

MANAGEMENT OF AN INTENSIVE CARE UNIT

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Intensive Care Unit

- Manage patients **with life-threatening illnesses, injuries, or complications**
- Qualified staff
- Advanced equipment

Intensive Care Service Definition (Turkish Ministry of Health)

- Adult / pediatric / newborn sections
- Aim the treatment of patients who are suffering from **one or multiple organ dysfunction and need intensive care.**
- They are equipped with **advanced technological devices**, which monitor **the patient vital signs.**
- Monitoring and treatment last 24 hours continuously.

Types of Adult ICU's

- Coronary care units
- Surgical intensive care units (general surgery, neurosurgery, cardiovascular surgery)
- Medical intensive care units (internal medicine, neurological critical care)

Levels of ICU

- There are three levels of ICU's
- Level 1
- Level 2
- Level 3

Level-1 ICU

- Patients recently discharged from a **higher level of care**
- Patients in need of **additional monitoring/intervention**
- Patients requiring critical care **outreach service support**

Level-2 ICU

- Need for preoperative optimization
- Need for extended postoperative care
- Patients receiving single organ support
- Patients receiving basic respiratory support
- Patients receiving basic cardiovascular support
- Patients receiving renal/neurological/dermatological support

Level-3 ICU

- Patients receiving Advanced Respiratory Support
- Patients receiving a minimum of 2 organs supported

Type of ICU

- OPEN SYSTEM: The specialist admit, treat and discharge his own patient
- CLOSED SYSTEM: Admission and Discharge Criteria, Observation and Treatment are under the control of intensivists.
- The patient outcome, cost benefit is noted to be better if intensivists have full clinical responsibility

THE BEST MANAGEMENT

- An **INTENSIVIST** as a **DIRECTOR** in a **CLOSED SYSTEM ICU** available for **24 HOURS/365 DAYS**

Health Planning Policies

- The **number, type and size** of ICU's must be planned according to the **regional conditions**. (To prevent unnecessary duplication of expensive services)
- ICU beds in a hospital can be divided into multiple Units, under separate management controlled by different specialists (Medical ICU, Surgical ICU, Burns ICUetc.)

Beds of ICU's

- The number of ICU beds in a hospital is usually 5-10 % of total hospital beds.
- The ideal bed number of ICU is 8-12
- ICU's with less than 4 beds are considered not to be cost effective
- Number over 12-16 beds may be difficult to manage

Design of ICU: planning phase

- MULTIDISCIPLINARY TEAM:
- the director of ICU,
- a representative of the medical staff,
- the head nurse,
- the architect,
- a representative of the hospital management,
- an engineer

The Location of ICU

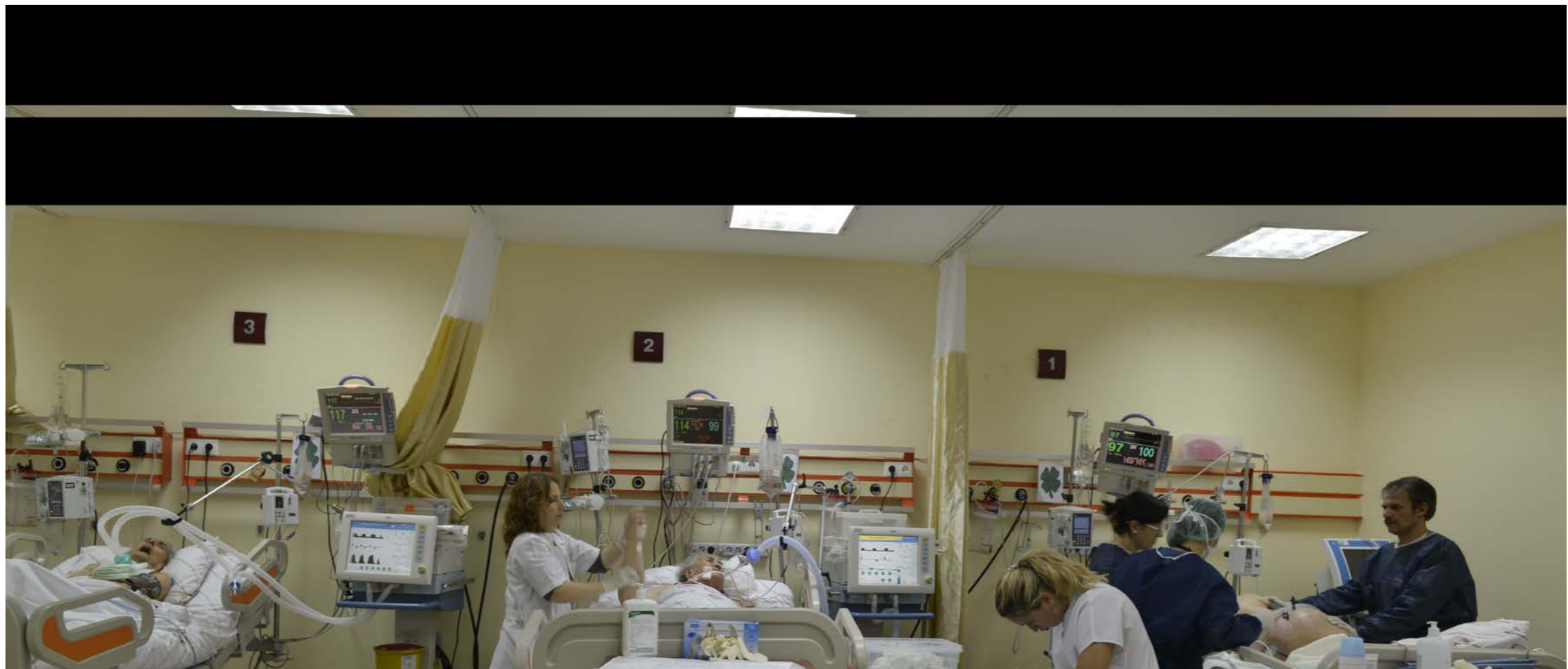
- Layout of the ICU should allow rapid access from the following:
 - – The emergency department
 - – The operating theaters and postoperative areas
 - – The medical imaging department

The Location of ICU

- Fast and easy connections have to be established with the following:
 - ◆ – Blood transfusion service
 - ◆ – Technical support services
 - ◆ – Laboratory
 - ◆ – Physiotherapy service

- Bed number=Total area/40
- Single room beds/open ward beds depends on the role and type of ICU. (1:6 is advised)
- 20 m²/bed in open ward; 25 m²/bed in isolation room
- There should be at least 2,5 metres between the bed centers.

