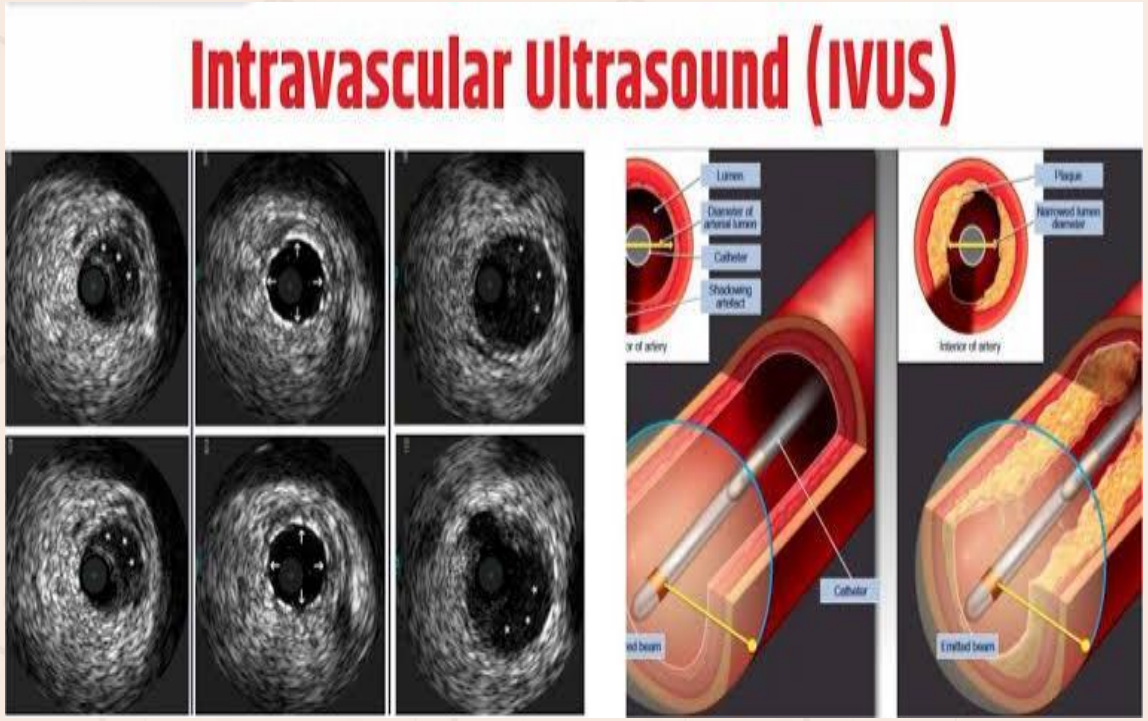
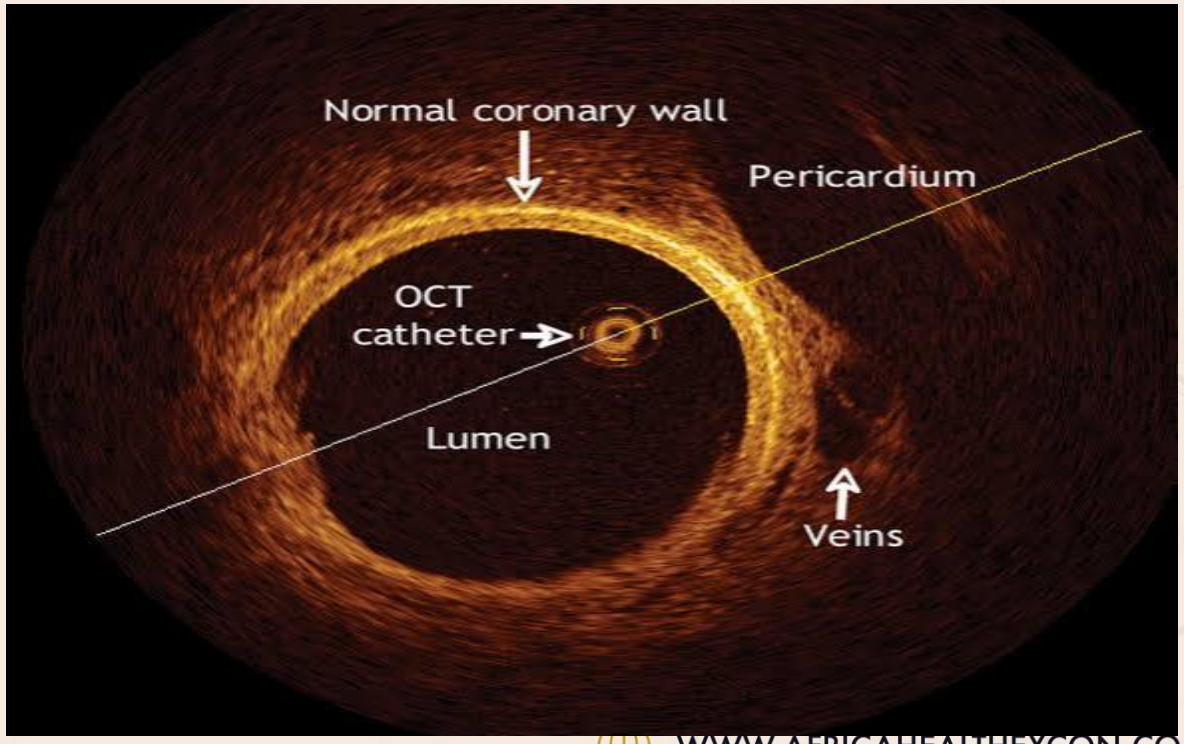
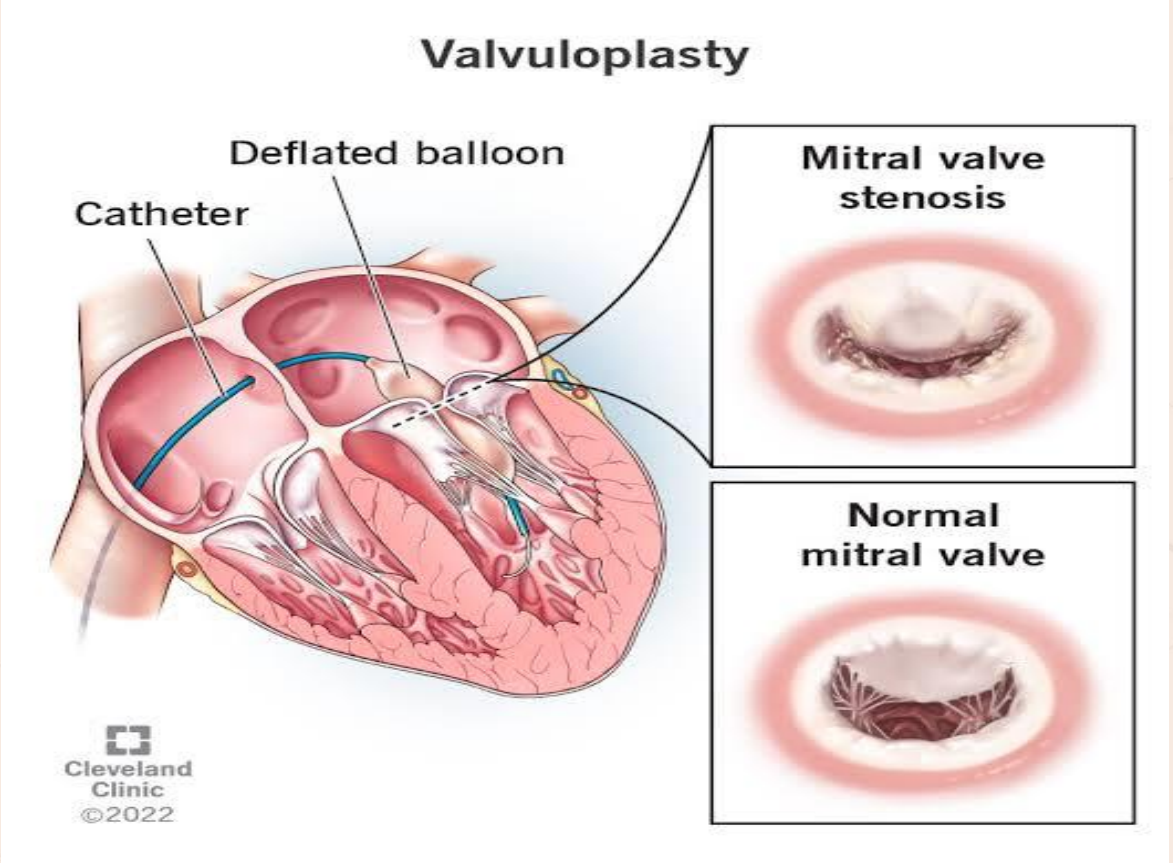
- **Intravascular imaging** in the cath lab involves techniques like intravascular ultrasound (IVUS) and optical coherence tomography (OCT) to visualize the inside of blood vessels. These technologies provide detailed images of vessel walls, plaque buildup, and other abnormalities, helping cardiologists assess the extent and nature of coronary artery disease and guiding them during procedures such as angioplasty and stent placement.





