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HYGIENE OF
MEDICAL-PREVENTIVE
ESTABLISHMENTS

Main problems of lecture

1. Tasks of hospital hygiene
2. Hygienic requirements to the hospital location
3. Functional zones at the hospital area
4. The systems of hospital planning
5. Internal design of hospital

Main Tasks of Hospital Hygiene

1. Preference to acceleration of recovery the patient, medical and psychological rehabilitation.
2. Achievement for psychological and somatic comfort for the patients during stay in hospital institutions.
3. Prevention of nosocomial infection.
4. Maintenance of epidemic and radiologic safety.
5. Maintenance of healthy occupational environment for the medical personnel.
6. A regulation of use of new materials, equipment and technologies in medical institutions.
7. Formation of a healthy life style bases.
8. Minimization of harmful environmental influence on an constructing and operating of medical institutions.

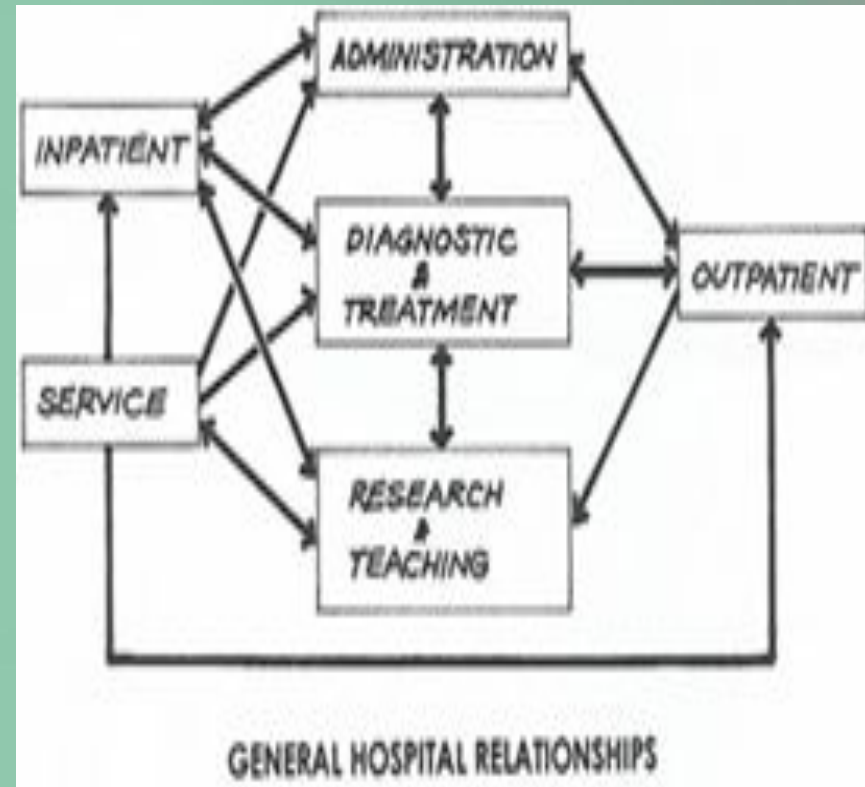
Hospital Environment

a set of all factors of physical, chemical, biological and information nature, which carries out influence on the organism of the patient during treatment



Functions of hospitals

- Treatment of patients;
- Diagnostic of diseases;
- Preventive measures for health protection;
- Prophylaxis of diseases;
- Prevention of relapses and complications of diseases;
- Medical and social rehabilitation of patients;
- Training of medical staff;
- Improvement of qualification of medical staff;
- Research work