OPEN WARD SYSTEM

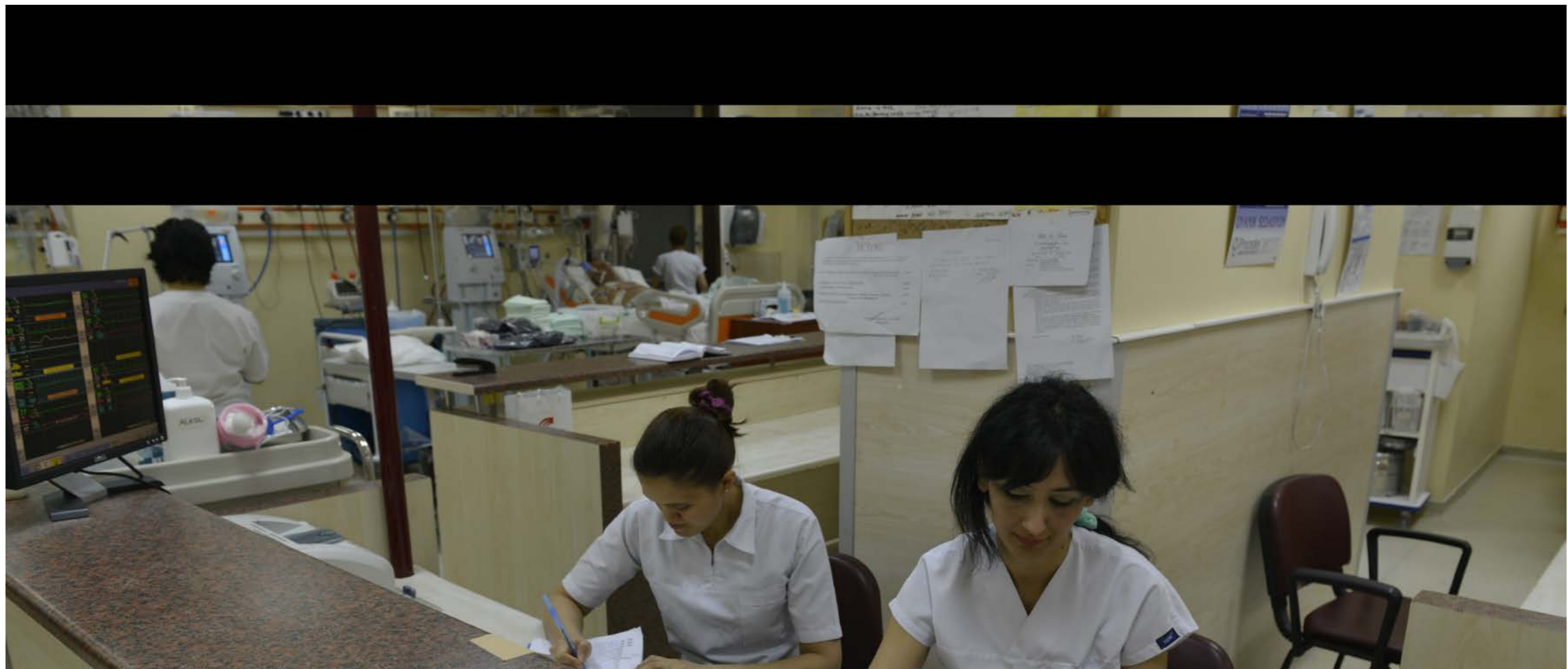


ISOLATION ROOM



- Central nurse station, central monitorisation
- Storage and utility areas (for equipment, clean and dirty utilities)
- Waiting room for visitors
- Seminar/conference room
- Rooms for staff (medical director, doctors, nurses, other personnel, etc)
- Change rooms, toilets and showers

CENTRAL NURSE STATION



- electrical safety and emergency supply
- Three oxygen, 2 air, 4 suction, and 16 power outlets with a bedside lamp are optimal for a Level III ICU

- Natural light is very important in preventing of patient disorientation and staff stress.
- An ICU must have large clear windows.

EQUIPMENT

- Central and bedside monitors
- Pulse oxymeter, Capnography
- 12 lead ECG recorder
- Patient/bed weighers
- Pressure monitoring systems
- Bedside glucose monitoring, temperature monitoring

EQUIPMENT

- Ventilators (bedside-portable)
- Infusion pumps
- Oxygen therapy devices
- Resuscitation trolley
- Defibrillators
- Haemodialysis/Haemodiafiltration equipments

EQUIPMENT

- Dressing trolleys
- Heating/cooling blankets
- Pressure distributions mattresses