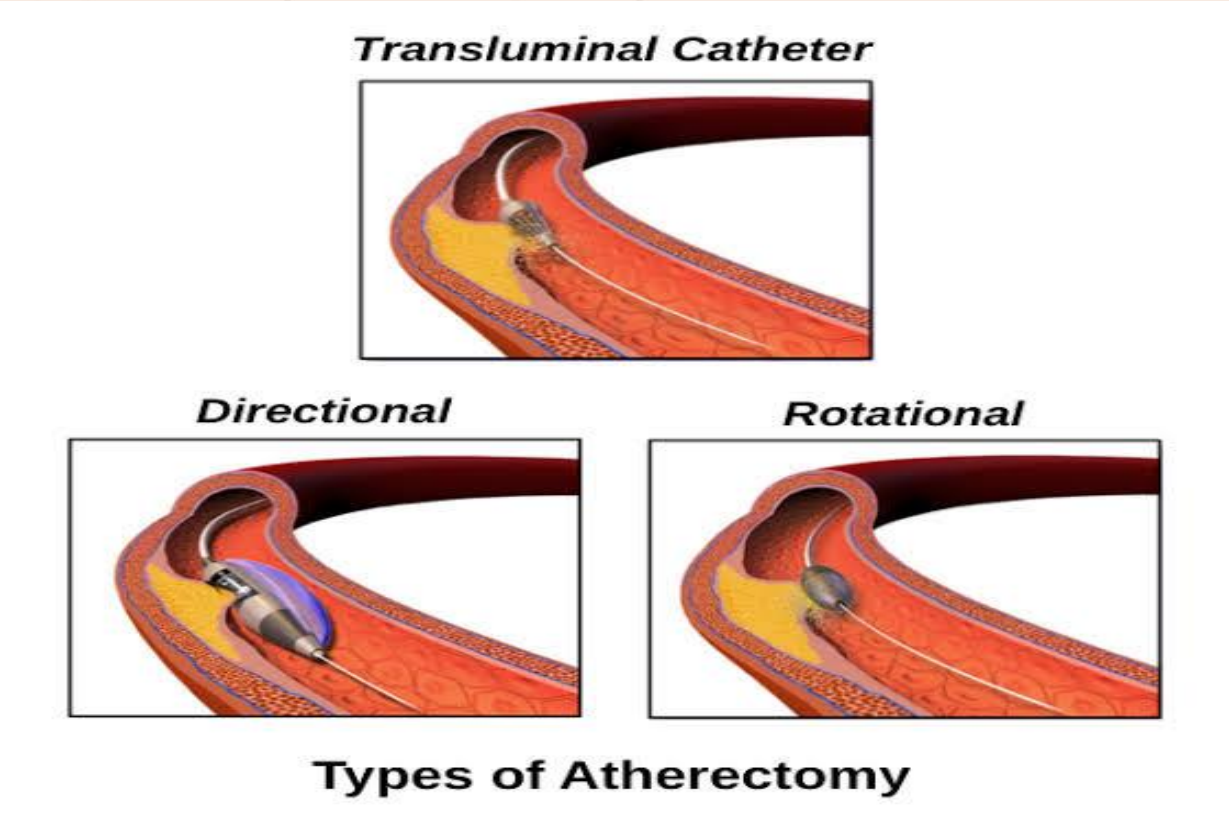
❑ Balloon valvuloplasty:

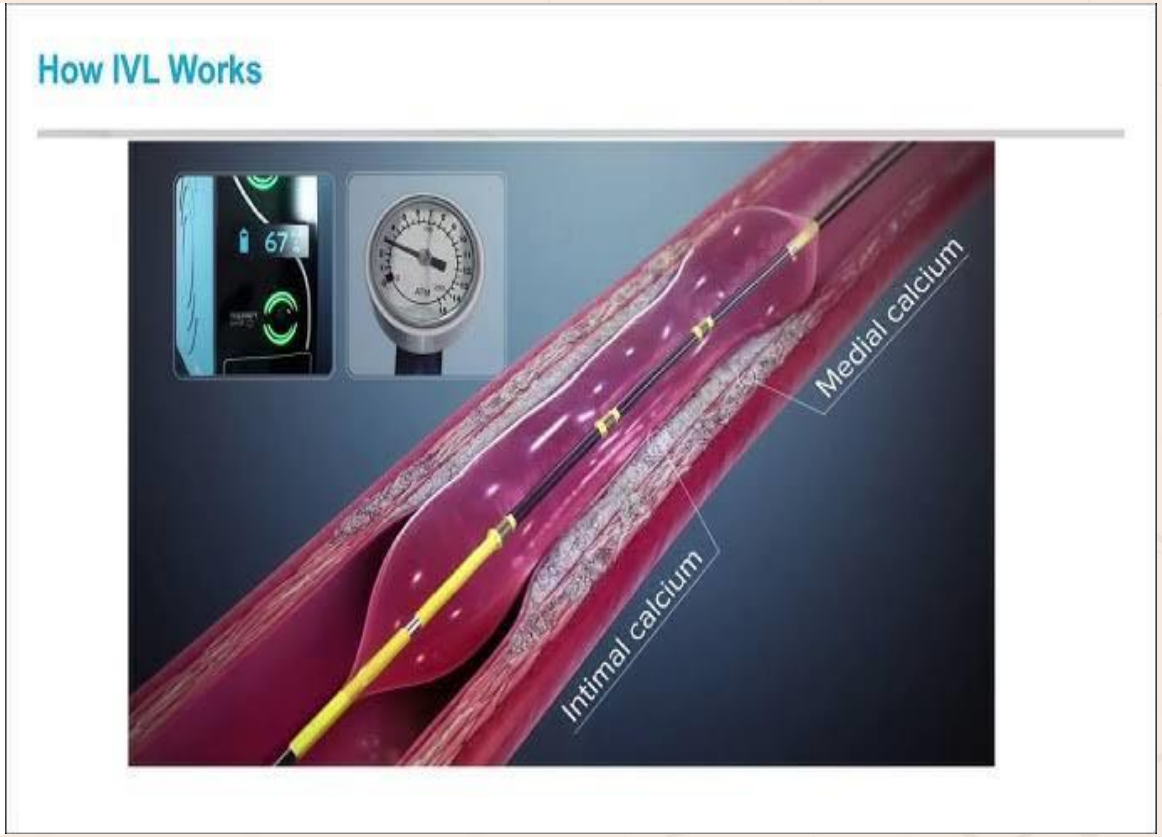
- **Balloon Valvuloplasty**: Dilating a narrowed heart valve using a balloon-tipped catheter to improve blood flow.



