Core Principles of Cardiothoracic Surgery and Care of the Patient following Heart Surgery

DAY 1- Thoracic day 1

Registration 08.30 – 09.00

Introduction 09.00 – 09.15

Lecture 09.15 – 09.45 Anatomy/physiology of the thorax  Learning outcomes: Describe the anatomy and working of the airways, pleura and lobes of the lungs, muscles of respiration and closely related structures

Lecture 09.45 – 10.30 Lung diseases

Learning outcomes: awareness of common disease, common symptoms, diagnosis, treatment options & the principles of nursing this cohort of patients.

Coffee 10.30 – 11.00

Lecture 11.00-11.30 Risk factor identification and modification

1. smoking
2. pneumoconiosis and occupation
3. genetics
4. ageing
5. social
6. mycobacteria and fungi
7. immunosuppression

**Learning outcomes**: Identify epidemiology of modifiable and non-modifiable risk factors for lung and pleural carcinomas, chronic infectious and inflammatory conditions and advice and modification to patients and appropriately referral on to specialists

**Lecture 11.30 – 12.00 Step down units role and nursing Type I and Type II respiratory failure  Learning outcomes**: safe assessment of patients and correct nursing action associated with respiratory deteriorating.

**Wetlab/skills room 12.00 – 13:00 Surgical work shops** x3 20mins (small groups)

1. Setting up for minitracheostomy & insertion
2. Tracheostomy care (inner tube cleaning, speaking tube use, removal, bleeding and tracheal suction)
3. Pleurodesis

**Learning outcomes**

A hands on session for the insertion of minitrachy. The equipment required to set up for a mini tracheotomy and the process for insertion. Practical session managing a patient (Simman) with a trachy, troubleshooting. The principles of pleurodesis in relation to the clinical findings and the practical aspects assisting with set up, performing and post procedure management highlighting the key nursing aspects.

**13.00 – 14.00 Lunch**

**Lecture 14.00-14.30 Haemoptysis and stridor nursing management Learning outcomes**: Recognition and how to nurse
and be involved in management of these potential emergencies

**Lecture Lung cancer 14.30 – 15.00 Learning objectives:** The patient pathway from diagnosis to treatment options and dealing with the diagnosis to include knowledge about diagnosis, role of the MDT, staging and prognosis, treatment options, psychology of the newly diagnosed patient, patient pathways, cancer networks

15.00 – 15.30 Tea/Coffee

**Lecture 15.30 - 16.00 Pre operative investigations**

1. ECG
2. Chest radiogram
3. RFT : advanced spirometry
4. Routine bloods
5. Bronchoscopy and airway stenting
6. Computerised tomography /PET scanning

**Learning outcomes:** Name the pre operative investigations that may be indicated and why. Be aware of the nursing implications of caring for these patients.

**Lecture 16.00 -16.30 Post operative complications and management**

1. excessive pain
2. pneumonectomy and mediastinal shift, bronchopleural fistula
3. sputum retention, atelectasis and chest infection
4. post operative bleeding
5. empyema

6. MI

Learning outcomes: Identification the common or important thoracic complications and of the nursing implications of caring for these patients

16.30-16.45 Evaluation

**DAY 2 Thoracic day 2**

Registration 08.30 – 09.00

Introduction 09.00 – 09.15

Lecture 09.15 – 09.45 Pleural conditions and drain insertion and management  **Learning outcomes:** Principles and practice of managing and nursing pleural effusion, empyema, chylothorax, pneumothorax, air leak and bronchopleural fistula, surgical emphysema, diagnostic sampling. Management of thoracostomy tubes and drain bottles – types of drain bottle

**Wetlab/skills station  09.45 – 10.25 Surgical workstations** (small groups) x2 20mins

1. Care off Thoracic Chest drains & removal

2. Drain Insertion (preparation for)

**Learning objectives.** Nursing care and hands on experience at insertion of a chest drain and practical issues with managing drains. Awareness of wall suction and the importance for thoracic suction, flutter bags as an alternative, the benefits for mobility/management in the community. The nursing
responsibilities in caring for drains and correct documentation. Rational for post insertion/removal imaging.

10.25 – 10.55 Coffee


Wetlab/skill station 11.25-12.25 Surgical workstations x3 20mins

1. CPAP application
2. Chest physiotherapy
3. Interpretation of ABG

Learning outcomes: Revision of the pathophysiology underpinning the use of CPAP, how to apply the circuit and the key nursing issues/documentation associated with caring for a patient on CPAP. Awareness of the practical procedures and key aspects for nursing in post operative care

Basic principles of interpreting ABG’s with renal & respiratory pathophysiology.

12.30 – 13.00 Evaluation

DAY 3 – Cardiac day 1

Registration 08.30 – 09.00

Introduction 09.00 – 09.15

Lecture 09.15-09.45 Anatomy/physiology of the heart
Learning outcomes: Describe the anatomy and working of the heart, conduction, valves and great vessels

*Lecture 09.45-10.15 Risk factor identification and modification*

1. smoking
2. diabetes mellitus
3. genetics/connective tissue disorders
4. hypertension
5. hypercholesterolaemia
6. rheumatic fever
7. IV drug abuse  8. renal failure

Learning outcomes: Identify epidemiology of modifiable and non-modifiable risk factors for coronary artery disease, aortic and mitral valve disease, endocarditis and aneurysms.

*Lecture 10.15– 11.00 Cardiovascular pathology*

Learning outcomes: Overview of atherosclerosis, Cardiovascular disease, coronary artery bypass grafting vs Percutaneous Coronary Intervention.