- Recording the patients parameters is essential

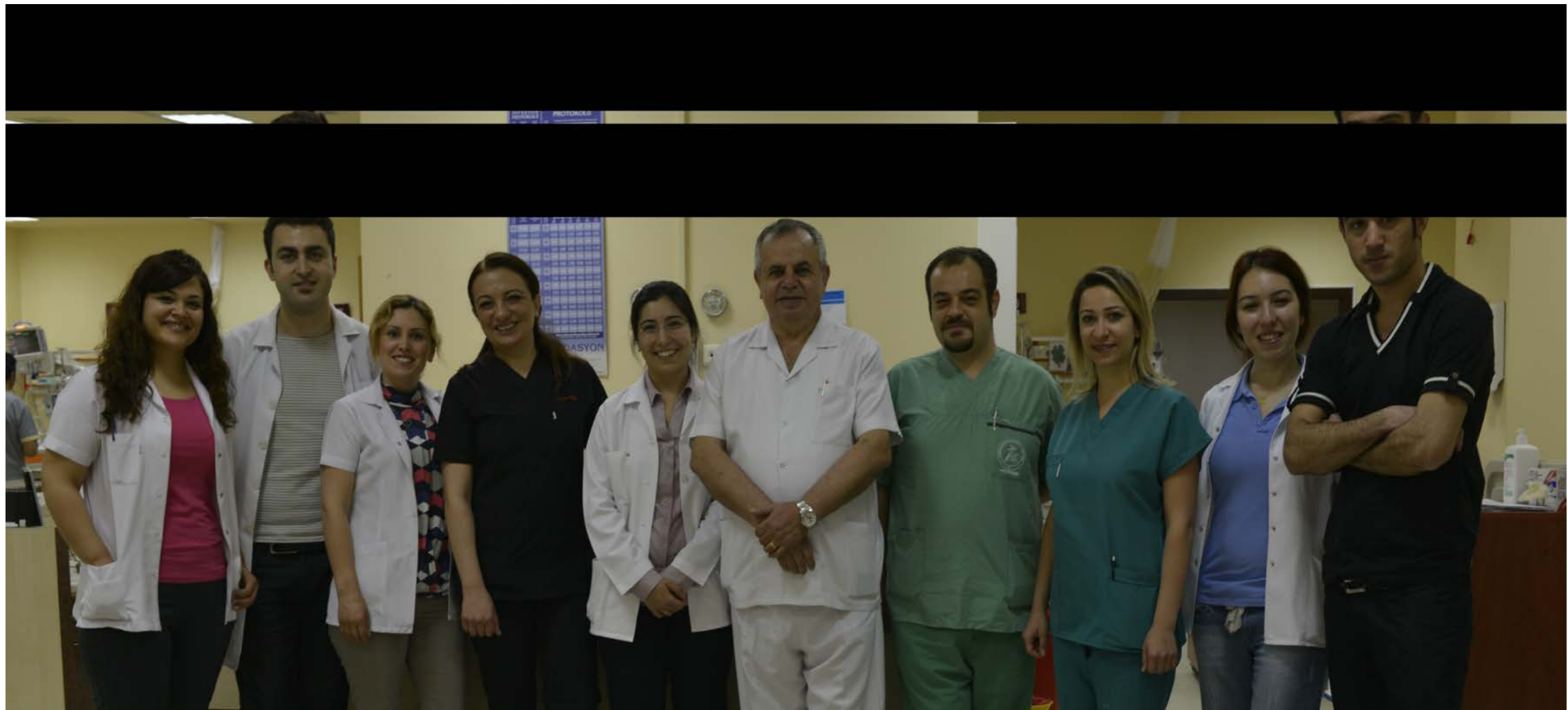
Andreas Valentin
Patrick Ferdinande
ESICM Working Group
on Quality Improvement

Recommendations on basic requirements for intensive care units: structural and organizational aspects

ICU TEAM

- Director of ICU (intensivist)
- Doctors
- Nurses
- Respiratory therapists/Physiotherapists
- Clinical pharmacist