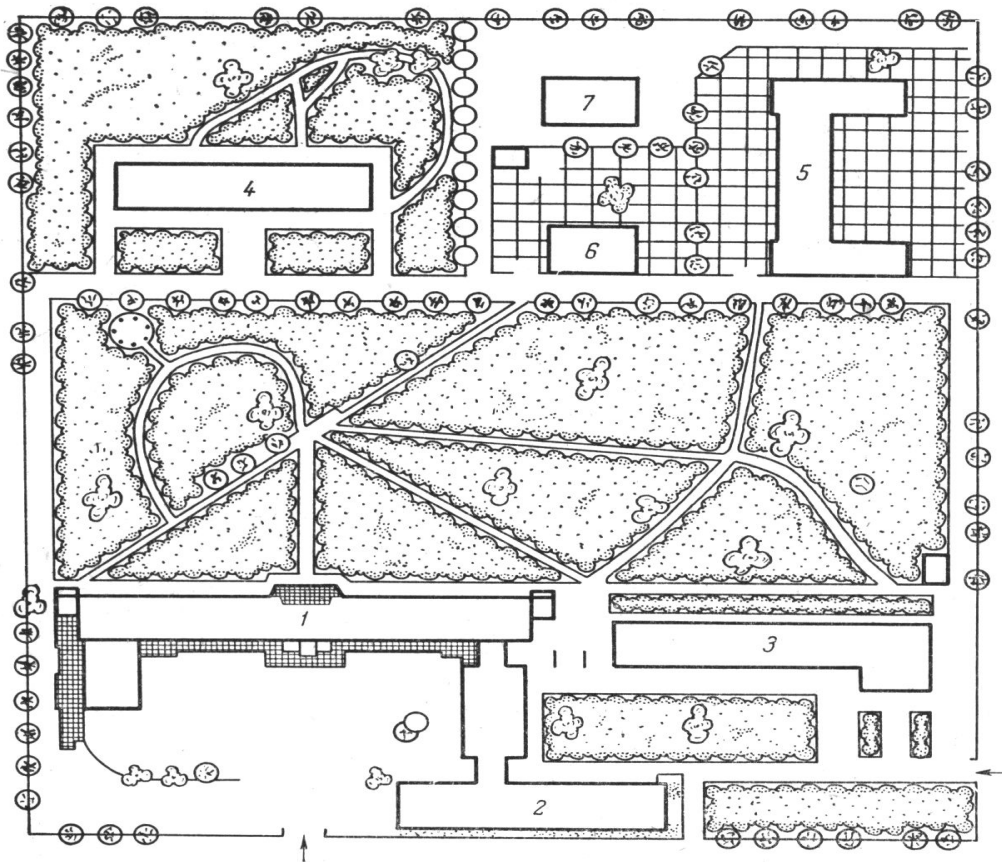
Hygienic requirements to the hospital location

- far from the railways, airports, high-speed highways and other powerful sources of pollution
- ground should be clean, dry, without sharp differences of a relief, gardenized and comfortable
- should be electrified, supply with water-pipes and water drain, bordered on perimeter and protect by a strip of green plantings
- maximal approximation to groups of the population, which they are served
- distance not less than 30 m from a red line of building and 30-50 m from apartment houses

Situational and general plans of hospital



General plan of hospital



- 1 – main medical building
- 2 – polyclinic
- 3 – maternity department
- 4 – infectious department
- 5 – nutritional unit
- 6 – utility building
- 7 – morgue

Requirements to hospital territory



- The area of buildings – 10 – 15%
- The area of green plantings - not less than 60%
- The area of a garden zone — 25 m³ on a bed
- Distance between buildings – not less 25 m
- Sanitary distance between an in-patient department and:
 - a morgue — not less than 30 m,
 - economic zone — not less than 50 m,
 - infectious department — not less than 30 m,
 - radiological department — not less than 25 m,
 - polyclinic — not less than 50 m
 - economic zone — not less than 50 m,
- Bordered on perimeter and between functional zones protect by a strip of green plantings with width no less than 15 m

The systems of hospital planning



- Centralised
- Decentralised
- Mixed
- Centralised-blocked



The systems of hospital planning



Centralized system - all departments are situated in the same building

The systems of hospital planning



Decentralized system - each department is situated in the separate building

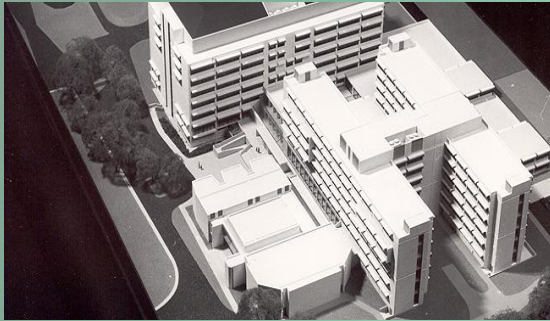
The systems of hospital planning



Mixed system – the basic somatic departments are situated in one multi-storied building.

Other departments are placed in a separate buildings.

The systems of hospital planning



- **H-form**

Centralized -block system

- isolated blocks in multi-storied buildings:

- a block of wards,
- a medical-diagnostic block,
- a block of material and technical service.



- **T-form**



- **X-form**

Modern systems of hospitals planning



Hygienic meaning of vegetation

Positive:

- Protection against wind, dust and noise.
- Optimization of microclimatic conditions.
- Bactericidal influence of phytoncides.
- Oxygenation of the air.
- Fixing of dust.
- Architectural-planning.
- Aesthetic and psychohygienic.