**Coffee 11.00- 11.30**

*Lecture 11.30 – 12.00 Pre operative investigation*

1. ECG and exercise stress tests
2. Chest radiogram
3. Myocardial perfusion scanning
4. Angiogram
5. Transthoracic and transoesophageal echocardiography
6. RFT: basic ward spirometry
7. CUSS
8. Leg vein scan
9. Allen’s test/radial scan
10. Routine bloods
11. Computerised tomography: aortogram/coronary angiogram
12. MRI

Learning outcomes: Name the pre operative investigations, why they may be indicated and then nursing aspects associated with patients undergoing such investigations

**Skills station 12.00 – 13.00 Surgical workshops: x3 20mins**

1. performing a 12 lead ECG, rhythm strip & Atrial ECG
2. performing basic PFT’s
3. haemostatic devices associated with coronary angiography & PCI – principles of application & nursing care of a fem stop device

Learning outcomes: How to correctly perform an ECG, how to get a good reading and trouble shooting. How to get a rhythm strip and Atrial ECG. How to perform basic lung function test measuring FEV1 & FVC then how delegates should interpret FEV1, FVC & FEV1/FVC% in relation to restrictive & obstructive lung disease. Identify the nursing responsibilities associated with
caring for patient following femoral and radial canulation. These will include the patients CVS observations, INR/APTT and the devices used to stop bleeding post procedure.

**Lunch and refreshments 13.00-14:00**

**Wetlab 14-00 – 16:15 Surgical workstations**, small groups x8
15min groups (with break for tea at 15.00 -15.15)

1. sternotomy and closure
2. CPB
3. CABG and conduit harvest
4. mitral valve repair
5. aortic valve replacement
6. types of valve replacement pros and cons – tissue/porcine/mechanical/tavi/sutureless
7. AF ablation
8. aortic dissection

Learning outcomes: An interactive hands on session exploring anatomy, physiology and pathophysiology of each surgical intervention/procedure. Relate this to the nursing aspects of caring for patients.

**Lecture 16.15 – 16.45 Pulmonary oedema**

Learning outcomes: Learning outcome: recognition of the causes and treatment in relation to nursing care.

**Evaluation 16.45– 17.00**
DAY 4 – Cardiac day 2

Registration 08.30 – 08.50

Introduction 08.50 – 09.00

Lecture 09.00 – 09.45 Principles of Post operative Care immediate care to establish haemodynamic stability: Learning outcomes: Demonstrate awareness of the key clinical aspects of immediate and hospital stay recovery. Implications of prolonged intensive care stay. Demonstrate knowledge of what patients require to be fit for discharge and the aspects of their post discharge care to include patient information, cardiac rehabilitation, communication with primary care and the surgical follow up

Lecture 09.45 – 10.30 Medications

1. NICE guidelines for CHD medication

2. What should be stopped/continued prior to heart surgery

3. What medication patients should have introduced post operatively

4. Basic mechanism & function of: Antiplatelets (oral and IV) LMWH

Learning outcomes: Describe what medication should be stopped prior to surgery and why. Describe what medication should be continued prior to surgery and why. Describe what medication should be prescribed on discharge. Describe the CVS, Renal, Liver abnormalities which would lead to caution prescribing which medication. Medications covered will include: Beta blockers, Statins, ACE inhibitors/angiotensin II antagonists Ca2+ channel blockers, Amiodarone.
Coffee 10.45 – 11.15

Skills station 11:15 – 12:15 Work stations: x2 30mins groups

1. Chest X Rays

2. Revision of conducting system rhythm strip recognition & 12 lead ECG – axis, territories

Learning outcomes: interpreting CxR & ECG. Be able to discuss the different positions of CXR, what structures are denoted by black, grey and white and demonstrate an A&E approach to interpreting CXR. Revise cardiac conduction, the six steps for rhythm strip analysis and to deliver a basic understanding of axis and territories in relation to the coronary arteries

Lunch 12.15 – 13.15

13.15-14.15 x3 20mins groups

Surgical work stations (ECG and pacing)

1. bradycardia’s

2. tachycardias

3. pacing wires & setting up a pacing box & pacing wire removal

Learning outcomes  Describe the conduction system and describe the timing associated with PR,QRS,T waves.

Recognise common arrhythmias SVT, AF, A Flutter, Bradycardia, Blocks, Asystole, VT, VF and immediate actions required  Describe how to identify atrial and ventricular wires, demonstrate how to turn the pacing box on to the emergency setting.

Identify modes – DDD, VVi, AAi, describe which letter denotes chamber paced, chamber listened to & when the pacing box
should deliver or inhibit electricity.

**Lecture 14.15 - 14.45 Sternal and leg wound complications**

Learning outcomes: Have an overview of the relevant anatomy and physiology, wound assessment and the phases of wound healing. Know the difference between deep sternal and superficial sternal wound infection and the nursing considerations when caring for patients.

**Coffee 14.45 – 15.15**

**Skills station 15.15-16.15 Surgical workshop (small groups x3 20mins)**

1. how to manage the VAC pump and ward dressing change
2. wound assessment
3. how to set up for a central line insertion

Learning outcomes: Practical assessment and management of these wounds. Understand the importance of wound assessment, how often it should be assessed, how to objectively assess a wound and what aspects are noted, treatment options are available and the nursing care/documentation required when caring for such patients. Awareness of the relevant A&P and pathophysiology. Be aware how to set up a CVP line and the nursing care/documentation associated with looking after such patients. The possible complications & actions required.

**Wetlab/skills room 16.15-16.45 Surgical workstations (small groups x2 30mins)**

2. Basic Ventilation used in the post operative patient.

Learning objectives: Describe the position of post operative chest drains and their function. Describe care of drains. Describe when they should be removed and the key issues nurses should be aware of. Describe basic ventilation modes used and the key care to maximize respiratory function for post operative recovery.

16.45– 17.00 Evaluation