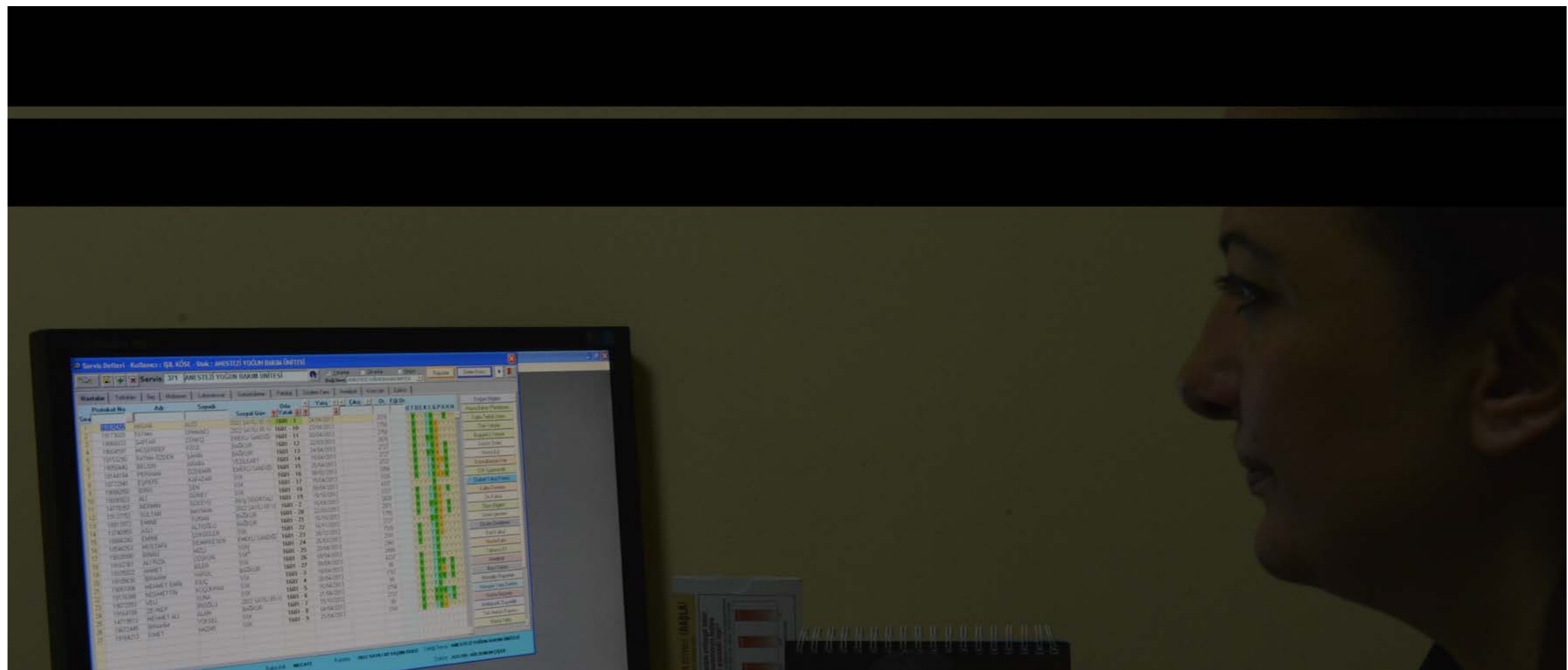
ICU TEAM DOCTORS



Director of ICU

- is responsible for the clinical management of patients referred to the ICU
- is responsible for admission and discharge decision of the patient
- is responsible for providing equipment
- is responsible for education of staff

PATIENT INFORMATION ON SCREEN



- The head of the ICU is assisted by doctors qualified in intensive care medicine.
- The number of staff is determined by;
the number of beds in the unit,
number of shifts per day,
the level of care

- The number of full time physicians is per six to eight intensive care beds in tertiary ICU's

- “off duty hours”: A physician is available upon request at short notice in the hospital

- The treatment of patients is under the control of intensivists.
- They may consult specialists in different medical, surgical, or diagnostic disciplines whenever necessary.

DOCTORS

- Nights, weekends, holidays: The medical care must assured on a 24 h/day basis

HEAD NURSE

- full-time
- responsible for the functioning and quality of the nursing care
- extensive experience in intensive care
- at least one deputy head nurse to replace him (her).

HEAD NURSES

- Doesn't participate in routine nursing activities.
- Works in collaboration with the medical director,
- Helps to the director to provide protocols and and together they provide policies and protocols

NURSES

- Guidelines recently published suggest that **at least 50% of nurses in training ICUs** should have **worked in Intensive Care for greater than 2 years** or be trained and **certified in Intensive Care nursing**.

Society of Critical Care Medicine

Guidelines for ICU Admission, Discharge, and Triage

American College of Critical Care Medicine
of the Society of Critical Care Medicine

ABSTRACT

Appropriate utilization of Intensive Care Unit (ICU) resources is an important issue as the nation struggles to contain health care expenditures. The guidelines proposed here provide models which ICUs may use in formulating admission, discharge and triage criteria. A process for implementation, monitoring and performance review of policies and procedures is also included.

QUALITY MANAGEMENT

- Scoring Systems
- Length of Stay
- Patients re-admitted to ICU
- Nosocomial infections in ICU
- Antibiotic utilization
- Mortality review

SCORING SYSTEMS

🟢 APACHE

🟢 SAPS

🟢 SOFA

🟢 MODS

Vincent and Moreno *Critical Care* 2010, 14:207
<http://ccforum.com/content/14/2/207>



REVIEW

Clinical review: Scoring systems in the critically ill

Jean-Louis Vincent*¹ and Rui Moreno²

INFECTIONS

- ◆ Ventilator associated pneumonia
- ◆ Catheter related blood stream infection
- ◆ Catheter related urinary system infection
- ◆ Wound infections
- ◆ Others

Prevention of Infections

- ◆ Hand washing
- ◆ Staff education
- ◆ Aseptic conditions during interventions
- ◆ Appropriate air conditioning