❑ Atherectomy :

- **Atherectomy**: Removing plaque and calcium buildup from blood vessels using specialized catheter-based devices.





❑ Electrophysiology studies (EPS) And Radio-frequency ablation:

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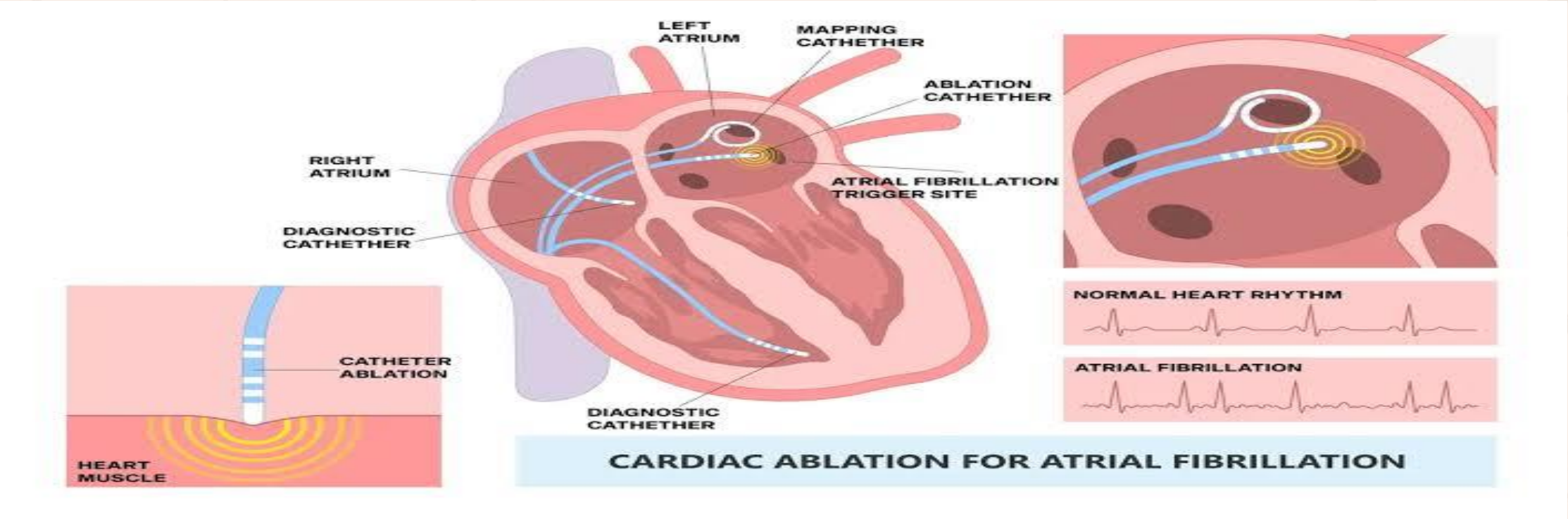
- **Electrophysiology studies (EPS):** Mapping and evaluating the electrical activity of the heart to diagnose and treat heart rhythm disorders.



