

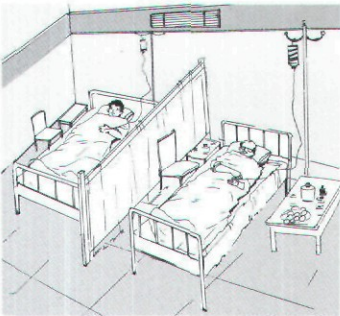


## Airconditioning other zones

**A**irconditioning operating theatre suites was discussed under a separate chapter earlier, because of the special treatment OTs deserve.

Other zones in a typical hospital need airconditioning too, and many of them have their own special needs as well. This chapter runs you through some of these other zones.

### Patient rooms

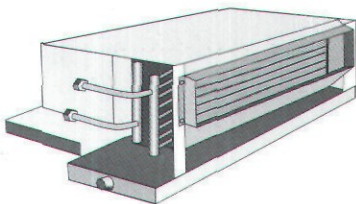


Airconditioning of bedrooms in our warm humid climate is desirable not only for medical reasons but also to keep out noise and pollution mainly from cars, buses and trucks in our congested urban areas. It is more important in hot dry areas where dust storms are common in the summer months.

When central airconditioning systems are used for patients' rooms, avoid ducted air supply and return to the rooms in order to eliminate chances of cross infection and to control odours through the common ducts. For the same reason, packaged airconditioners feeding a group of rooms through a ducted supply must also be avoided.

**Use of individual fan coil units in each room connected to a central chilled water plant and room thermostats, for independent temperature control, is an ideal solution.**

Toilets attached to each bedroom are exhausted through a central exhaust system directly to the outdoors and this exhaust air is replaced by the fresh air supplied to the bedrooms.



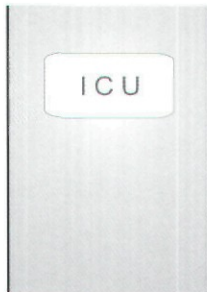
**Fig 6.** A Fan Coil Unit



The wards, in many cases, are not airconditioned, particularly when airconditioning is entirely strange to the normal habitat, customs and expectations of the patients. Some general hospitals may also keep a small percentage of the bed rooms non-airconditioned for patients who may prefer economic solutions.

## Other hospital areas

The needs of each department of a hospital are special and these must be kept in mind while planning the mechanically facilities. Listed below are a few of the many important areas that comprise a modern hospital.



### Intensive Care Units

These units serve seriously ill patients from post-operative to coronary patients. Their needs of **clean filtered air** without the possibility of contamination from adjoining areas and a variable range of temperature capability from 24 to 27°C are important.



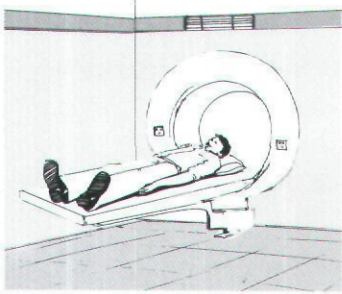
### Labour and Delivery

The procedures for normal childbirth are considered non-invasive and rooms are controlled **similar to patient rooms**. Invasive procedures such as a caesarian section are performed in an operating theatre.



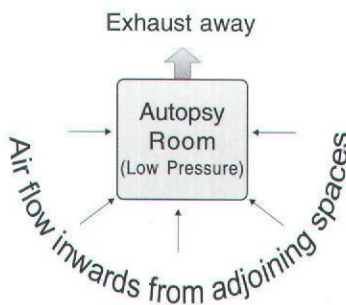


## Magnetic Resonance Imaging (MRI) / CT Scan rooms



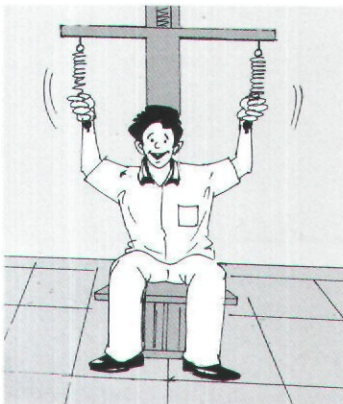
Normal comfort airconditioning and ventilation is required. However the special needs of the equipment manufacturer must be checked out and at times a 'precision' airconditioner may be called for to handle the **high heat release of computer equipment and the cryogens** used to cool the magnet.

## Autopsy room



Comfort conditions are maintained with a 100% fresh air system with full exhaust. Due to heavy bacterial contamination and odour, autopsy rooms require **special attention for exhausting all air above the roof** of the hospital. To prevent spread of contamination to adjoining areas, the autopsy room must be maintained at a **negative pressure**.

## Physical Therapy Department



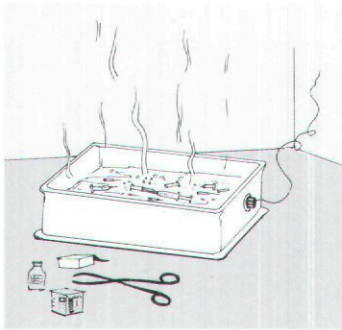
The normal airconditioning cooling load of the electrotherapy section is affected by the **shortwave diathermy, infrared and ultraviolet equipment** used in this area.

The exercise section requires no special treatment and temperature and humidity should be within the comfort zone.



## CSSD (Central Sterilisation and Supply Department)

Comfort air conditioning is optional but ventilation and exhaust air systems are essential.



Used and contaminated utensils, instruments and equipment are brought to this unit for cleaning and sterilization prior to reuse. The department usually consists of a cleaning area, a sterilizing area and a storage area where supplies are kept until requested. The storage area should preferably be air conditioned on a 24 hour basis in case the remaining CSSD department is merely ventilated.

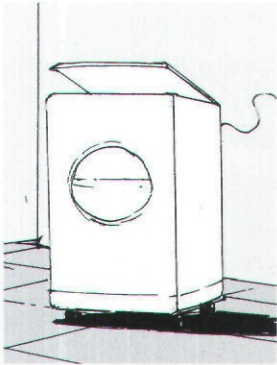
## Kitchen

This is **generally ventilated**, meaning that fresh filtered air is distributed to the entire area and stale air exhausted through the hoods kept over the cooking areas where heat is concentrated.



Cooler and freezer rooms are located close to the kitchen area and the refrigeration equipment for these should preferably be water-cooled for best cooling efficiency.

The dietitian's office is often located within or adjoining the kitchen. It is usually completely enclosed to ensure privacy and noise reduction and hence airconditioned for comfort.



## Laundry

This is another area which is **generally ventilated** with fresh filtered air and exhausted through hoods placed over the heat-generating laundry equipment such as washers, flat work ironers and tumblers. Special advice must be taken from the equipment manufacturers and all exhaust should terminate above the roof or where it will not be a nuisance to neighbours.

## Air pressure gradients

In general, one factor to be kept in mind is to **ensure that air pressure is higher in cleaner zones, lower in 'less clean' zones, but always higher than outside air**, so that air flow is always away from the cleaner and more critical areas and finally out into the atmosphere.

To ensure this, a gradient in air pressure between zones must be planned with care.