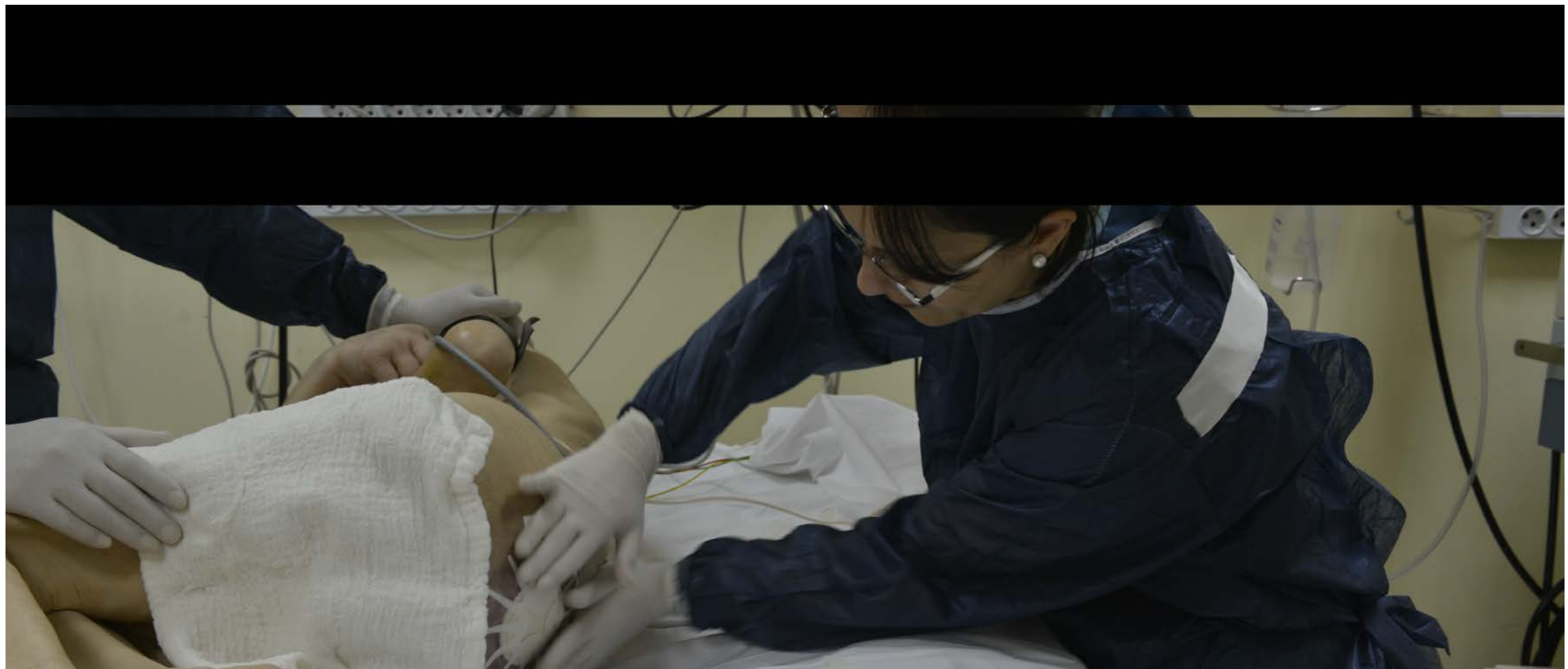
Treatment of Infections

- ◆ Antibiotics
- ◆ Infection control comitee

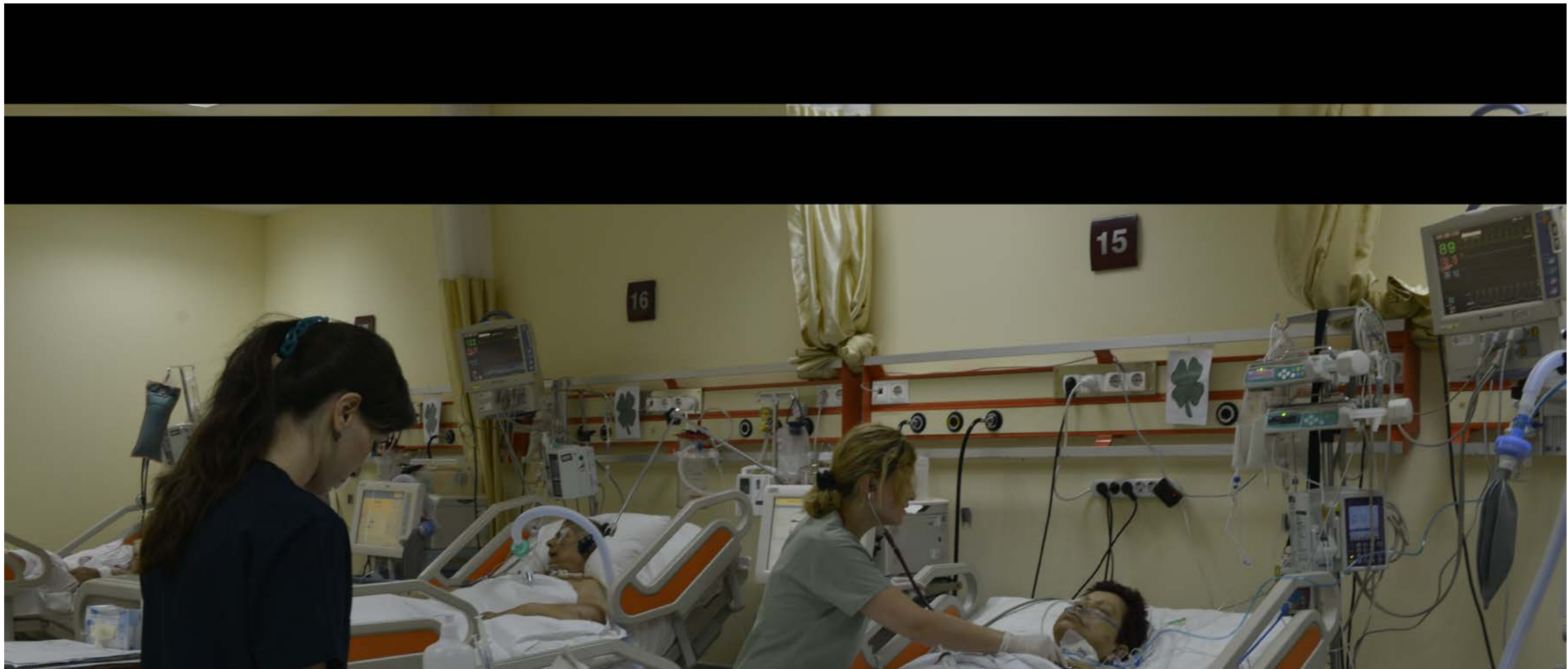
CONCLUSION

- ◆ ICU's are the most expensive and important sections of health care
- ◆ It must be planned wisely with professional attention,