❑ Pacemaker and defibrillator implantation:

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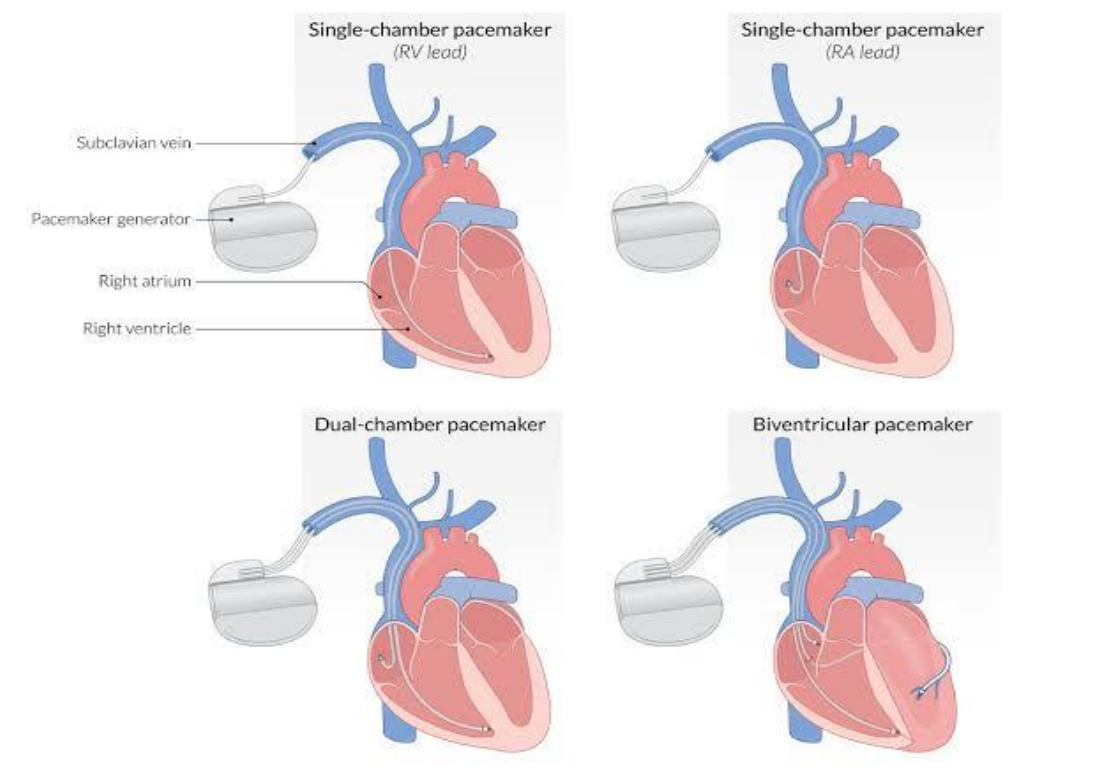
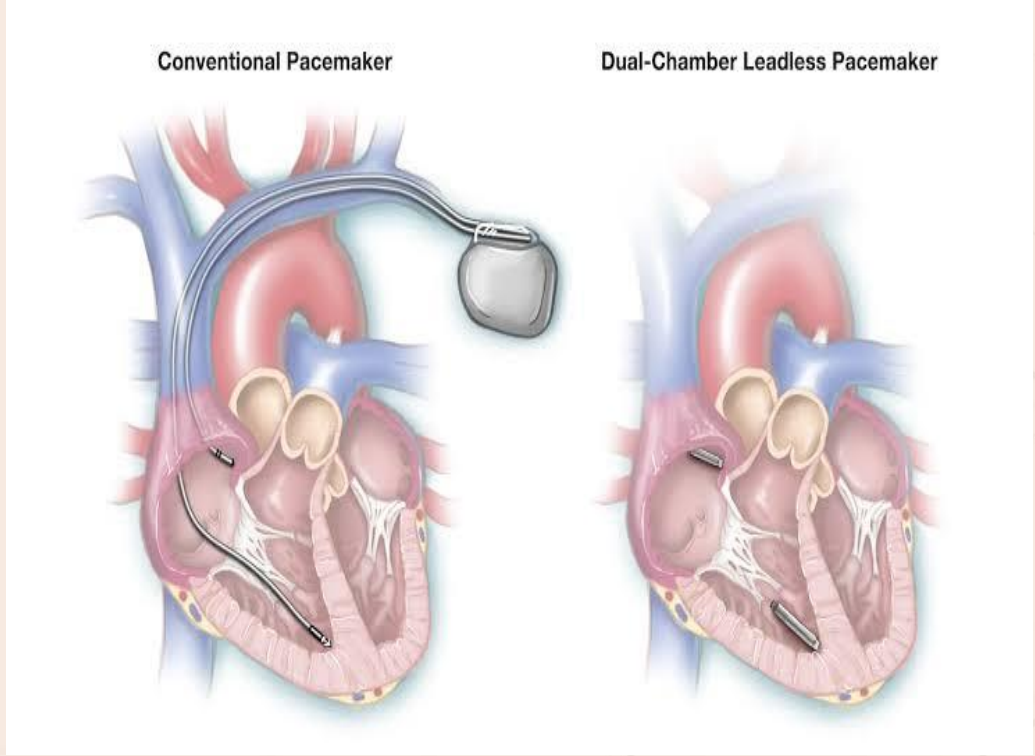
- **Pacemaker and defibrillator implantation**: Placing devices that help regulate heart rhythm or deliver electrical shocks to restore normal rhythm.





