SAWA UNIVERSITY

جامعة ساوة الاهلية
كلية التقنيات الصحية والطبية
قسم التخدير - اللجنة العلمية

العناية المركزة\الكورس الأول

THE ICU ORGANIZATION/DESIGN

جامعـــــــة ســـــــــاوة الاهلية — Sawa University

كليـــــة التقنيـــات الصحيـة والطبيـة — College of health and medical techniques

قسم تقنيـــات التخديـــــــر — Department of Anesthesia

.....المرحلـــــــــــــة ...الثالثة — .....3..... Stage

استاذ المادة : د.ضي عبد الكريم

نظـــــــري — Theoretical

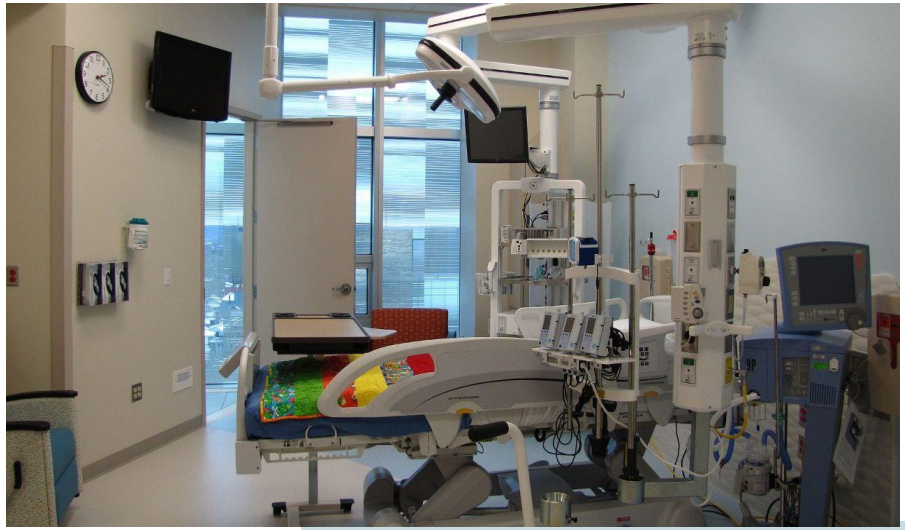
محاضرة رقم .....1.. — Lecture No. 1.....

(INTRODUCTION)

- ICU IS A HIGHLY SPECIALIZED AND SOPHISTICATED HOSPITAL AREA
- DESIGNED, STAFFED, LOCATED, FURNISHED, AND EQUIPPED FOR CRITICAL CARE
- DEDICATED TO MANAGING CRITICALLY ILL PATIENTS, INJURIES, OR COMPLICATIONS
- STAFFED BY DEDICATED MEDICAL, NURSING, AND ALLIED HEALTH PROFESSIONALS

INTRODUCTION

- This specialty is separate from anaesthesia, medicine, and surgery. It requires its own team of specialized doctors, nurses, and staff.



ICU LEVELS

LEVEL 1

- suited for small district hospitals, private nursing homes, and rural centers
- Ideal size: 6-8 beds

- Offers resuscitation and short-term cardio-respiratory support with defibrillation

- ABG testing preferred

- Can ventilate patients for 24-48 hours
- Includes non-invasive monitoring: SPO2, heart rate and rhythm (ECG), NIBP, temperature

- Arrange safe patient transport to higher-level centers
- Encourage staff to take short courses like FCCS or BASIC ICU
- Provide basic lab tests (CBC, BS, Electrolytes, LFT, RFT), imaging (X-ray, USG), ECG, and blood bank support

LEVEL 2

Recommended for large General Hospitals:

- 6 to 12 beds
- Director must be a qualified Intensivist
- Supports multiple organ systems
- Offers invasive and non-invasive ventilation
- Provides invasive monitoring
- Capable of long-term ventilation
- 24/7 access to ABG, electrolytes, and routine tests
- Strong microbiology support, including fungal ID preferred
- ICU protocols and policies must be followed
- Nurses and doctors trained in critical care
- CT required; MRI preferred