WOUND CARE NURSE



DAILY VISIT

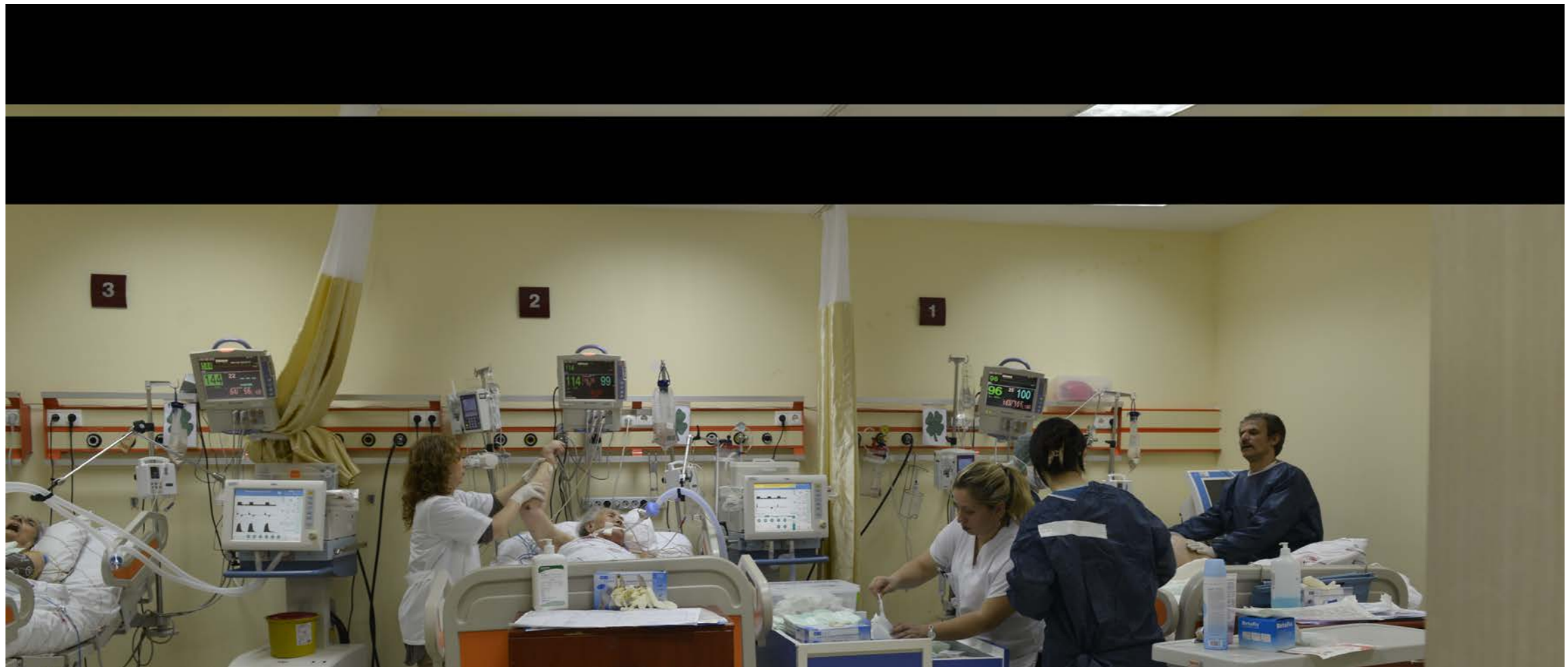
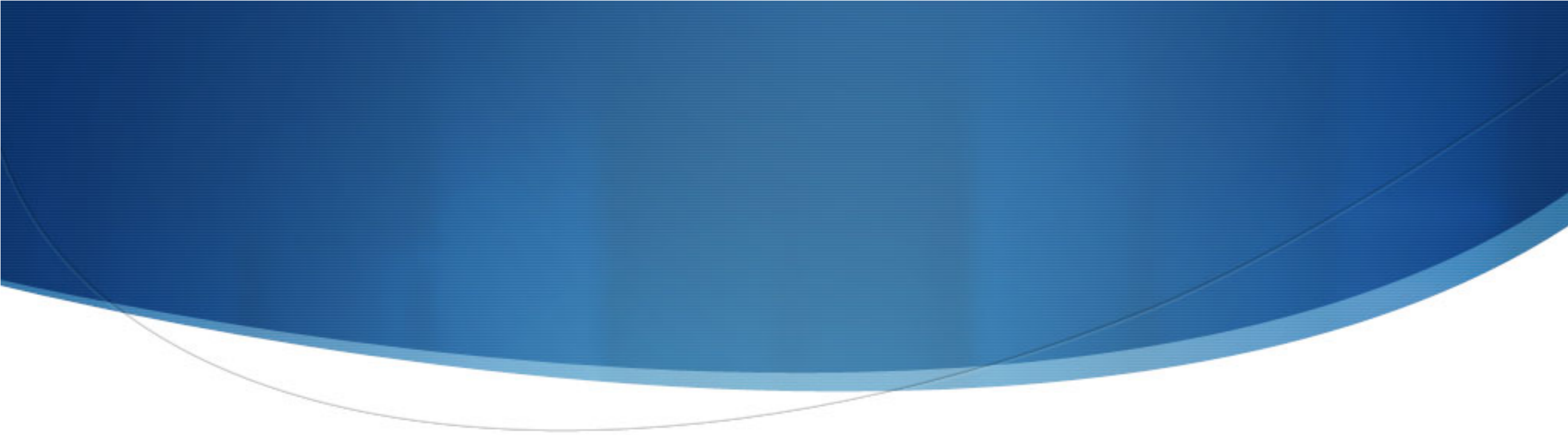