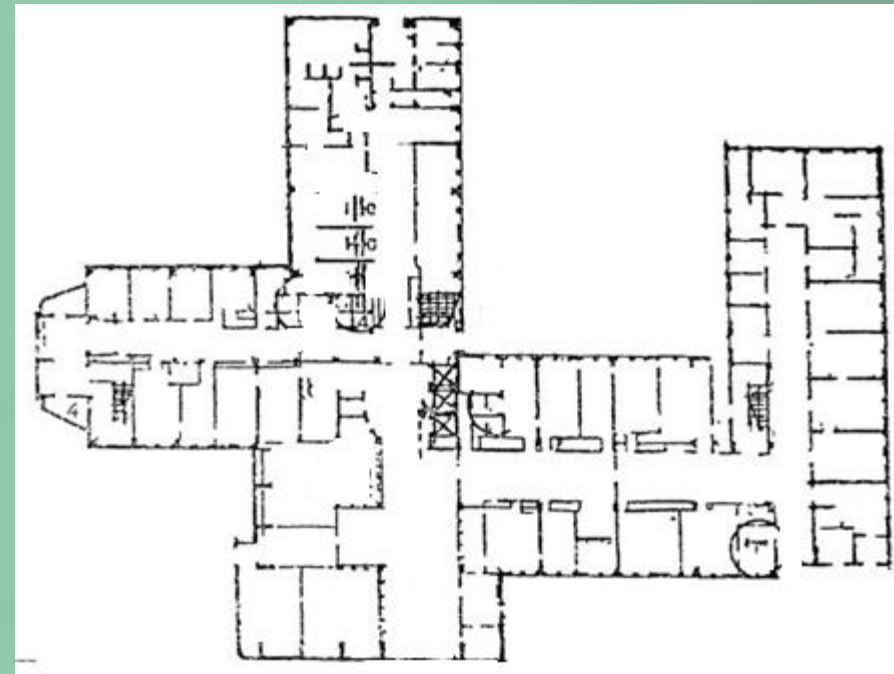
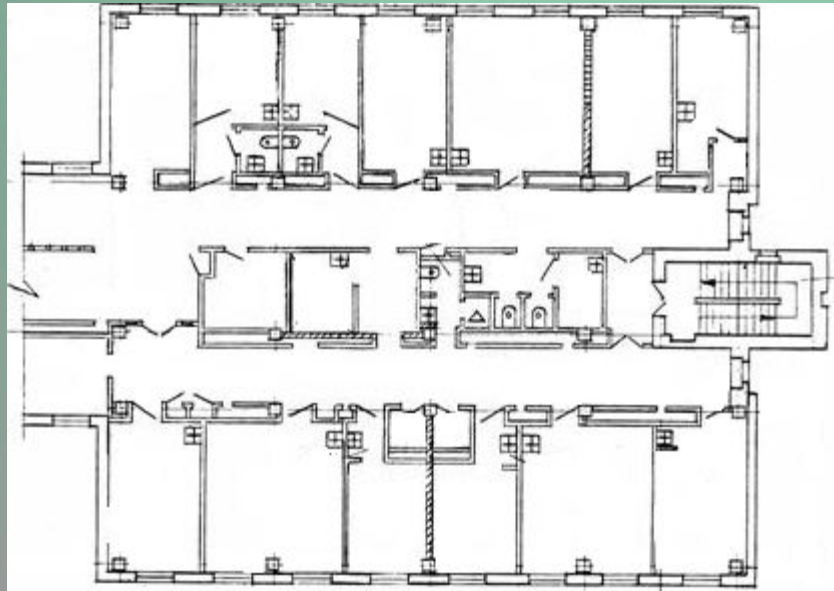
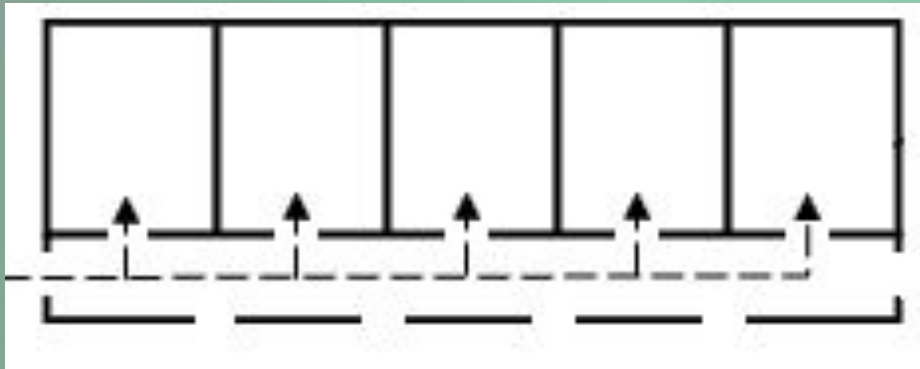
Hygienic meaning of vegetation