LEVEL 3

PRESENTATION TITLE

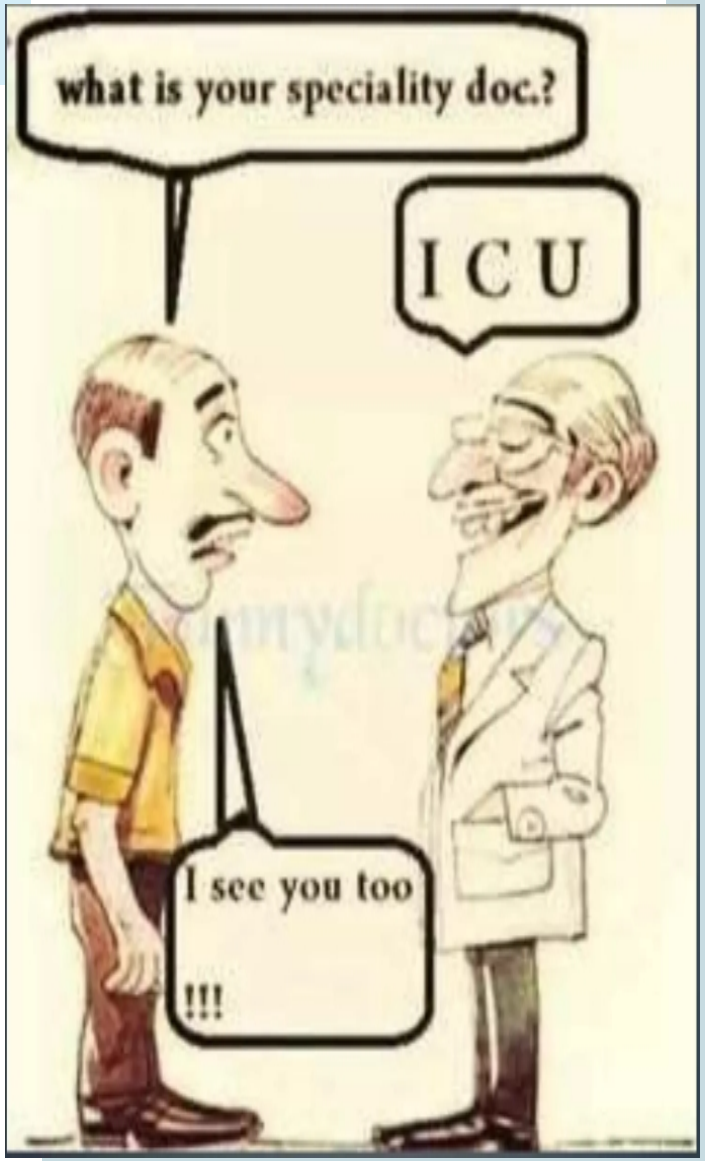
Recommended for tertiary hospitals:

- 10 to 16 beds
- Led by an Intensivist
- Preferably a closed ICU
- Equipped with latest invasive and non-invasive monitoring (e.g., continuous cardiac output, SCvO2)
- High-standard long-term acute and multisystem care
- Bedside X-ray, ultrasound, and 2D-Echo available
- CT Scan and MRI facilities should be available, owned or outsourced.
  - Bedside bronchoscopy and dialysis (RRT) must be accessible.
  - Nurse-to-ventilated patient ratio should be 1:1.
  - Patient area minimum 100 sq ft; 125 sq ft ideal, plus space for storage, nursing, and visitors.
  - Staff must stay updated on critical care technologies and knowledge.
  - Follow infection prevention protocols.

ICU DIRECTOR

in many ways, the leader of a critical care team is the senior physician— the intensivist. In considering the organization of intensive care, it is important to understand the roles and responsibilities of this person as well as how best to utilize him/her.
Manage admissions and discharges

- Create treatment protocols and guidelines
- Update equipment and practices
- Promote efficient use of materials and staff
- Coordinate ongoing education for hospital and ICU staff



PRESENTATION TITLE

RESIDENT DOCTOR

Postgraduates in Anaesthesia, Medicine, Respiratory Medicine, or related fields, including surgery, are suitable. One PG and one graduate resident per 10-14 ICU beds is recommended.

THE NURSING STAFF

Ideal nursing for ventilated patients is 1 nurse per patient, but never less than 2 nurses for 3 patients.

OTHER STAFF

- Respiratory therapist
- Physiotherapist
- Technicians
- IT specialist
- Biomedical expert
- Nutritionist
- Class IV cleaning staff
- Security guards
- Support from Clinical Lab, Microbiology, Imaging, Pharmacy as needed
- One person to monitor pollution and infection control protocols