Physiotherapie

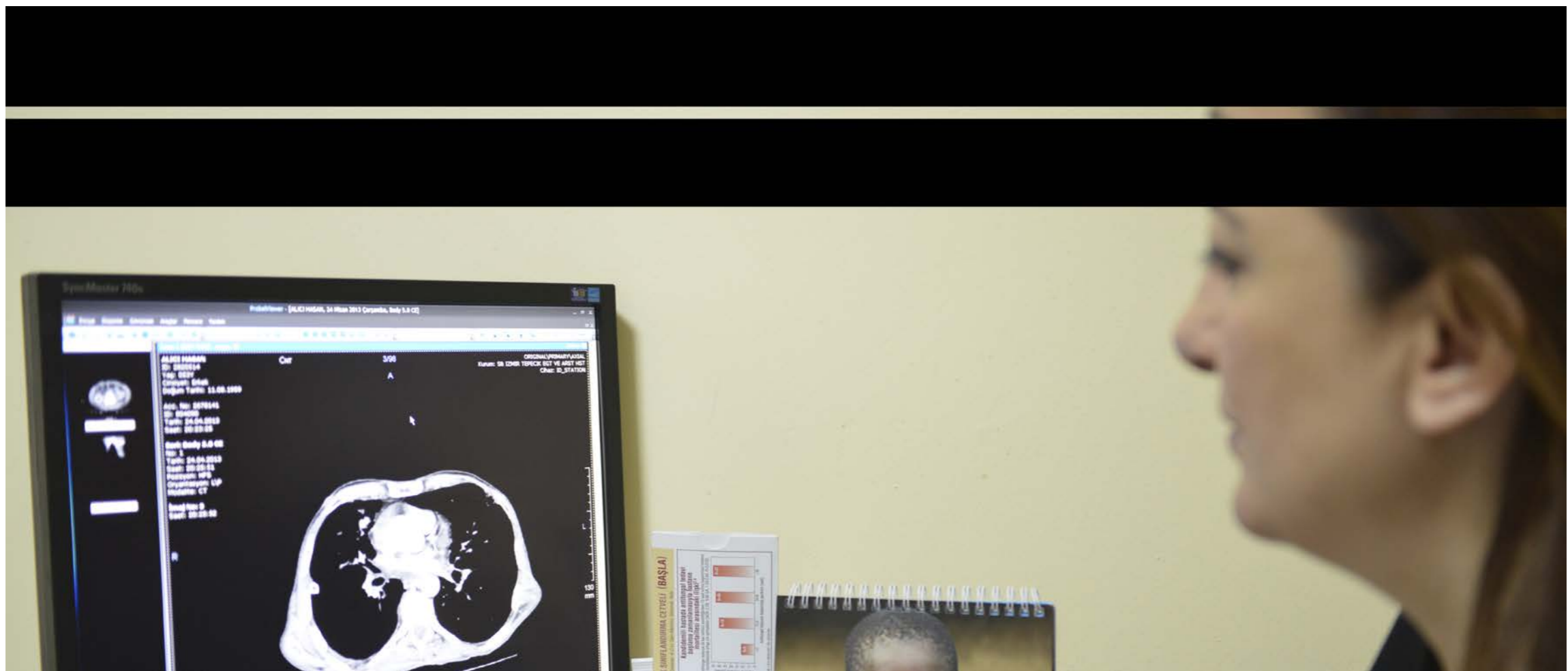


CONSULTATION





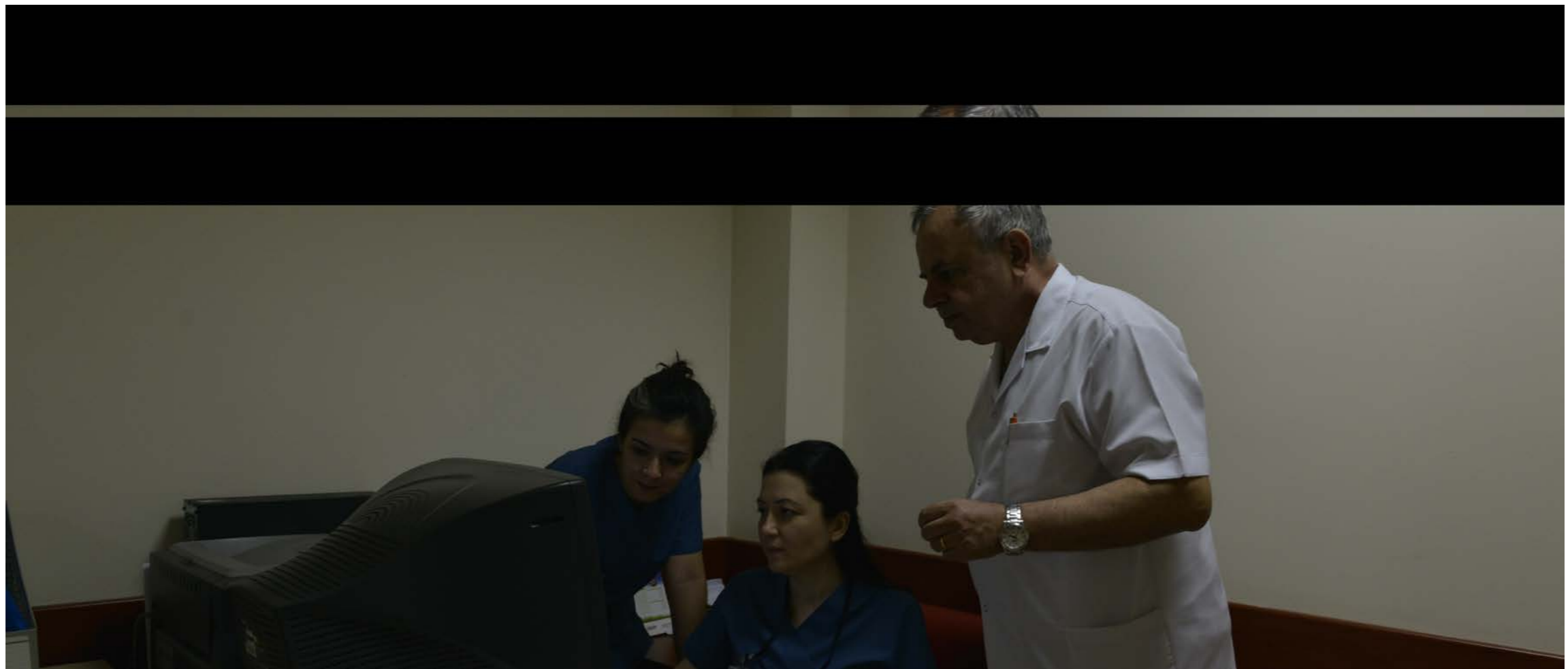
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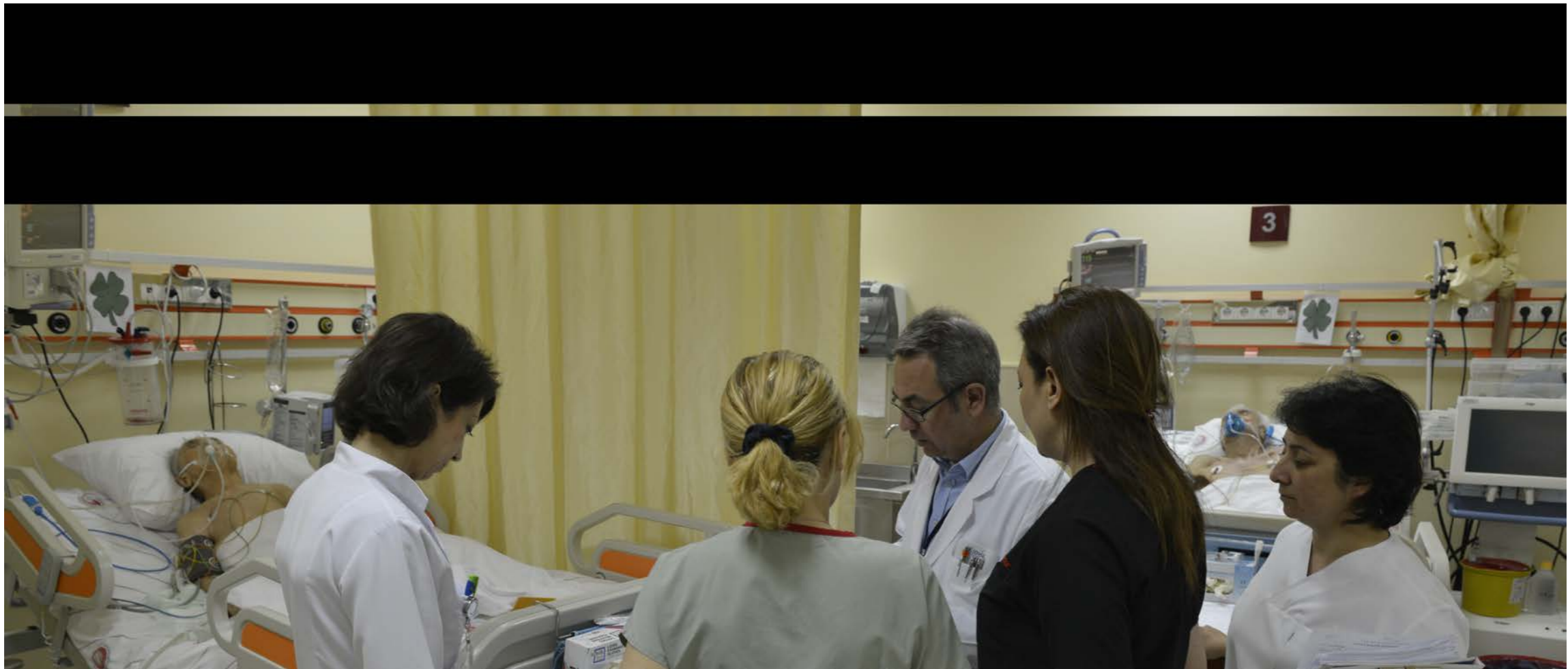
HEMODIALYSIS