Negative:

- × A potential source of allergens.
- × Some plants are poisonous.
- × Danger of traumatization
- × Adsorption of dust particles
by plants surface



Types of hospital corridor



LIST OF PREMISES AND AREAS OF WARD SECTIONS AND DEPARTMENTS

Name of premises	Area (depends on the profile of department, the patient's age group), m ²
<i>PREMISES OF WARD SECTIONS</i>	
Wards for 1 bed (various types)	9-16
Wards for 2 beds and more	3-13 for 1 bed
Semi box or box for 1 bed	22
Box for 2 beds	27
Consulting room	10
Room (post) of the nurse	6
Procedural	12-22
Room for enema with floodgate	10
Toilet for patients (with floodgate and washstand)	3-6 for 1 toilet
WC (Toilet, shower) for people with disabilities in wheelchairs	6
Room of personal hygiene	5
Bathroom with shower	12-14
Room for washing and sterilization of bedpans	8
Room for temporarily storage and sorting of dirty laundry	4
Room for storage of cleaning items and disinfectants (with boarding bridge, crane and dryer)	4
Room for day stay patients	0,8-1
Room for collection and storage of materials for analysis	3

AREA OF WARD IN DIFFERENT DEPARTMENTS

Somatic (therapeutic) departments: <ul style="list-style-type: none">- for adults- for children	7 6
Infectious and tuberculosis: <ul style="list-style-type: none">- for adults- for children	7.5 6.5
Orthopedic and traumatology, neurosurgery (including rehabilitation), ambulatory, radiological: <ul style="list-style-type: none">- for adults and wards for children with day stay mothers- for children with mothers, who stay around the clock	10 13
Intensive care, postoperative	13
For newborns, premature infants and children up to 1 year	3

AIR TEMPERATURES AND THE NUMBER OF AIR EXCHANGES IN THE HOSPITAL PREMISES

<i>Premise</i>	<i>Temperature, °C</i>	<i>Number of air exchanges</i>		<i>Multiplicity of exhaust with natural air exchange</i>
		<i>+</i>	<i>-</i>	
Wards for adults, premises for mothers of children's departments, wards for tuberculosis patients (adults and children), premises for hypnotherapy	20	80 m ³ for 1 bed		2
Premises (wards) for patients with hypothyroidism	24	80 m ³ for 1 bed		2
Wards for patients with thyrotoxicosis	15-16	80 m ³	not allowed	2
Postoperating rooms, reanimation halls, intensive care units, boxes, operating rooms, anaesthetic rooms, wards for 1-2 beds for burn patients, hyperbaric chambers	22	by calculation, but not less than tenfold exchange	not allowed	not allowed
Postpartum chambers	22	80 m ³ for 1 bed		the same
Wards for 2-4 beds for burn patients, wards for children	22	the same		-
Wards for aborted, infants, newborns and traumatized children	25	by calculation, but not less than 80 m ³ for 1 bed		not allowed
Boxes, semi boxes	22	80 m ³ for 1 bed	80 m ³ for 1 bed	2,5

INDICES OF AIR CLEARANCE

Index	Permissible level	
Carbonic gas		
very clean air	0.05 %	0.05 %
rather clean air	0.07 %	0.07 %
satisfactory clean air	0.1 %	0.1 %
Dust pollution		
very clean air	500 particles in 1 cm ³	500 particles in 1 cm ³
rather clean air	0.1 mg/m ³	0.1 mg/m ³
dirty air	0.15 mg/m ³	0.15 mg/m ³
Oxydation of the air		
very clean air	6 mg O ₂ /m ³	6 mg O ₂ /m ³
Moderately polluted air	10 mg O ₂ /m ³	10 mg O ₂ /m ³
dirty air	12 mg O ₂ /m ³	12 mg O ₂ /m ³
Germ pollution	General microbe number	haemolytic Streptococci
clean air	3500-4000	75-100
moderately polluted air	5000-7000	150
dirty air	above 7000	above 150