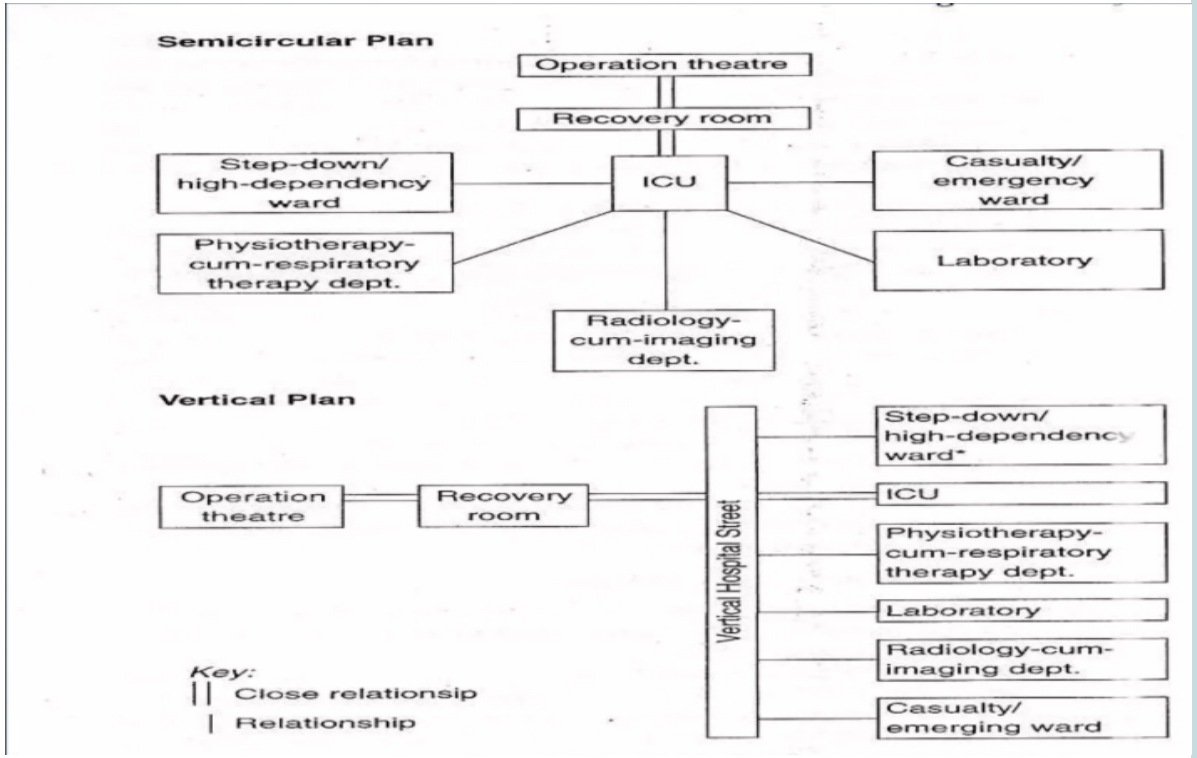
HOW MANY BEDS?

ICUs with fewer than 6 beds are costly and limit staff experience. ICUs with over 24 beds are hard to manage and affect outcomes. Efficiency drops when ICU beds exceed 12. Thus, ICU bed count should be kept within these limits.

LOCATION\ENTERY/ EXIT POINTS

ICU location must prioritize safe, quick transport of critical patients.

- Place ICU near ER, operating rooms, and trauma ward.
- Corridors, lifts, and ramps should allow easy bed movement.
- ICU should be close to diagnostics, blood bank, and pharmacy.
- No public passage through ICU.
- ICU must have one manned entry/exit.
- Emergency exits are required for disasters.



ICU EQUIPMENTS

Sr no	Equipment	Number	specification
1	Bedside Monitors (For ICU)	One per Bed	Modular -2 Invasive BP, SPO2,NIBP, ECG, RR, Temp Probes with trays
2	Monitors for HDU	Same	Same but without Invasive BP but upgradeable
3	Ventilator	6	With paediatric and adult provisions, graphics and Non-Invasive Modes (Two Ventilators should be with inbuilt Compressor. each should have a Fisher and Paykel Humidifier (These can be bought directly from F &P
4	Non invasie ventilators	3	With provision of CPAP and IPAP
5	Infusion pumps	2 Per bed in ICU 1 Per Bed in HDU	Volumetric with all Recent upgraded drug calculations

ICU EQUIPMENTS

7	Head end panel	1 per bed	With 2 O2 Outlets, two vacuum, one compressed air and 12 electric outlets , provision for Music, Alarm, trays for two monitors, Two Drip stands, One Procedure light
8	defibrillator	Two with TCP facility (one standby	Adult and paediatric pads with Trascutaneous pacing facility
9	ICU Beds (Shock Proof) (Fibre)	One for each bed	Manoeuvred with all positions possible with mattress. Now beds are available which give lateral positions also
10	Over bed tables	One for each bed	ALL SS with 6 to 8 cupboards in each to store Drugs Medicines, side tray for x-rays, BHT, on wheels
11	ABG machine	One + one	Facility for ABG and electrolytes
12	Crash trolley	Two for ICU + One for HDU	To hold all resuscitation equipment and Medicines
13	Pulse oximeter	2	1 for standby

ICU EQUIPMENTS

15	Intermittent Leg Compressing Machine	2	To prevent DVT
16	Airbeds	6	To prevent bed sores
17	Intubating video scope	1	To make difficult intubation easy
18	ICU Dedicated Ultrasound and Echo machine	1	With recent advances to look instantly even at odd hours. Vascular filling, central lines, etc
19	Bedside X ray	1	
20	Ambu Mask different sizes	10	Silicon , ETO steriliable

QUIZ

- WHAT IS ICU?
- WHAT ARE ITS LEVELS?
- GIVE EXAMPLES ABOUT ICU EQUIPMENTS?

Any questions?

Thank You