❑ Trans catheter valve procedures: Repairing or replacing heart valves:

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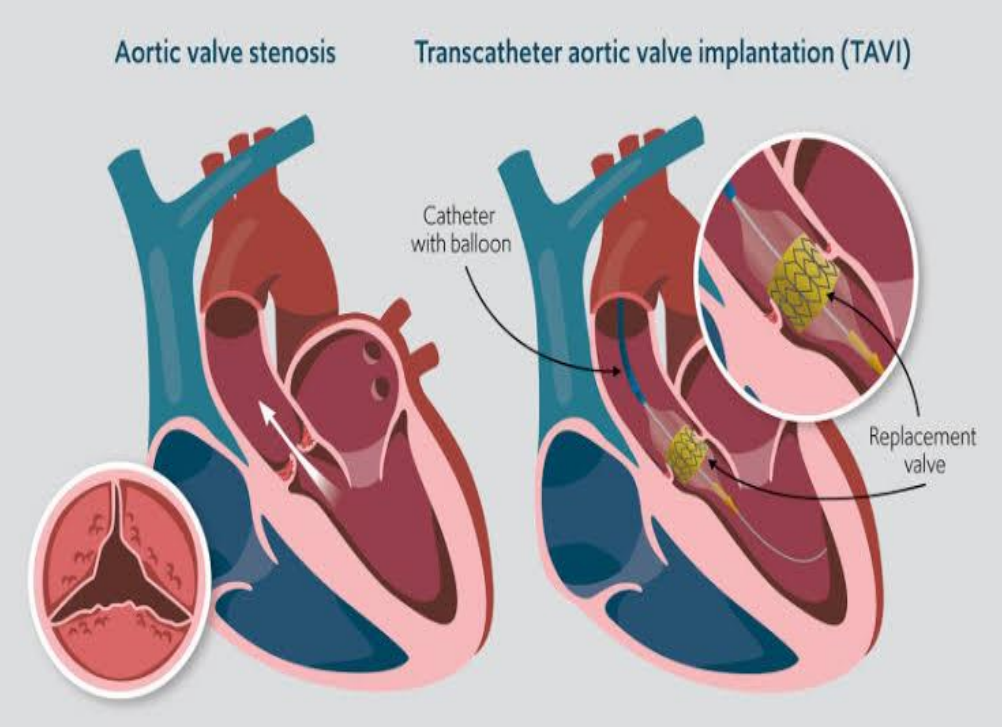
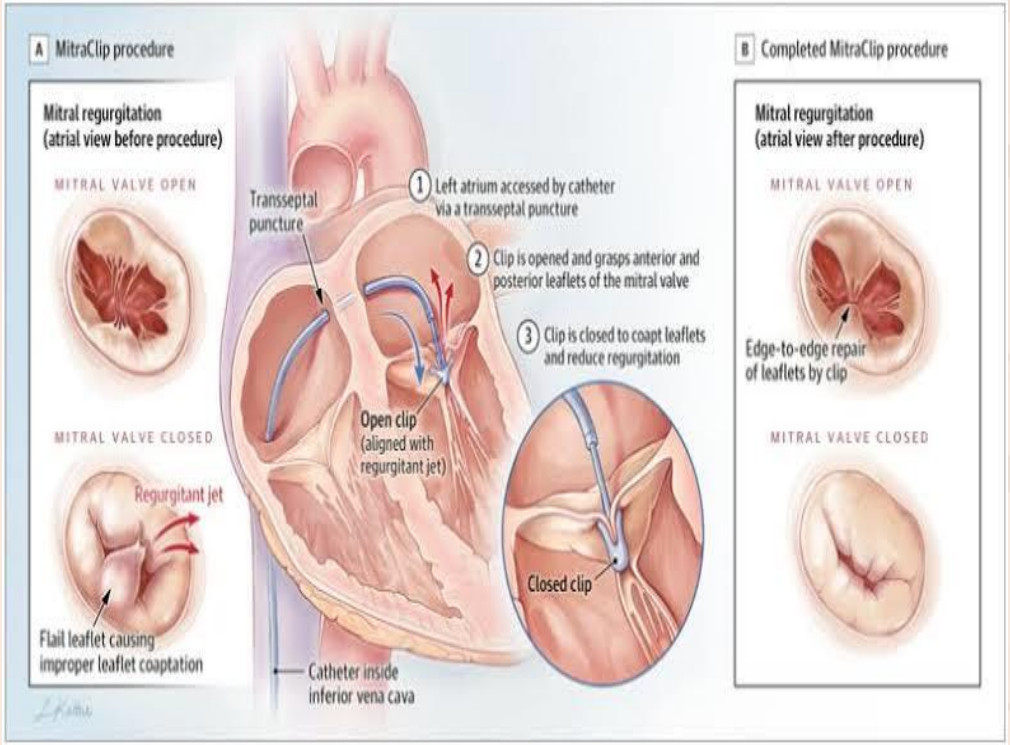
- **Trans catheter valve procedures**: Repairing or replacing heart valves using minimally invasive techniques through catheters, avoiding open-heart surgery.





❑ EndoVascular repair:

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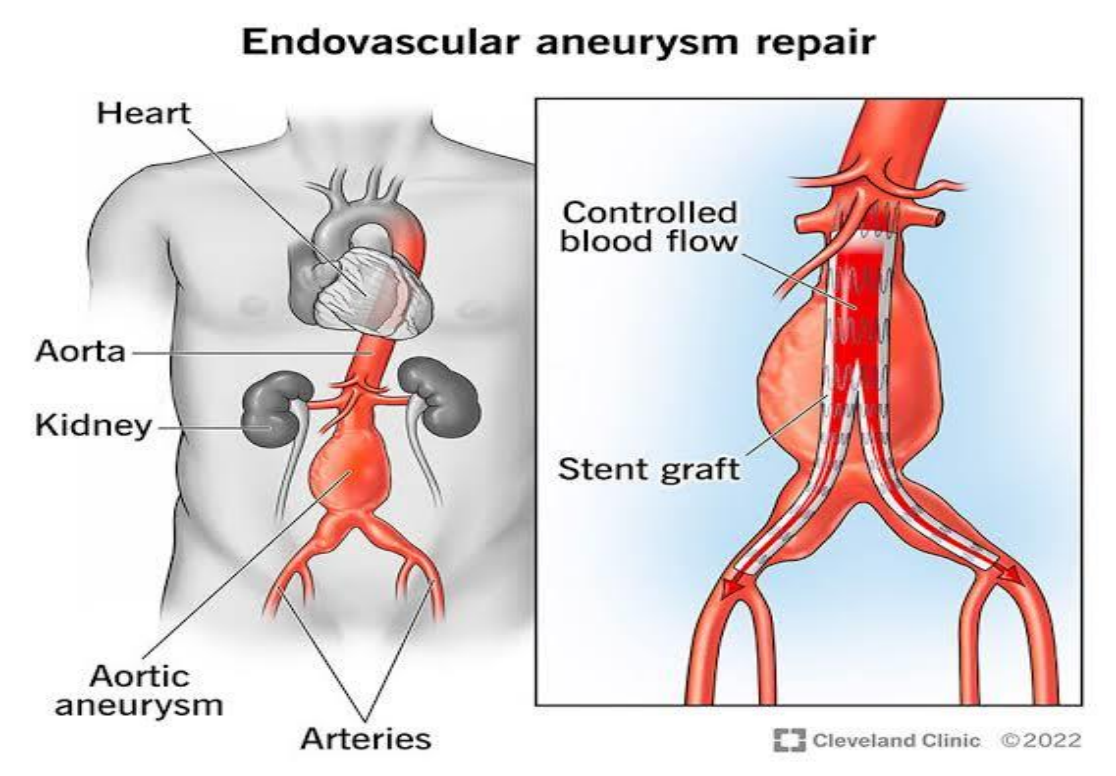
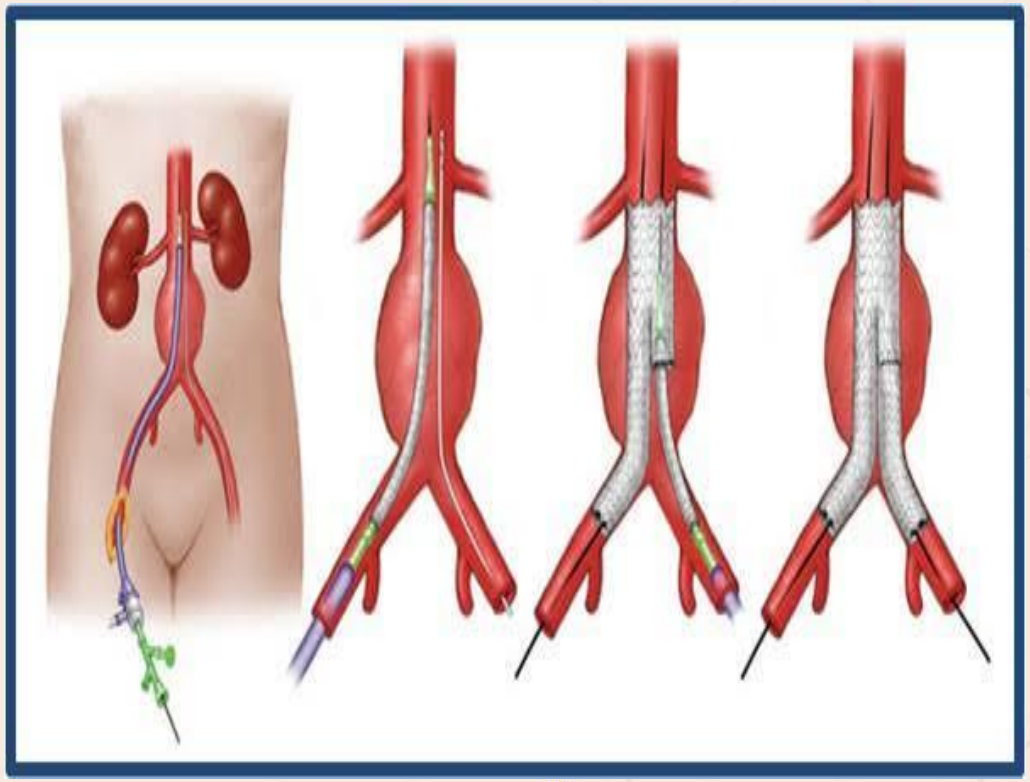
- **Endovascular repair** is a minimally invasive procedure used to treat certain types of vascular conditions, particularly abdominal aortic aneurysms (AAAs).





❑ Conclusion:

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- Nurses play a significant role in the endowment of evidence-based care and the development of rehabilitation policies and protocols. It helps in hospital cost reduction, increases patient safety, comfort, and shortens the hospital stay. During discharge, the Cath lab nurses have to educate the patient and family members about immediate reporting if any symptoms develop. It helps in improving the quality of life and may reduce mortality.
- In conclusion, the Cath lab nurses must be well versed in the hemodynamics of cardiac diseases and procedural details. They should update themselves regularly with continuing medical education and contribute their expertise to make the “Heart Team” approach successful.

References:

- World health organization statistics .
- American college of cardiology (AHA)
- American Heart Association.
- Council on Cardiovascular Nursing.
- European society of cardiology (ESC).
- Cardiovascular Council of Nurses and Allied Professions (CCNAP).
- Preventive Cardiovascular Nurses association (PCNA).

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