The construction should be robust and the luminaires should be capable of being securely mounted. Provision should be made for easy cleaning of the interior of enclosed luminaires without the risk of electrical shock.

Hand-held switches at mains voltage can be dangerous to patients so an extra-low voltage relay-actuated switch, at a maximum of 24 volts, should be incorporated into any nurse-call apparatus. Electrical connections should be accessible only with the use of tools.

It is also worth noting that any recessed emergency luminaires used on an escape route will have to retain the fire integrity and the rate of fire spread of the surrounding ceiling system. In practice this means that any attachment used will have to withstand the 850 °C glow wire test and be manufactured from a self-extinguishing material such as polycarbonate or a TPa based polymer.

14.2.7 Cleanliness

It is possible for airborne dust particles as small as 0.5 μm to transport harmful bacteria. Luminaires in common with other items of equipment can cause the transfer of infection by contact with the dust particles they may harbour. Therefore, luminaires for use in hospitals should have the minimum area of horizontal or near horizontal surfaces on which dust may settle and such dust should be easily removable by simple cleaning methods. In high risk areas it is advisable to use luminaires with no horizontal faces, only downward and vertical faces. It is also advisable to use theatre luminaires that have glass diffusers since glass cannot be penetrated by bacteria and is unaffected by sterilising materials and UV radiation. A further measure in preventing the transmission of infections is to ensure that any space requiring ingress protection between the void and room (especially theatre luminaires), uses a luminaire that has integral mechanical measures to ensure the seal between the ceiling and the luminaire frame and does not rely on the luminaire being manually held while it is fixed into place.

14.2.8 Electro-magnetic compatibility (EMC)

Many items of electrical equipment installed in hospitals can cause interference, either by radiation or by transients through the mains voltage supply. The prime nuisance factor from fluorescent luminaires is from radio interference. Suppressors, if fitted to the ballasts within the luminaires, should reduce the interference.

The use of high frequency electronic control gear within the patient environment requires careful consideration with regard to EMC emissions and immunity. The testing and certification of a ballast by a manufacturer as an independent component is not sufficient to ensure that its use within another housing or product will meet the overall technical requirements. Tests need to be performed by manufacturers on the complete assembly, as it would be installed. BS EN 60601 defines the EMC test requirements for electrical medical equipment within the patient environment. The EMC elements of ISO 11197 should be observed for bed head service trunking systems that include lighting components.

14.3 Approaches for the lighting of different areas in hospitals

The areas considered here are those most likely to be experienced by those visiting a hospital as patients. Hospitals contain many other areas. Details of the lighting required for all areas of hospitals are given in SLL Lighting Guide 2: *Hospital and health care buildings.*