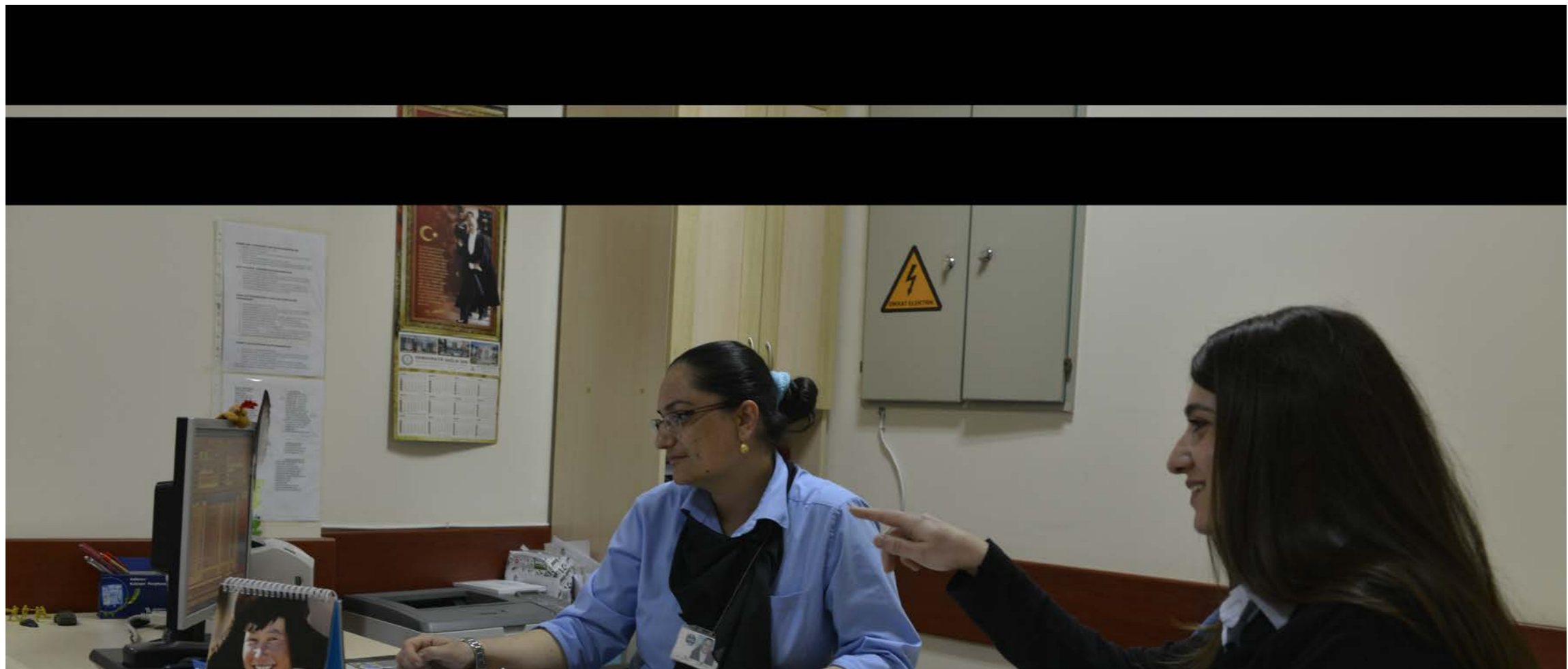
HEAD NURSE



VISIT WITH INFECTION CONTROL COMMITTEE MEMBERS



SECRETARY





THANK YOU FOR YOUR PATIENCE